



Halogen Moisture Analyzer

LMHA-701

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1. Safety Measures

The place where the moisture analyzer is placed should avoid excessive airflow, corrosion, vibration, overheating, or excessive humidity. These factors can affect weighing readings.

Do not place the moisture analyzer in

- Near doors and Windows in case of airflow and rapid temperature changes.
- Be near air conditioning or radiators.
- Near equipment that vibrates, rotates, or reciprocates.
- Near magnetic fields or devices that generate them.
- Uneven working surfaces.
- Narrow space. There should be enough space around the instrument for easy operation and away from heat sources.

2. Introduction

Halogen Moisture Analyzer LMHA-701 delivers moisture analysis with heating temperature range of 40°C to 199°C. It features halogen heating system, ensuring uniform and fast drying performance. Integrated with high-resolution LCD screen, it offers clear data visualization and intuitive operation. Equipped with an automatic shutdown function that provides safe and energy-efficient performance. Our Analyzer is ideal for laboratories and industrial settings requiring precise moisture content determination.

3. Features

- 5-inch color touchscreen
- Waterproof and explosion-proof
- Stainless steel chamber
- Corrosion-resistant design
- Custom test methods
- Built-in data storage
- USB real-time updates
- RS232 and USB ports
- Auto-lock function
- Multi-user operation
- Ready-to-use design
- Real-time curve display

4. Specifications

Model	LMHA-701
Weighing Range	200g
Readability	0.001g
Moisture Readability	0.01%
Sensor	Imported from Germany HBM
Heating Source	Halogen lamp
Heating Method	Mild, Standard, Fast
Shutdown Method	Automatic shutdown, manual shutdown, timed shutdown
Data Storage	100 sets
User Management	Password protection, multiple users, automatic locking
Sample Disk Diameter	Φ 90mm
Heating Temperature Range	40 to 200 °C
Monitor	5-inch touch screen display screen
Result Display	Test temperature, test time, moisture content, solid content, weight after drying, dynamic curve, moisture regain, solid content, weight loss, dry weight, test method, sample name, maximum value, minimum value, average value
Communication Interface	Standard RS232 communication interface, capable of connecting printers, PCs, and other peripheral devices, and customizable USB
Power Supply	220V
Power Consumption	450W
Dimension	220×340×210mm
Packaging Dimension	550×400×450mm
Net Weight	3.8kg
Gross Weight	15kg

5. Applications

Halogen Moisture Analyzer LMHA-701 is ideal for moisture and solid content testing. It is widely applied in food processing, pharmaceuticals, chemicals, and agricultural industries.

6. Installation

6.1 Install the tray, windshield, and sample tray holder

- Remove the top cover and install the tray in the heating chamber.
- Install the windshield on the tray.
- Install the sample tray holder, rotating until positioned. In the locked position, the sample tray holder should be pointing in front of the instrument.
- Accurate level and stable mounting are prerequisites for obtaining good repeatability. Adjust the instrument level to compensate for irregularities and small slants in placement. Adjust the horizontal foot behind the moisture analyser until the horizontal bubble is cantered. The horizontal bubble is located under the front panel of the instrument.
- Note: the instrument needs to be leveled every time the position changes.

6.2 Power Connection

Warning: Electric shock hazard.

- Use only the 3-pin power cord with a ground plug that comes standard with your instrument. Connect the power cord to the 3-pin ground socket only.
- Only cables that meet the relevant standards and have a ground plug are allowed as extension cords.

Be careful:

- Check to make sure the voltage of the instrument label corresponds to your local line voltage. Otherwise, do not connect the power supply.
- Halogen tubes are designed for special line voltages (110 V AC). Halogen tubes used in the plant must conform to local line voltages. Too high a voltage can cause the halogen tube to burn out. However, too low a voltage can prolong the heating process and cause the instrument to not operate properly. Connect the power cord to the power jack and outlet at the rear of the instrument. Once the power is connected, the instrument can run. Power on the device and press the power button on the display screen to open the display screen. Preheat the moisture analyzer for at least 30 minutes to adjust to fluctuations in the environment. If the instrument is placed in a cold environment before installation, it will take several hours to ensure stability.

