



Water Activity Meter With Sensor LMWAM-B100

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1. Safety Measures

- Good grounding should be provided for the instrument.
- Keep the distance between the sensor and the instrument more than 15cm. During the process of measuring, minimize the possibility of touching the sensor. Keep the object and the instrument at the same temperature.
- It is forbidden to measure the materials whose water activity is above 0.98 (such as water).
- Do not touch the shell of the water activity sensor when the instrument is operating. Do not open the sensor's cover during measurement or correction, if not the veracity of measurement will be affected.
- After finishing the process of measuring, stagger the top and bottom cover (as shown in **Figure 1**), do not close it. In case the ambient temperature goes down (especially on winter nights), there will be condensation inside the sensor. It will damage the sensitive element of the sensor.



Figure-1

- If the object's water activity's measuring value is higher than 0.82, put the desiccant inside of the sensor immediately after the process of measuring, then make the instrument in the measuring status for 5 minutes or make it closed for one hour to avoid the damage to the sensitive element of the sensor.
- Put some desiccation in the sensor when you take the instrument from cold temperature into the room which turns on the heater inside, in case the condensation will destroy the sensitive element of the sensor. Also, wait for 3 hours before you install and energize the instrument.
- If the sensor will not be used in the long term, magnesium chloride or drying agent shall be put into it, to make the inner of the sensor in a stable and safe environment. Make the cover of the sensor staggered for 24 hours before you want to use it again.
- Direct solar radiation shall be avoided. The instrument shall be stored and used in a cool and ventilated place.
- When you pull out the plug, you should hold the plug rather than the wire, also you shouldn't rotate the plug. The plug is push-pull style, when you plug in, you should hold the knurling part. When you want to put off the plug, hold the cone part at the end of the plug to aim the socket aperture.
- Ensure the sensor is in a clean condition which can avoid measurement deviation.

Water Activity Meter with Sensor LMWAM-B100

2. Introduction

Water Activity Meter with Sensor LMWAM-B100 measures 0 to 0.98 aw with high stability. It features digital display and rapid measurement system. Equipped with advanced sensor ensuring reliable readings. It offers measurement range suitable for food, pharmaceuticals, and cosmetics. Our Meter helps in quality control and shelf-life determination.

3. Features

- Stable performance
- Easy operation
- Quick calibration
- Built-in printer
- Durable design
- Measures solids, liquids, powders

4. Specifications

Model No.	LMWAM-B100
Measuring Range	0 to 0.980 Aw
Measuring Temperature Range	0 to 50°C
Water Activity Accuracy	±0.015 at 20°C
Temperature Accuracy	±0.5°C
Repeatability	Less than or equal to 0.015
Temperature Coefficient	Less Than or equal to 0.0005/°C
Measurement Points	1
Print Method	Measurement end print
Display	Large-screen LCD
Operating Temperature Range	0 to 50°C
Operating Relative Humidity Range	0 to 95% RH
Power Consumption	Less than or equal to 15W
Power Supply	220VAC ±10%
Dimension	320×120×340 mm
Packaging Dimension	580×470×280 mm
Net Weight	9 Kg
Gross Weight	12 Kg

5. Applications

Water Activity Meter with Sensor LMWAM-B100 is employed in food, pharmaceuticals, and cosmetics for quality control. It ensures product stability by measuring water activity in various samples.

6. Installation

- 1) Insert the plug of the water activity sensor into the sensor's socket, which is on the back panel of the instrument. It should be pushed by aiming at the plug's notch and tightening the nut. Do not pull out the plug by pulling the meter's wire or by rotating the plug.
- 2) One end of the printer wire should be connected to the signal control socket, which is on the back panel of the instrument. Then, connect the other end of the printer wire to the printer. Connecting the printer power wire with the corresponding socket on the back panel of the meter.

Note: Plug the RED plug into the RED socket and plug the BLACK plug into the BLACK socket.

- 3) Before plugging in the 110- 230V AC power line of the instrument, ensure the power switch of the instrument is in an “**off**” state.

Note: Good grounding should be provided for the power.

7. Operations

7.1 Function of the button

- 1) **Selection button:** Mainly used to select the item during the process of implementation.
- 2) **Confirmation button:** Mainly used to implement the selected item.
- 3) **Increase/decrease button:** Mainly used to adjust the current time and measurement time.

7.2 Operation Instruction

After plugging in the instrument and turning on the power switch of the instrument and the printer, there will be three optional function items, and the current time shown on the screen. The three optional function items are “Measurement”, “Correction”, and “Setting”. Users can select functions by the “**Select**” button (the selected item will be highlighted).

7.2.1 Measurement

First, put the sample into a plastic container (As shown in **Figure 2**, the sample should be crumbled before measuring. The volume of the sample should be more than 60% volume of the plastic container). Then put the plastic container into the water activity sensor and cover the sensor.



