

Grain Moisture Meter Model KU60

GRAIN MOISTURE TESTER



GRAINSURE

GRAINSURE CO



@grainsure



grain-sure

0816119016

IN THAILAND

EE-KU Kasetsart University
Grain Moisture Tester



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Version 9

Made in Thailand



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โทร.081-6119016



Grainsure



GRAINSURE



User Guide

EE-KU GRAINS MOISTURE TESTER.

MODEL.

EE-KU 60th Years Anniversary



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Grain type setting

TYPE	Type of Grain		Weight
t-1	Corn(100g)		
t-2	Mung bean(100g)		
t-3	Soybean(100g)		
t-4	Millet (100g)		
t-5	Paddy(100g)		
t-6			
t-7			

Table of Content

Feature	5
Special Feature	5
Equipments	6
Specification	7
How to use	8
1. Preparation	9
2. Turn On the device	9
3. Turn Off the device	9
4. Select grain type	10
5. Weighing sample	11
6. The process of pouring sample	12
7. Pouring Out	13
8. Reading Other Values	13
8.1 Reading Average Grain Moisture Content	13
8.2 Read the number of measurements	14
8.3 Reading the temperature of the grain being measured	14
9. Reset the number of measurements taken and clear the previous average value	14
10. Setting grain type with no recorded data	15
11. Troubleshooting: Common Error Messages and Solutions	15
Digital scale user manual	17

EE-KU GRAINS MOISTURE TESTER

EE-KU 60th Years Anniversary

Feature

The portable tester is 110mm wide, 130 mm long and 40mm high. On the top if an opening for putting the grain in, inside the opening is designed as electric capacitor with grain temperature sensor.

The front side is inclined, for easily operated by user, display with 4 digits LCD screen. Under the screen, there are 4 buttons. The system is operated by microcontrollers, EEPROM and RAM are two types of memory in the system.

The testor requires a 9-volts battery located on the bottom of the tester .It measure 4 typesof grain, compensate effect of temperature drift automatically , dosplays moisture percentage ,average moisture and number of testing , measures grain temperature,and also low battery warning ,abnormal operation or wrong use.

Special Feature

- 1) This grain moisture tester is designed to be calibrated by users.
- 2) The tester has been already calibrated to measure 4 grain types (Standard model i.e. corn, paddy, soybean, millet.) To measure other types, Users have to notify as option. With extra charge.



Equipments

- 1) GRAINS MOISTURE TESTER model KU60
- 2) Digital scale
- 3) Pouring funnel
- 4) Packaging box
- 5) Cup

Specification.

- 1) Principle : Capacitance.
- 2) Measure temperature :Thermal couple type-K fast response.
- 3) Moisture : Display percentage 00.0%-99.9% (depending on calibration).
- 4) Error : Less than 0.5% (depending on calibration).
- 5) Repeatability : less than 0.2% (range 0%-20% depending on calibration).
- 6) Grain temperature :00.0-80.0 °C ± 0.2 °C.
- 7) Moisture compensation due to temperature drift.
- 8) Grain type : Maximum 7 types.
- 9) Sample : 50 g./100g. (depending on grain type).
- 10) Memory : Ram and EEPROM.
- 11) Display average moisture percentage : 1-99 samples.
- 12) Number of testing : maximum 99 times.
- 13) Count numbers of testing and calculate average readings automatically.
- 14) Delete average and number of testing.
- 15) Check system operation automatically : notify user when battery is low or any mistakes
- 16) Operating temperature 10-50 °C.
- 17) Power source : 9 V battery. And DC Adapter as option

How to use.

This tester can measure and display many parameter .

- 1) Percentage of moisture contain of current sample.
- 2) Over all percentage of moisture contain.
- 3) Number of testing.
- 4) Temperature of current sample.
- 5) Delete average percentage and number of testing.
- 6) Percentage compensation due to temperature drift.



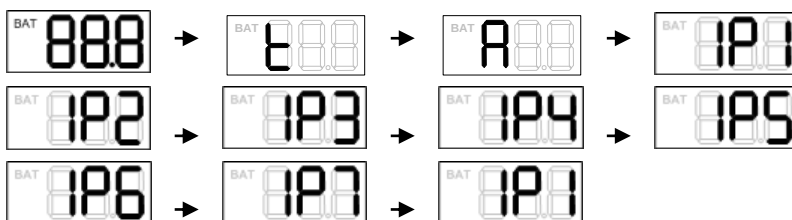
1.Preparation

Set the device on a flat surface, such as a table, ensuring that the device stands upright and level without tilting. Before turning on the device, ensure there are no residual materials in the sample chamber. Check the sample chamber thoroughly to confirm that no materials are left inside.