7. Software Operations

7.1 Moisture Test

The measurements are not the same for different test samples. It mainly includes the drying procedure, drying temperature, and stopping mode. The user can set the appropriate test program in the main interface according to the sample and can also call the set test program on the sample library.

7.1.1 Test Procedures



Figure-1

- 1) Set drying procedure: fast (rapid temperature rise), standard, mild (slow temperature rise).
- 2) Set drying temperature: Set the appropriate temperature according to the sample.
- 3) Set the stopping mode: Automatic (judged according to the water loss per unit time), timed, or manual.
- 4) If the shutdown mode is fixed time, the test will be automatically stopped after the shutdown timing. If the automatic shutdown mode is set, the shutdown conditions can be set in "Setup -> weighing settings".
- 5) Put the sample into the sample tray, cover the heating cover, and click the start but
- 6) After the weighing is stable. The machine will carry out moisture measurements according to the set test procedure.
- 7) You can press  the icon on the main interface to display the real-time curve diagram. Press  the icon to return to the digital display.



Figure-2

7.1.2 Select the test program in the sample library

- In addition to setting the test program on the main interface, you can also call or add the test program in the sample library, which can be applied to different samples corresponding to different test programs.
- Click the "Sample Library" button in the main interface, you can add, edit, and delete samples and test programs corresponding to samples.

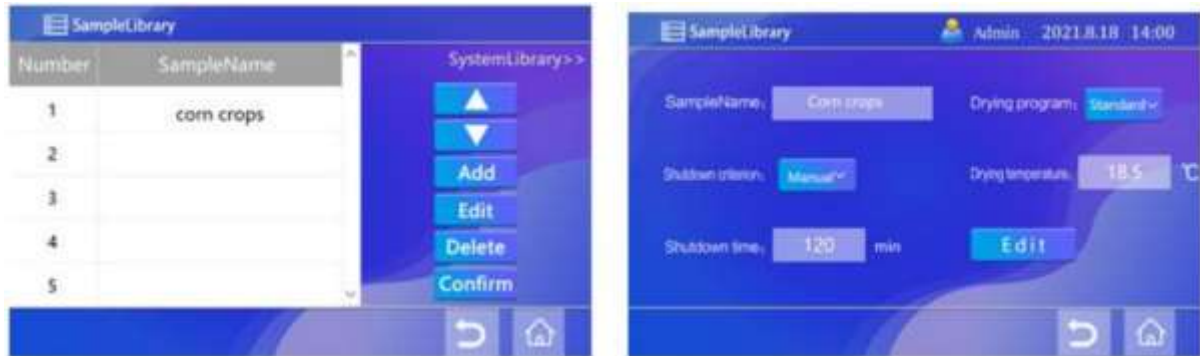


Figure-3

- Click "Add" in the sample library interface to add a new sample and the test program corresponding to the sample. Click "Edit" and the sample will be in the sample library list. You can select the sample name and click "Confirm" to use the moisture test program. Up to 100 sets of samples can be added.
- At the same time, users can click "system library" in the sample library interface to enter the selection of system preset samples, the test program for the system preset users cannot edit.

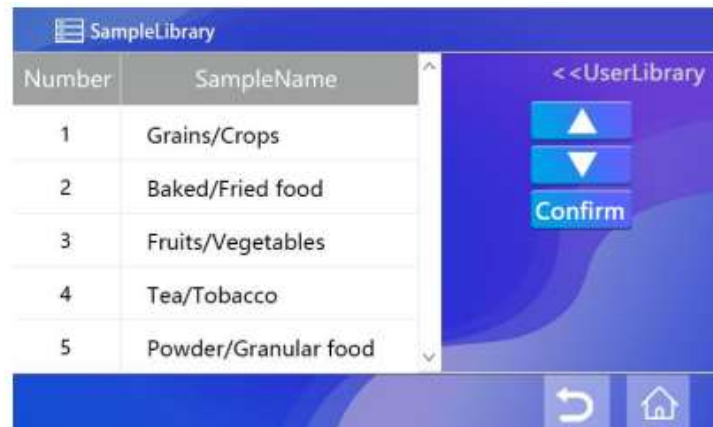


Figure-4

7.1.3 Sample Weight Selection During Measurement

The greater the number of samples, the more water will be evaporated, and the testing process will be prolonged. Overall, a sample weight of 10g is recommended. 3g samples can get faster results, but there is a lack of measurement accuracy. 20g samples usually give consistent results but take longer to test. The sample should be no less than 1g.

