# CLARITY
Enterprises

# Grain Moisture Meter

## Category Code Table for Preset Instrument Calibration Parameters

| Category Name | Category Code | Category Name | Category Code |
|---|---|---|---|
| Japonica rice | P 1 | Peanut Kernel | P 1 1 |
| Soybean | P 2 | Sorghum | P 1 2 |
| Wheat | P 3 | Black sesame | P 1 3 |
| Rapeseed | P 4 | Sunflower seed | P 1 4 |
| Corn | P 5 | Watermelon seed | P 1 5 |
| Barley | P 6 | Cottonseed | P 1 6 |
| Indica rice | P 7 | Unshelled Hazelnut | P 1 7 |
| Rice | P 8 | Shelled Hazelnut | P 1 8 |
| Large corn | P 9 | Coffee Beans | P 1 9 |
| White wheat | P 1 0 | Cocoa Beans | P 2 0 |

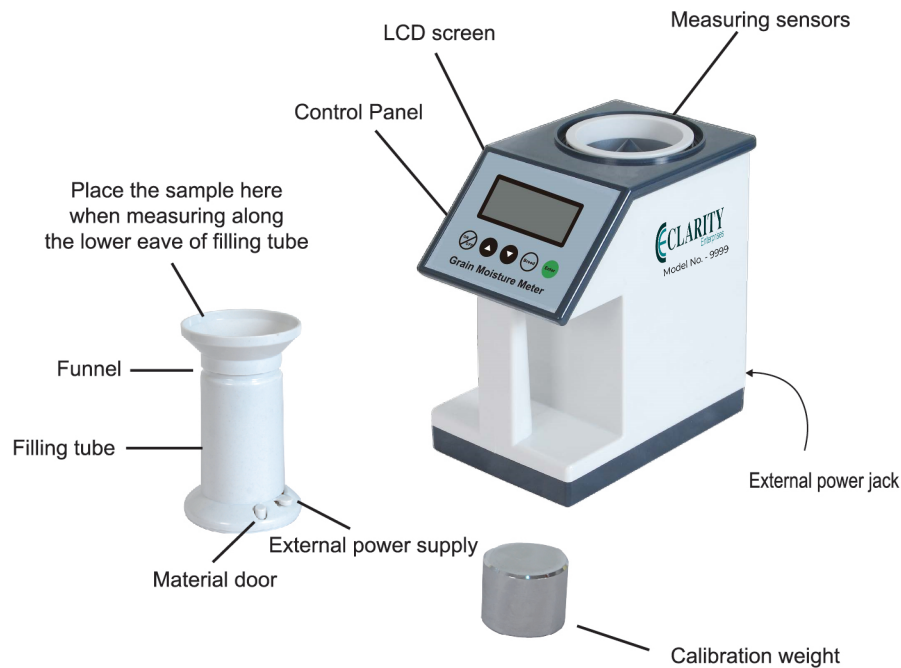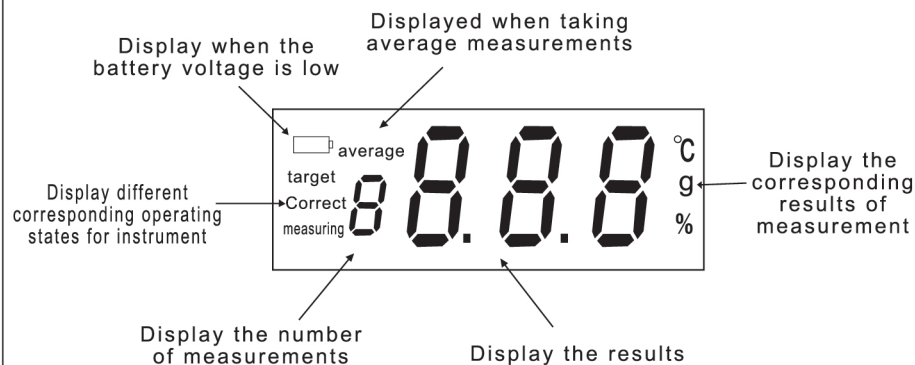## GOOD QUALITY

Quick, accurate, convenient
AC/DC power supply compatible
High-brightness backlight LCD, clear and energy-saving
Multipoint calibration, error correction
Low power consumption, automatic shutdown
Automatic weighing and temperature compensation
Volume-weight conversion display

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## 1、Schematic

LCD screen

Measuring sensors

Control Panel

Place the sample here when measuring along the lower eave of filling tube

Funnel

Filling tube

Material door

External power supply

External power jack

Calibration weight

### LCD diagram

Display when the battery voltage is low

Displayed when taking average measurements

Display different corresponding operating states for instrument

Display the corresponding results of measurement

average

target

Correct

measuring

℃
g
%

Display the number of measurements

Display the results

Measurement range :3-35%
Measurement time: ≤ 10S
Ambient temperature :0-40 ℃
Power: Four AA alkaline batteries or external 6V DC power supply
Display: Backlit LCD highlighted
Subsidiary functions: Volume translated display, sample weight display, temperature display, mean moisture value calculation.
Complete accessories: external AC power adapter, cleaning brush, manual, certificate and warranty card, filling tube, funnel, calibration weights each; four AA alkaline batteries.