Figure-2 Putting the sample into a plastic container

After pressing the “**confirmation**” button to choose the measurement function, the water activity detector will be in measuring status. The measurement time will be 10 to 30 minutes (It can be set by the ▲▼ button by entering the setting time item which is under the setting function). During the process of measurement, the value of the water activity, temperature, measurement time, and printing option will show on the screen. The printing option includes printing (printing the measurement values after the measurement process is completed), no printing (Not printing the measurement value after the process is completed), and stop measurement. The measurement option can be selected with the “**Select**” button. After the process of measurement is completed, the value will show on the screen and print the final measurement results (If you choose the printing option). At this time, press the “**confirmation**” button to return to the homepage for preparing the next process of measurement.

7.2.2 Correction

This function is set to correct the instrument's measurement precision. If there is no big change in the environmental temperature, it should be corrected once per two months.

Note: The new instrument has been corrected and can be used directly. Instructions on how to correct it.

Press the **"Select"** button to choose the correction function, then press the **"Confirmation"** button to enter the next menu. This page shows two kinds of saturated salt for correction. After selecting the proper saturated salt item, put the plastic container with the prepared saturated salt solution into the water activity sensor (As shown in **Figure 2**, the plastic container must be uncovered with the plastic container cover during the process of correcting). After covering the sensor's cover, push the **"Confirmation"** button to start the correcting process. The correcting time will be 10 to 30 minutes (The method of setting correcting time is the same as the method of setting measuring time). During the process of correction, the result of the water activity, temperature, correction time, and a functional option of stopping correction will show on the screen. After the correction is completed, push the **"Confirmation"** button to return to the homepage. If you push the **"Confirmation"** button during the process of correction, you can choose to stop or to continue the process. If you confirm to stop the process, choose **"Yes"** by pushing the **"Select"** button. If you want to continue the process, push the **"Select"** button to choose "No", the instrument will continue to connect after pushing the **"Confirmation"** button. Normally, you can use the sodium chloride solution for correction. Only when the user estimates the object's water activity below 0.40 then the magnesium chloride solution used for correction.

7.2.3 Setting

If you want to set the relevant parameters, press the **"Select"** button to choose the **"Setting"** function. Then press the **"Confirm"** button to enter the menu, which includes the item of measure point, current time, and measuring time. Then, pressing **"▲"** and **"▼"** to set the measure time, current time (year, month, day, hour, minute), and measuring time. After the setting is completed, press the **"confirmation"** button to return to the settings menu, then select the **"return"** button to return to the homepage. The function of setting measuring time is for different customers' needs. Normally, 10 minutes of measuring time can guarantee the accuracy of the result. If the sample needs more time to be stable for measuring, you can extend the measuring time to less than 30 minutes.

7.3 Preparation of Saturated Salt Solution

The standard of saturated salt solution is used for instrument correction in the form of a fixed point of water activity. These fixed points of water activity represent the constant water activity of different saturated salt solutions under certain temperatures. Two kinds of saturated salt solutions are used for the correction standard for the instrument.

The following paragraph is the detailed method of preparation:

The saturated salt solution is prepared with salt (AR) (such as AR sodium chloride and AR magnesium chloride) and pure water or distilled water. The liquid part of the prepared saturated salt solution shall cover the undissolved AR salt. The volume of undissolved salt should be 50-60% of the total saturated solution. Also, the total volume of the saturated solution should be more than 60% volume of the whole plastic container. To obtain a uniform salt solution, pure water or distilled water, the temperature of which is a little higher than ambient temperature, shall be added when the AR salt solution is prepared. Then, the saturated salt solution shall be placed under normal temperature ambient after it is covered, and it can only be used 12 hours after it reaches the ambient temperature. Since the water activity is closely related to ambient temperature, there are certain requirements for the stability of the saturated salt solution with temperature. Considering the thermal inertia of the saturated solution, sudden temperature changes should be avoided.

Notes:

The saturated 15 g AR sodium chloride and 10 g water can be used to prepare the saturated sodium chloride solution, and about 18 g AR magnesium chloride and 3-4 g water can be used to prepare the saturated magnesium chloride solution. How to keep the saturated salt solutions: Cover the plastic container after finishing the process of correction, then put the plastic container into a closed container for the next process of correction.

8. Troubleshooting

If the measurement time appears as gibberish, select the "**measurement time**" in the settings menu, then press the "▲" button, and it will turn to 30. After that, the user can set the measurement time according to their needs. If the measurement data is unusual, use the standard solution to calibrate the instrument. If the instrument for patrol measurement works abnormally, it shall be turned off immediately. Then, check if the connection of the water activity detector is normal, and if there is condensation inside the sensor, pull it out and plug it back in. Turn on the instrument again.

9. Accessories

Standard Accessories

Accessory Name	Quantity	Unit
Water activity meter	1	Piece
water activity sensor	1	Piece
Micro printer	1	Piece
Sample container, dish (6cm)	4	Piece
Power line of the machine	1	Piece
External power of printer	1	Piece
Portable Aluminum box	1	Piece



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