7.2 Statistics

- When the moisture test is completed, you can click the "Save" button on the main interface to save the value of the current test.
- Click the "Statistics" button on the main interface to enter the statistics interface, and record the saved date and time, moisture, solid content, and moisture regain rate. At the same time, calculate the maximum value, minimum value, and average value of the first n times. A maximum of 100 groups of data can be saved. If the data is greater than 100, the new data will overwrite the old data.
- If a USB flash drive is configured, the saved data will be saved to the USB flash drive in real time. Theoretically, countless data can be saved.
- In addition, "Output" in the statistics interface can save the statistics data of the first n times to the U disk STATIS file. You can press the print key to output the data in the table to the small receipt printer. The print format is as shown in the lower right image.

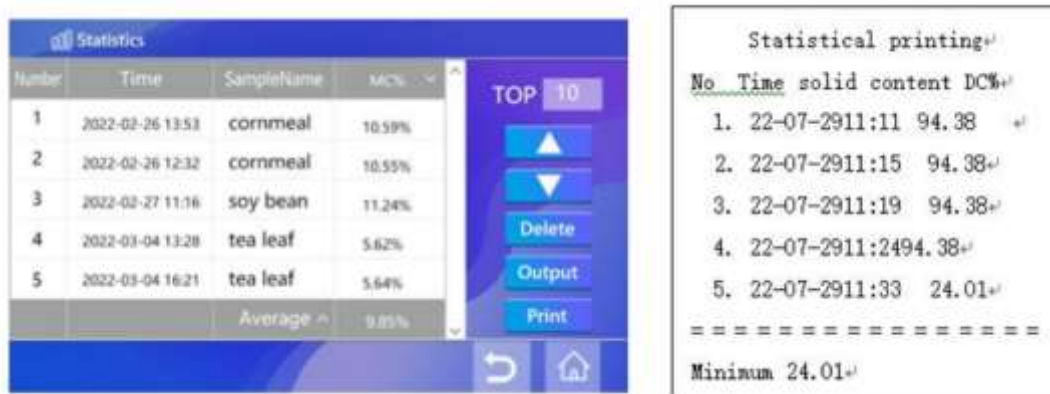


Figure-5

7.3 Set Up Function

Click the "Setup" button on the main interface to enter the setting interface. It mainly includes weighing setting, calibration setting, print setting, date and time setting, communication, and system setting.



Figure-6

7.3.1 Weighing Setting



Figure-7

- **Filtering amplitude:** The value is designed according to the user environment. The more unstable the user environment is, the greater the value will be set.
- **Stabilization time:** The larger the value is set, the faster the weighing value will stabilize. However, if the repeatability needs to be improved, the value needs to be reduced.
- **Filter depth:** The size of the digital filter. The higher the accuracy of the instrument, the larger the value setting. However, if you need a faster indication, you need to reduce the value.
- **Zero tracking:** environmental changes can lead to the drift of the display, automatic zero clearing setting can ensure that even if the environment has microwave changes, still maintains from 0g weighing.
- **Creep variable:** When an object is placed on the weighing table for a certain period, the creep of the sensor itself will make the display value slowly become smaller or larger, which is a normal phenomenon, so the creep variable can be appropriately increased. This value will affect the moisture measurement accuracy. It is recommended to use the default value.
- **Creep time:** The frequency of treating creep, the smaller the frequency, the higher the frequency. The default value is recommended.
- **Shutdown conditions:** Used in automatic shutdown mode for moisture testing, moisture testing ends when conditions are met. The setting value is that the weight change value per unit time is less than a certain value, indicating that the moisture has been dried. If the weight change within 60 seconds is less than 5mg, the test is complete. The default value is recommended.

