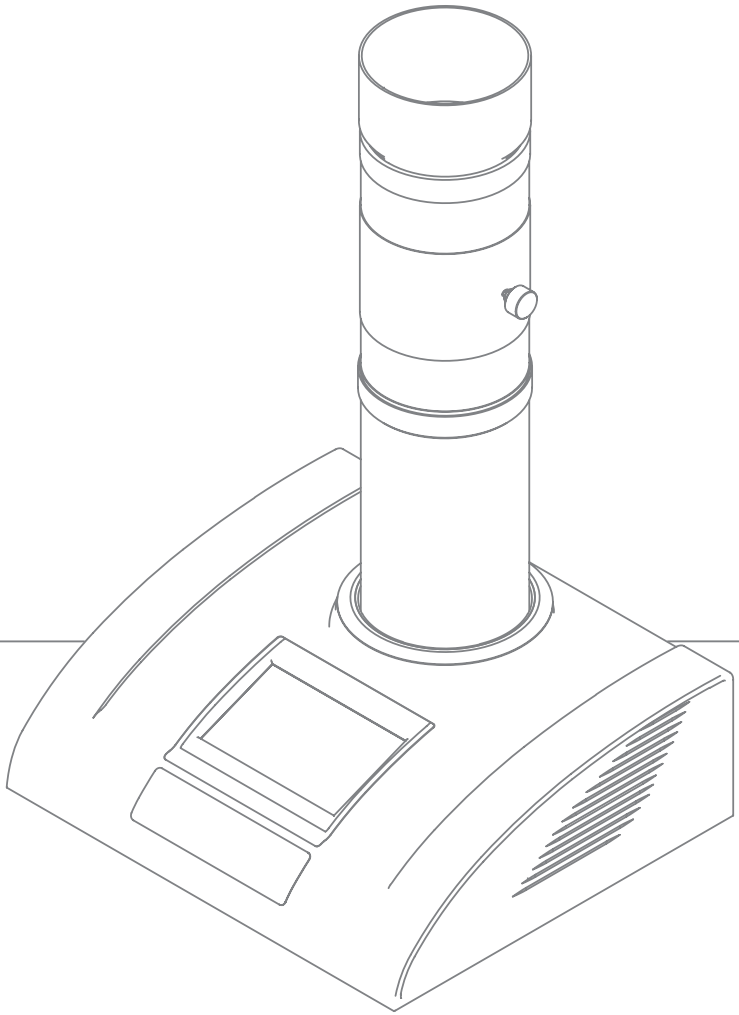
USER GUIDE

MTC® MOISTURE ANALYZERS



FBMT | EN | S.45.16

INDEX

CONGRATULATIONS ON YOUR CHOICE

We are pleased to offer you the finest technology in grain quality control.
Your moisture tester was submitted through an extensive quality control process to ensure its reliability and accurate results.

Thank you for choosing us.

Please unpack your instrument carefully and if you find any damage or noncompliance, you should put it back into the original package and contact your sales representative for replacement.

PACKAGE CONTENT

- 01 Moisture Tester;
- 01 Grain Cell;
- 01 Dump Cell;
- 01 Power Cord;
- 01 User Guide;
- 01 Carrying Case.

ENGLISH

GENERAL INFORMATION

The Moisture Tester is a portable instrument designed to measure grains, seeds and a wide variety of other product's moisture content. Based on North American Standards (USDA and CGC), all the instruments must provide results equivalent to the air oven, which is the reference method.

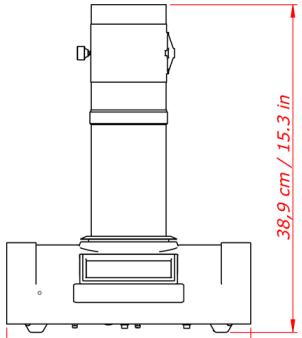
The moisture content reading process uses a technology based on the water dielectric properties in the sample. Using calibration charts, the water amount in the sample is converted to moisture percentage.

Designed to provide fast and accurate results, the instrument has also a simple and intuitive operating interface, offering the user a color display with touch panel to easily interact with the instrument. Built to meet or exceed the precision, security and performance demands for grain moisture testers described in the NIST (National Institute of Standard and Technology) Handbook 44. Plus, the instrument comes loaded with the USDA and CGC calibration charts.