## 10、Maintenance

1.The instrument belongs to high-precision electronic instrument product which must be taken and put down gently, avoid shock and moisture, also must be placed horizontally when using and stored. It should be cleaned and maintained regularly;

2.The batteries should be removed when not using for long or during transportation.

3.Electronic Balance Calibration: If the instrument built-in electronic scale is inaccurate, calibration can be conducted according to the following methods.

a.Place the instrument horizontally in shutdown status and remove all things in the transducer. First long-press the "Breed" key, then press the power button to start. The instrument will beep. Then release the "Breed" button and numbers are shown in the instrument indicating that it is in the balance calibration mode;

b.Press "Enter" key again, the radix point on the display flashes and show 200g, indicating that 200g weight can be put on;

c.Gently place the fixed weight attached in the instrument (or 200g standard weight) on the clack tip in the center of the measurement transducer; then press "Enter" again. After 200g is shown on the instrument, shutdown and remove the weight.

The instrument has power-on self-test function, which will show the appropriate indicators according to different modes, shown as follows:

•E-1: indicates the moisture transducer fails or there is sample inside, the instrument shall be poured or needed to repair;

•E-1, E-2, E-3: represent the water, temperature and weight circuit failure;

•db1: indicates that the moisture value difference between samples during calibration is less than 1%;

•db2: indicates that there is error in the moisture low-high order of moisture value during calibration

•Flashing battery sign appears on the top of left corner: indicating low power in the battery which needs to be replaced;

•Battery symbol and the word "U-L" appear simultaneously: indicating that the battery runs out which needs to be replaced immediately;

•---: indicating that the weight self-test fails, which shall operate or conduct maintenance in accordance with "Maitenance3"

•P-L: indicating that sample quantity is too little.

## 8、 Instrument ancillary functions (Reference use)

1、Display sample weight: after the instrument displays the first moisture measurement value or takes the average value, press the enter key once to display the sample weight, the unit is "g"

2、Display sample temperature: when the weight is displayed, press enter key once to display the sample temperature in ℃; at this time, press enter key again to display moisture content

3、Mean value: when the instrument measures the same breed more than twice, the mean value measured several times before can be displayed.

4、Bulk density conversion: cover the bulk density cylinder with the bulk density cover, and measure the rice or wheat samplesPour the product into the bulk density cylinder, take out the cover, scrape the cylinder, and then pour the material in the cylinder into the unloading cylinder,After the moisture content is displayed, press the "Enter" button once to display the weight of the sample, and then press the Once the "Enter" key, the instrument will start automatic conversion, and the bulk density of the sample will be displayed later.



## 9、 The main technical indicators

Measurement object: food and other non-metallic granular samples, such as rice, wheat, corn, soybeans, rice, rapeseed, etc.;

Measurement error: ≤ ±0.5% (main moisture range)

Repeat error: ≤ 0.2%

## 2、Preparation before use

1、Remove the dedicated shockproof protective cover on the moisture analyzer measuring transducer, also make sure that there are no substance in the transducer, otherwise the analyzer will not work properly;

2、Open the battery compartment cover at the bottom of the instrument, and install 4 AA alkaline (1.5V) batteries according to the polarity indicated (rechargeable batteries are not allowed), or plug in the external AC power adapter (100V -240V 50HZ-60HZ)

3、Place the instrument on the flat table with no wind which is shock resistant, and put the funnel cover on blanking tube;

4、Prepare the sample to test: make initial screening of samples to remove impurities, and the sample is placed together with the instrument as long as possible in order to achieve temperature equilibrium;

5、Look up the table and select category code: for the convenience, the category calibration parameters are pre-set of the factory; when using it only needs to check the" Breed Code Table" and select the appropriate category code to conduct direct moisture measurement;

6、If instrument calibration and error correction are needed, the moisture value of sample measured according to 105℃ standard oven method shall be regarded as the standard value, otherwise the measurement accuracy cannot be guaranteed.

7、When the instrument is used for trade settlement, safe storage and other occasions for high precise measurement, our Company strongly urges the user to adopt calibration and error correction of measured categories under certain conditions so as to ensure accuracy and maintain user interest.

## 3、Moisture measurement

1、Press the power switch, the instrument starts self-test, and the breed code will be shown
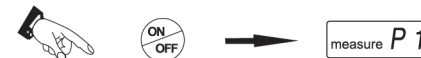


2、Press "△" or "▽" to select breed code according to the breed code table; For example, corn is $P\,3$.



3、Put the test sample in the filling tube to the lower open of funnel (see Fig.A);

4、Install the filling tube on the instrument transducer port, use one hand to hold the filling tube, and the hand gently press the switch of material door (as shown in Fig.B), so all samples are dropped into the transducer evenly. Do not press any button, the instrument will automatically start, and the moisture value will be presented after the radix point flashes several times:

5、Close the door of filling tube and pour out the samples in the transducer to prepare for the next measurement.