7.3.2 Calibration Settings.

7.3.2.1 Weighing Calibration

Precautions before weighing calibration:

- To obtain accurate measurement results, the instrument must be energized for 30 minutes before calibration and reach the stable state of the instrument after preheating. Avoid air convection, the ambient temperature is kept at $20^{\circ}\text{C} \pm 2.5^{\circ}\text{C}$ to avoid the vibration source of the indoor small room.
- Prepare the calibration weight (configuration) and adjust the horizontal position.
- Remove all weight from the instrument.
- Calibration must be carried out before each weighing and during precision weighing, and calibration is also required when the temperature changes.

1) Linear Calibration

Click "Setup-> Calibration Setting -> Weigh Cal" on the home screen to select "Linear calibration" in the drop-down box, and then click "Start Cal". Then "300g" flicker is displayed, the 300g weight is put on the weighing plate, and the speed of the numerical flicker is shown to be faster. After the numerical flicker stops, the weight is removed. According to the above steps, according to the display weight value, put 200g, 100g, and 50g weights in turn until the 50g weight is removed, the program will automatically enter the main interface.



Figure-8

2) Single Calibration

Click "Setup - > calibration setting - > weigh cal" on the main interface, select "single calibration" from the drop-down box, and then click "start cal". Then "300g" flashes, (Note: the calibration value displayed at this time is only used as the reference calibration value, and the user can select any weight of the linear calibration point on the scale according to the actual needs.) place the calibration weight on the scale, and the flashing speed of the displayed value will increase until the value stops flashing, and then remove the weight. The program will automatically enter the main interface.

7.3.2.2 Temperature Calibration

- Install the temperature correction kit and perform the temperature correction. If the instrument has been used recently, it should be warmed up for at least 30 minutes before calibration.
- Set the drying temperature to 100 degrees on the main screen, place more than 1g of sample into the sample tray, and cover with the heating cap. Click the Start button and wait until the temperature stabilizes to 100 degrees.
- When the temperature is stable to 100 degrees, click "Setup -> Calibration Setting -> Temp Cal" on the main interface. Input the actual temperature displayed on the temperature component into the calibration box and click Confirm.



Figure-9

7.3.3 Print Setting

This device supports the connection of external small ticket printers and label printers. You can select the two printers and the corresponding baud rate of the printer by printing Setting. The contents of the small ticket print include date and time, moisture, moisture regain, solid content, dry weight, wet weight, running time, and so on. Users can define a title at the beginning of the printed content and define their fields at the end of the printed content. The print format is shown in the following figure:

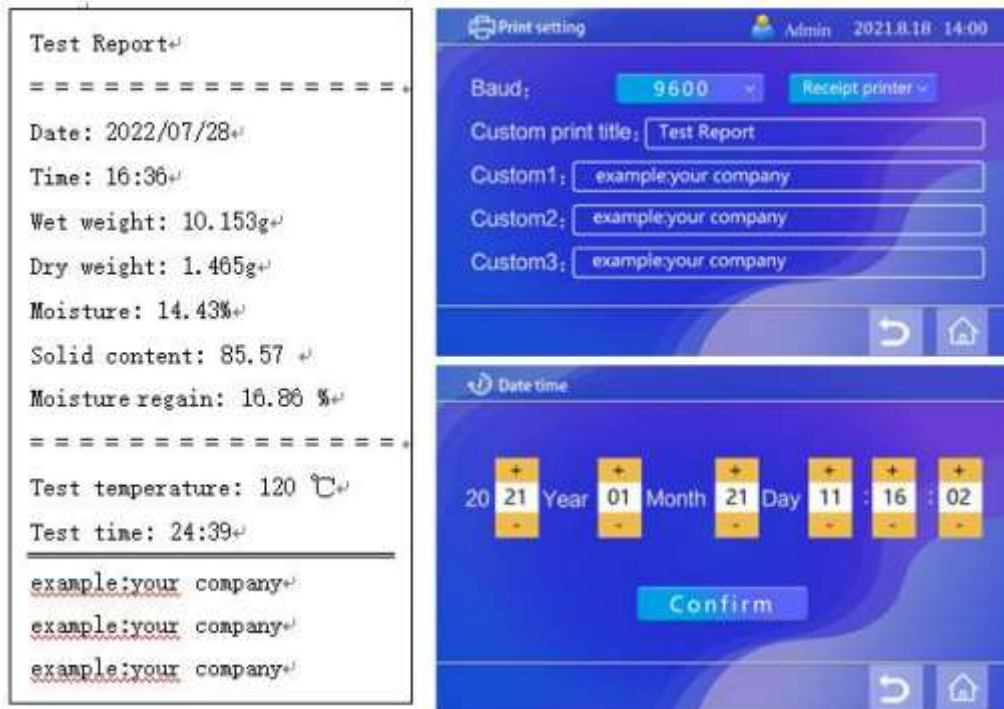


Figure-10

7.3.4 Date and Time Setting

After entering the time setting interface, click the +- sign to set the correct time, and click the confirm button.

7.3.5 Communication Settings

Optional functions. Set some functions when you need to connect to the network and upload data to the server. See the Network Function Supplement manual.

7.3.6 System Setting

In system Settings, backup restore, and version update are not available to users.

7.3.6.1 User Management

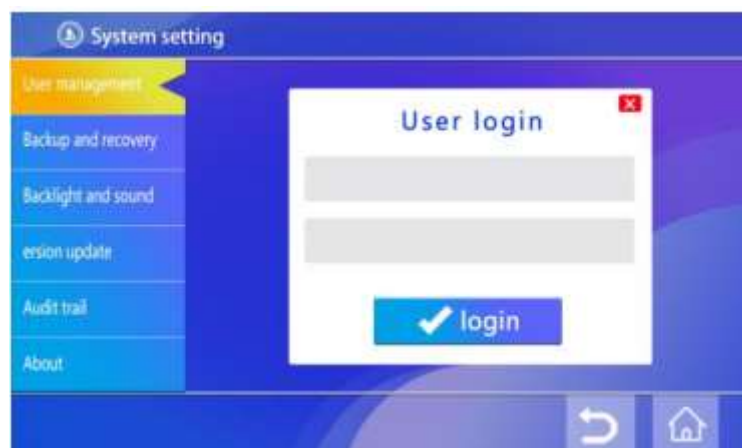


Figure-11

- The Settings support multi-user operations, and the operation rights of each user can be assigned by the administrator. The administrator has the highest authority and can operate all the functions of the instrument.
- Go to the User Management Settings and log in using the administrator account (Test lab) password (default 123456). You can add a new user and assign permissions to the user in the User management interface.
- The instrument supports 5 user management. You can select the corresponding serial number and click the "Modify" button to assign the username, password, and permission. Click "Confirm" to complete the setting.



Figure-12

- After you have assigned the user account, click the "Administrator Password" button in the user management interface to remove the check box in front of "login without password". At this point, you can use the account to log in to the instrument operation after the machine is turned on. Login Different accounts have different operation rights.
- You can also change the administrator password on this page.