2. Turn On the device.



Press ON/OFF (button 1) to turn on the device then screen will display



t-1 number1 indicates that it will measure first grain type, and it displays t-1 repeatedly (it may not be t-1, it depend on last used The tester can recognize last type of grain to be used)

3 Turn Off the device.



Pressing the ON/OFF button (button 1) while the device is operating will immediately turn it off. Alternatively, the device will automatically turn off if left idle without pressing any buttons for more than 5 minutes.

4. Select grain type :

If you want to measure grain type, when the display shows  (scrolling text), you can start the process of pouring the grain right away. However, if you want to measure grain type ൧, ൨, ൩, ൪, ൫, ൬, or ൭ (the device can measure up to ൭ types), for example, if you want to measure grain type ൨, follow these steps to set the desired grain type:



4.1 Press button ൨ and hold for 3-5 second , screen will

display  and blink, and then press button 3 again,

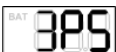
screen will show  Or whatever type number the device was previously set to measure.



4.2 Press button ൩ to scroll through the grain types until you reach plant type 3 or your desired type (screen display t-2, t-3, t-4, ..., t-7 and t-1 again as round robin)

4.3 Press 4 to scroll grain type until t-൨ displays (desired grain type) when press button 3 , the screen shows

 →  →  →  →

 →  → 

meaning it is ready for measuring

5 Weighing sample

Turn on the digital scale and check that the unit is set to grams (g). Place the measuring cup on the scale and press the Tare button to reset the scale to 00.0 g

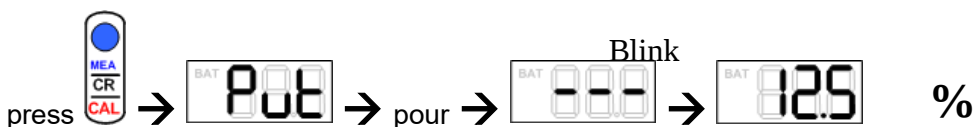


Pour the sample grain to be measured according to the specified weight for each type of grain (as defined in the table on page 3)



6. The process of pouring sample

Ensure that the chamber is empty. Then, place the pouring funnel onto the chamber, as shown in the diagram. Press button 2, and the display will show the message "Put." then Slowly pour the sample grain from the cup into the chamber. Let the grain gently hit the slanted edge of the pouring funnel and the center of the chamber. Once all the grain have been poured, wait for approximately 5 seconds. The device will then display the measured moisture percentage.



Note: Pouring the grain into the chamber slowly (but not one grain at a time) will yield more accurate moisture readings with less variability for each pour. If the grain are poured in too quickly, the measured value may be slightly lower than the actual moisture content.

7. **Pouring Out:** Lift the device to a reasonable height and tilt it to allow the grain to flow out completely. The device will then be ready to return to the starting point for a new measurement, with the display showing the desired grain type to be measured. ( type 1)



Once the grain have been poured out, the number of times measured and the last average value will still remain.

8. Reading Other Values

The KU50 Grain moisture tester can not only read the percentage of moisture but also other values, including:

8.1 Reading Average Grain Moisture Content

(if multiple measurements or samples have been taken)



Press button5 12.5 will blink, indicating that the average moisture content is 12.5%.

Note: Suppose you measure 3 samples: Sample 1 reads 10.0%,

Sample 2 reads 15.0%, Sample 3 reads 17.0%.

When you press button 5, the display will show 14.0

$$(၈၀ + ၈၆ + ၈၈) \div ၈ = ၈၆.၀\%.$$

8.2 Read the number of measurements



Press and hold button 5 then press button 3 simultaneously

The display will show the number of measurements taken. Such as

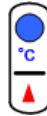


mean number of measurements is 1



mean number of measurements is 3

8.3 Reading the temperature of the grain being measured.



Press and hold button 5 The display will show the temperature of the grain,



for example:

(The temperature of the grain is 25.3 degrees Celsius)

9. To reset the number of measurements taken and clear the previous average value, do the following:



9.1 Press and hold button 5 then press button 2 simultaneously



The display will show 000 blink This means that all measurement data has been completely cleared. Or...