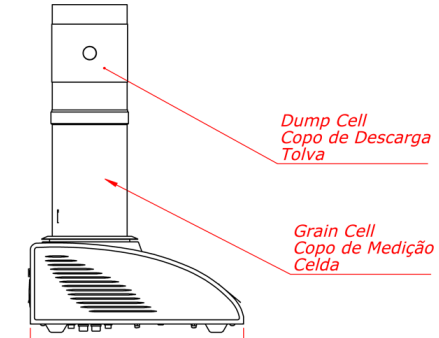
FEATURES

Instrument features:

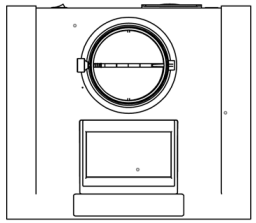
1. Integrated precision scale with a safety device to prevent misuse and results tampering;
2. Integrated high tech temperature sensor which can measure from -4°F to 158°F;
3. Integrated thermal printer;
4. Security protection to metrological parameters access;
5. Full range voltage input (100 –240 V AC);
6. Software with capacity to load up to 458 different types of grains;
7. Single measurement or 3 average readings for greater precision;
8. 4,5" Color LCD display with touch panel;
9. Input custom ID to each moisture read;
10. Virtual emulated RS-232 output for external connection;
11. Foreign material, Damaged kernel and Test Weight measurement.



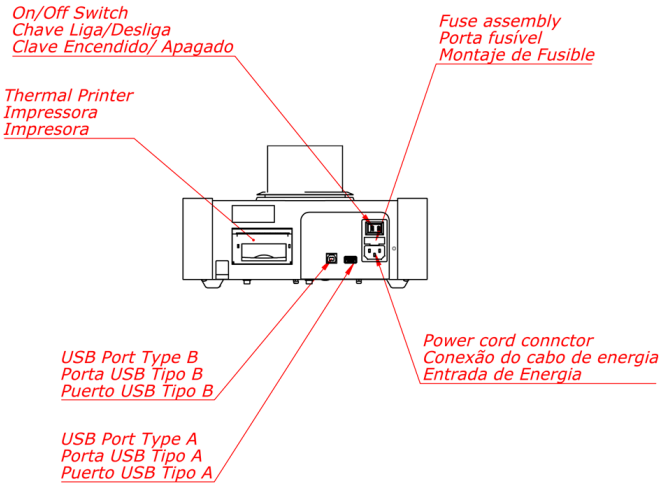
Front View
Vista Frontal



Side View
Vista Lateral



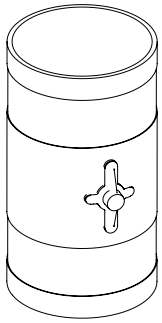
Top View
Vista Superior



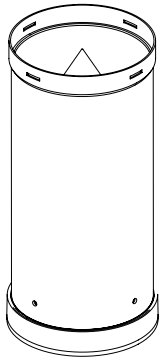
TYPE A USB PORT
Shall only be used to record your results to an external flash drive.

TYPE B USB PORT
Is the RS-232 output. Connect to your computer to access it.

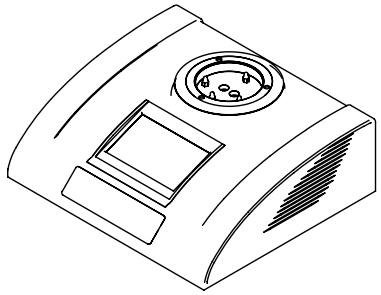
MAIN COMPONENTS



DUMP CELL
It is where the operator places the sample in. A mechanism made of two wings, it holds/releases the sample into the grain cell.

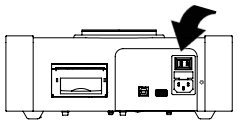


GRAIN CELL
After receiving the sample from the dump cell, the grain cell is responsible for measuring the sample's moisture and temperature. The grain cell shape compensates the sample compaction and superficial moisture.



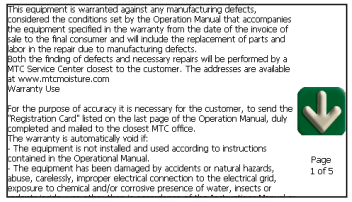
MAIN HOUSING
The electronic circuits of the moisture tester is completely isolated inside the instrument enclosure, carefully developed to withstand the rigors of field usage.
The ON/OFF Switch, communication ports, and power inlet are in the back of the unit.
Equipped with a touch panel over a 4.3" LCD color display, offers the user an easy and intuitive interface.