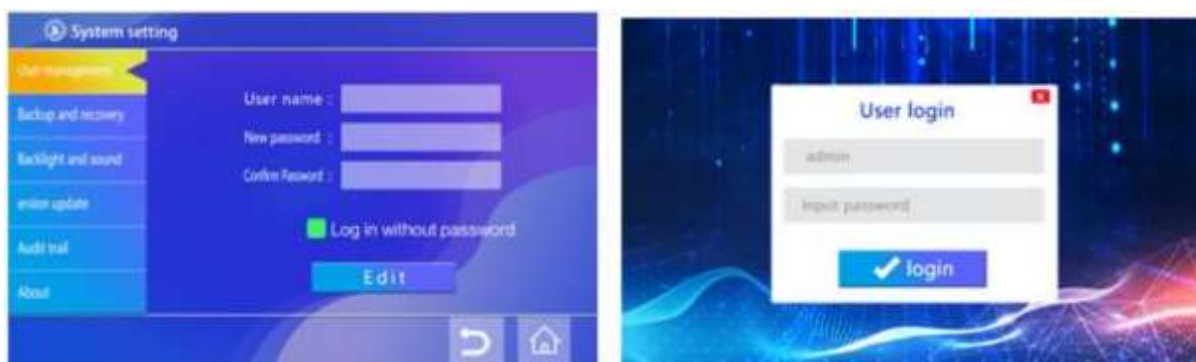
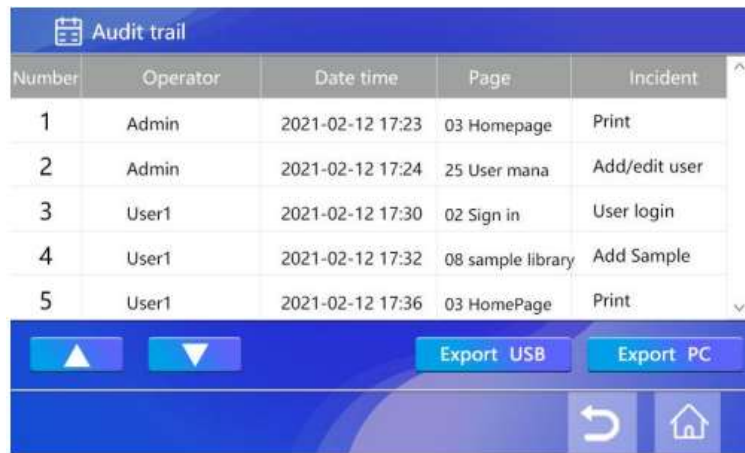


Figure-13

7.3.6.2 Audit Trail



Number	Operator	Date time	Page	Incident
1	Admin	2021-02-12 17:23	03 Homepage	Print
2	Admin	2021-02-12 17:24	25 User mana	Add/edit user
3	User1	2021-02-12 17:30	02 Sign in	User login
4	User1	2021-02-12 17:32	08 sample library	Add Sample
5	User1	2021-02-12 17:36	03 HomePage	Print

Navigation icons: Up, Down, Export USB, Export PC, Refresh, Home.

Figure-14

- It is used to retroactively trace the source data from the result of data processing for auditing and error detection. The instrument supports the audit trail function and can save 2000 trace data. If there is a USB flash drive function, when the USB flash drive is inserted into the instrument, the tracking data will be updated to the USB flash drive in real-time. Theoretically, countless data can be saved. \
- Tracking data includes user login new information, changing passwords, printing, saving data, statistical summary, and other data. If you have a USB flash drive, you can export these data to the USB flash drive Excel file, or you can export the data to the computer through the RS232 interface. When the number of data exceeds 2000, the new data will overwrite the old data.

7.3.6.3 Backlight and sound Settings

On the backlight and Sound screen, you can set the brightness and volume of the backlight, turn off the key tone.

8. Maintenance

This instrument is an electromechanical integration intelligent metering instrument, so we must take it seriously and carefully maintain it.

- Do not use sharp objects (such as pencils, ballpoint pens) keys,
- Be careful not to let objects fall on the weighing plate from high places, so as not to damage the weighing mechanism.
- Do not expose the instrument to high humidity or dust for a long.
- After the instrument is used, it is best to cover it with a cover to avoid dust invasion.
- Keep the instrument clean, and dry, often wipe, and dust.
- When the instrument is frequently used, the instrument should be continuously energized to reduce the preheating time.
- Every accurate measurement should be checked, and electronic instruments should be checked regularly.

Matters needing attention when cleaning:

- Unplug the power supply before cleaning.
- The weighing plate should not be removed at will to avoid damaging the sensor. • Do not use corrosive cleaners (such as solvents and other items) can be a soft cloth without hair dipped in water and then dipped in some neutral detergent (soap) to clean.
- When cleaning, Kindly be careful not to let water drop into the instrument. After cleaning, dry the instrument carefully with a clean, non-shedding soft cloth.
- Avoid contact with strong magnetic objects.

Instruments should be kept clean. Textile dust enters into the inside of the instrument. When using the instrument frequently, the instrument should be continuously energized to reduce the warm-up time.

9. Accessories

Standard Accessories

Accessories	Quantity
Host	1
Stainless steel sample tray	1
Tripod bracket	1
Heat sink	1
Calibration weight	1



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