9.2 Turn off the device or...

9.3 Change the type of grain being measured as per item ๔

10. Setting grain type with no recorded data

If the selected grain type is not pre-calibrated by the manufacturer, the system may display error code 4.

for example Type 7 is not pre-calibrated

 when press button 3  the screen display

7P1 , 7P2 , 7P3.....7P7 and error code  will blink three time("n_d" means "no data" or "data not available." It indicates that the manufacturer has not calibrated for type 7,)

Then The screen will return to the default option, 't-7', allowing the user to select a different type again

11. Troubleshooting: Common Error Messages and Solutions

 or 

This could be caused by excessive heat, low battery, or a circuit malfunction.

solution 1.Replace the battery.

2.Place the device in a room temperature environment (approximately 20-35 degrees Celsius) for about 30 minutes. Then, try turning the device off and on again.

3.Contact the manufacturer.



The chamber has not been emptied , leaving residual materials

Solution 1.Clean the chamber thoroughly to remove any remaining

grain or debris. Then, power cycle the device.

2.Place the device in a room temperature environment

(approximately 20-35 degrees Celsius) for about 30

minutes. Then, try restarting it.

3.Contact the manufacturer.



The moisture reading of the grain is off-scale, indicating an excessively high moisture content



สาเหตุ "no data" or "data not available." It indicates that the manufacturer has not calibrated for selected type

แก้ไข 1. Check page ๓ of the user manual for a list of available grain type

2. Contact the manufacturer.

Digital scale user manual

Model MH-Series



Control panel

1. [ON/OFF] Power button
2. [TARE] setting the weight to zero
3. [LIGHT] Turn on/off display backlight.
4. [UNITS] Unit selection
5. [PCS]  Piece Counting Function

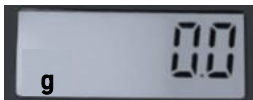
The digital scale provided with the grain moisture meter is a highly accurate device. To ensure that the scale measures the weight of the grain quickly and accurately, it should be used and maintained as follows:

Precautions for Use:

1. Do not place items on the scale that exceed its weight capacity. This model should not exceed  00 grams
2. Place the items to be weighed gently on the scale (do not press).
3. Avoid shaking or dropping the scale.
4. Store the scale in a clean, dust-free environment, away from excessive heat, and avoid using it under direct sunlight for extended periods.
5. If the scale will not be used for a long time, remove the batteries, wipe the scale dry, place it in a plastic bag, and store the batteries separately in another bag. Do not store them together in the same bag.

Preparing the Scale:

- 1) Open the cover of the scale and place it on a flat, stable surface that does not tilt or vibrate. The surrounding air should be still, with no wind, as this can cause the readings to fluctuate.
- 2) Press the [ON/OFF] button and wait for the display to show "0.0". The backlight will also turn on. If the display is clear, you can turn off the backlight if desired.
- 3) The scale measures grain weight in grams (g). Check if the unit is set to grams (g). If not, press the [UNITS] button until "g" appears.
- 4) Once the display shows "0.0" and the unit is set to grams (g), the scale is ready to weigh.



- 5) Test by placing an item on the scale, such as an empty cup. If it reads 10.0 grams, remove and replace the cup to see if it reads 10.0 or 00.0 grams. A deviation of ± 0.0 is normal. The scale is now ready for use.

Weighing grain :

The grain moisture meter typically uses 100 grams of grain for measurement, but it could also be 10 or 50 grams, depending on the type of grain specified in the manual (page 1).

1.) First, place the empty measuring cup (for the grain) on the scale and reset the weight to "0.0" (Tare). There are two ways to do this:

1.1) When the scale is already on: Place the empty cup on the scale, for example, if it reads 20.0 grams, press the [TARE] button. The scale will then read "0.0." (If the cup is removed, the scale will read -20.0.) When the cup with grain is weighed, the reading will only display the grain weight without needing to subtract the cup's weight.

1.2) When the scale is off: Place the empty cup on the scale before turning it on. Once the scale is turned on, it will automatically adjust and display "0.0."

2.) When the empty measuring cup is on the scale, and the scale reads "0.0" in grams (g), the scale is ready for you to place the grain in the cup to measure their weight. (If the scale is left unused for more than 30 seconds, it will automatically turn off.)

Digital Scale Features:

1. Maximum weight capacity of 1000 grams with 0.1-gram precision.
2. Can Tare up to 1000 grams for container weight.
3. Operates within a temperature range of 0-60°C.
4. Automatically turns off after 30 seconds of inactivity.
5. Powered by two AAA batteries.

Note

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