FIRST TIME STARTUP

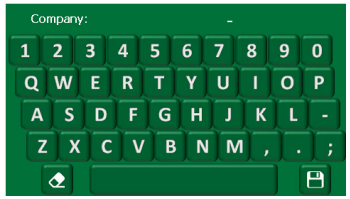


1. Press the power button at the back of the instrument.

2. Choose the desired language by pressing until your choice appears. Then, press **OK.**



3. Read the Terms of Use[1] carefully. Navigate through the text using the arrows on the right side of the screen. After you reach the end of the page, a screen will pop-up, if you agree to the terms please touch the YES.



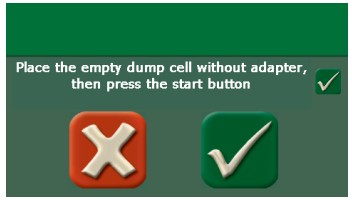
4. Record the name of the company that owns the instrument. Use the keyboard on the screen to type it. After you finish touch . If mistyped, press to write it again. After the name is saved, a screen will pop-up with a message asking for confirmation. If you agree, touch YES.

[1] The Terms of Use can also be found at the end of this manual.

STANDARD CHARTS SELECTION / SELF-TEST

The instrument has 10 built-in chart groups (Argentina, Bolivia, Brazil, CGC English, CGC French, German, Italian, Mexico, Spanish in General, United States).

5. The user can select the group that is appropriate to his area, or whichever he desires. To navigate through the options, use the buttons .



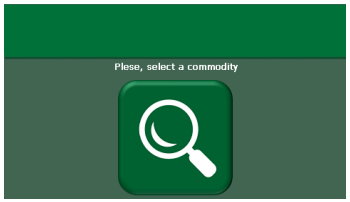
6. Follow the steps on the screen to complete the self test. It verifies all the import components and software parameters, such as:

- Configuration parameters integrity;
- Memory;
- Time and date;
- Equipment calibration data integrity;
- Scale.

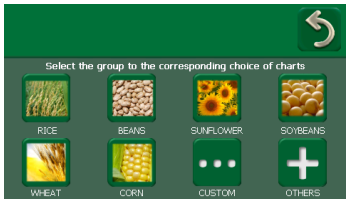
After that, press to proceed.

At the unlikely event of an error, restart the process pressing . In most cases, it is just an alert that can be easily solved by the user. If you can not solve the issue by yourself, please contact the most convenient authorized technical service office.

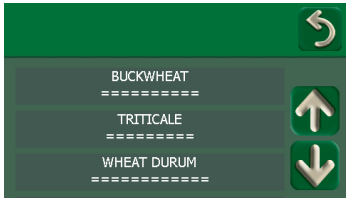
CHARTS SELECTION



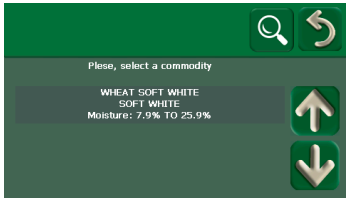
7. Press on to proceed.



8. Chose desired grain group touching on the grain icon.



9. Select the proper chart, browse using the arrows on the right of the screen. Finally, touch on the desired chart to finish this phase. If you want to exit, you can press .



If you want to change your calibration selection, you can press the on the main screen at any time, this will take you the selection screen. The previous 5 calibrations that were used will be available, if the one you are looking for is not listed, click on the and you will be taken to the groups, then repeat the procedure described in the previous paragraph.

MAIN SCREEN

This initial menu works as a screen for quick measurement once is selected the proper chart. This screen will be the equipment home screen after its first initialization.

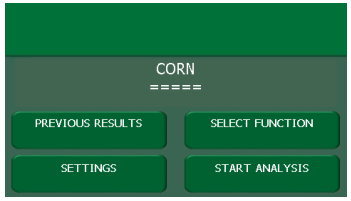
Here you have access to **DIAL** verification, measurement ID , chart selection , and the equipment settings **MENU**.

Press on **DIAL** to go to dial measurement screen. It will show the sensors readings and the sample dial.