6、In order to reduce measurement error, please pay attention to maintaining the consistency of operating practices;

The same sample (especially large particle samples such as corn, etc.) should be for more time and take the mean value; press the "Enter" button and the mean value for several measurements will be displayed.
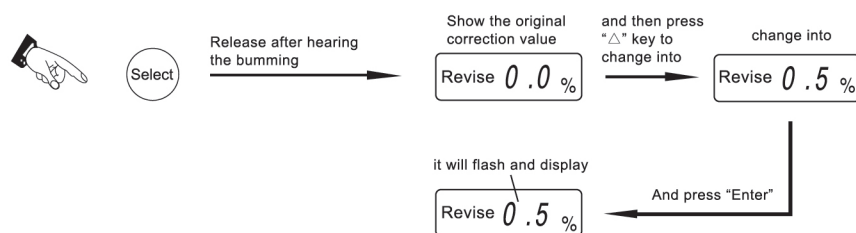
## 4、Error correction

Due to objective reasons and geographical differences, certain limit exists in the preset parameters in factory for calibration, which may cause error during measurement. In this case, moisture value can be corrected according to the following methods to ensure and improve the measurement accuracy;

1.Determine the error correction value: in general, the moisture value measured by 105 ℃ standard oven method is the standard value, minus the measured value, and the correction value will be obtained. For example, the measured moisture value is 13.5%, and the actual moisture to display s 14.0%, therefore the correction value is +0.5, which means it should be tuned up 0.5. If the obtained correction value is negative, it needs to be tuned down.

2.Correction: pour the sample in instrument, press "Select" key until hearing the beep. The word "Revise" on display flashes, and the originally set error correction is shown as well (the correction value of factory setting is 0.0). Press "△" or "▽" key to adjust the correction value, click the" Enter "button to save the instrument which flashes for confirmation. Shutdown the instrument or click "Breed" key to exit the correction status.

3.The entire correction process is shown as follows::

Select → Release after hearing the bumming → Show the original correction value **Revise 0.0 %** → and then press "△" key to change into → change into **Revise 0.5 %** → And press "Enter" → it will flash and display **Revise 0.5 %**

## 5、Calibration

Calibration means to make new setting for the instrument parameters with the known standard moisture sample. Its effect is to increase the measured species or correct the measurement error of the existed categories accurately.

The instrument can use calibration with four standard samples at most, as follows:

1.Standard sample preparation: prepare the standard sample with 105℃ standard oven method; to make the calibration with the most representativeness and accuracy, the highest and lowest moisture value of standard sample shall be on both ends of the actual measured moisture scope, where the distance of 3-6 percentages between levels is ideal. Shall the measured moisture scope do not exceed 6%, samples can be divided into high, medium and low three standards, or high and low two standards. (For example: wheat, water at high standards, intermediate 1, intermediate 2, low-moisture, 22%, 18%, 14%, 10%);

2.Notes: (1) Pour all items in the transducer before calibration operation.
          (2) Do not shutdown the instrument during the calibration process.
          (3) Carry out the calibration process in the order or low, medium and high moisture value;

3、Select breed code: Press "△" or "▽" key to select the category code required for calibration (the originally labeled parameters in the breed will be overwritten);

4、Enter the calibration mode: long press the "Enter" button (about 5-6 seconds) and release after hearing the beep. It is indicated that the instrument has entered the calibration mode, and put in the first standard sample;

5、Mark the low moisture calibration: take the standard sample with low moisture and put in the transducer through filling tube, wait for the display measuring result (such as 11%), and then press "△" or "▽" to change the displayed value into standard value (such as 10%). Then click the "Enter" button to save the modified result. The instrument flashes 10%, indicates that the firs point calibration is done; as shown below:

Display the value measured **Calibrate 11.0 %** → and then press ▽ → key to change into **Calibrate 10.0 %** → And press "Enter" → it will flash and display **Calibrate 10.0 %**

Tip: First point calibration error correction can also be used as a method for error correction; if shutdown and exit now, it is equivalent to the completion of the error correction.

6、Mark the second point: pour out the standard sample with low moisture, the instrument displays  ; and put in the second standard sample as indicated; complete the calibration operation for the second point as indicated in step 5;

7、Continue the calibration operation: Continue the calibration operation as shown in the above methods; after finishing the Continue the calibration operation for the fourth standard sample, the instrument will exit Continue the calibration mode automatically; if the third or fourth standard sample does not exist, press "Breed" button and exit the Continue the calibration mode;

8、Re-test the standard sample: Re-test the standard sample; if the measured error ≤0.5%, it means that the calibration is successful; If the error is too large, it needs to be re-calibrated.

## 6、Restore the factory calibration data

If the user wants to reset the default calibration data of instrument in factory, he can operate according to the following methods:

Select the category code needed to reset, press "Enter" button, and release after hearing the beep. Then press the "Select" button and release until hearing the beep. The instrument flashes, indicating the default parameters have be reset. Shutdown and exit the reset mode.