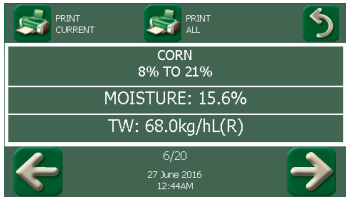
1. Place the empty Dump Cell, press **ZERO.**
2. Fill the Dump Cell with the desired weight and then dump the sample in.
3. The dial reading will be shown on screen, in real time .
4. Press on to return to moisture measurement screen.

Press on to add an **ID** to the measurement, like a truck license plate. This will be recorded for next measurement. If you want to change or remove, touch the button again and do so.

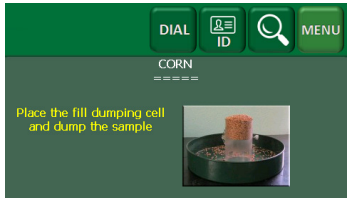
MAIN MENU



Press **MENU** to goto the main menu.



Press on **PREVIOUS RESULTS.** It shows a moisture measurement log. It is possible to browse using the arrows and the equipment system stores up to twenty readings.



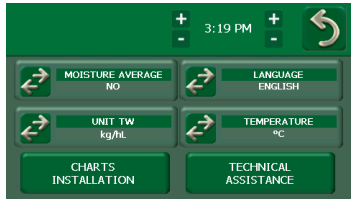
Press on **START ANALYSIS** to return to measurement screen.

SETTINGS and **SELECT FUNCTION** will be explained on the next pages.

SETTINGS

Press ⇄ to change.

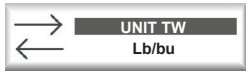
Press ↩ to return to main menu.



Use + and - to adjust the time, for hours use the left icons and for minutes the ones on the right.

It is possible to get the average moisture reading from 3 sequential dumps. You can choose to have it enable all the time, by choosing **YES**. If **NO** is chosen, the average mode is turned off. The **OVER 20%** option will do the average, however it will not count for the average calculation if the sample has 20% or less humidity.

Celsius and **Fahrenheit** are available.



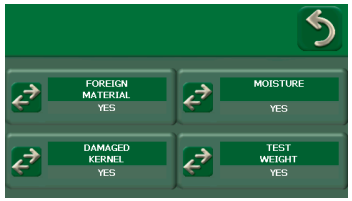
Test Weight (TW) result can be shown in 5 different units: **kg/hL ; lb/bu ; lb/A bu ; lb/W bu ; g/0.5l ; KIT**. When **KIT** is selected, the equipment will ask the user if he wants to measure TW with precision and then the user will select the measurement method. This option can be activated through **SELECT FUNCTIONS / TEST WEIGHT** too. It is explained on page next page.

There are 6 languages available: **ENGLISH / SPANISH / GERMAN / FRENCH /ITALIAN / PORTUGUESE.**

Change the built-in chart groups

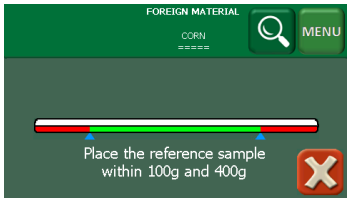
Restricted area access.

SELECT FUNCTION



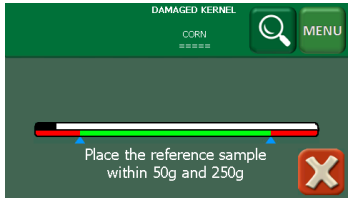
Press **SELECT FUNCTION** on **MAIN MENU**, it shows all equipment functions. Those are: **FOREIGN MATERIAL, MOISTURE, DAMAGED KERNEL, TEST WEIGHT**.

1. Activate each one pressing . If it shows **YES**, it is enabled.
2. Return to **MAIN MENU**.
3. Press **START ANALYSIS**.



FOREIGN MATERIAL measures how impure is the sample.

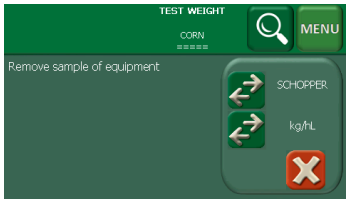
- Place the sample within 100 grams and 400 grams inside the grain cell.
- Remove the foreign material from the grain cell.
- Place just the foreign material in the equipment.



DAMAGED KERNEL measures how much the sample is damaged and each kind of defect.

- Place the sample within 50 grams and 250 grams.
- Remove the damaged grains from the sample.
- Place just one type of damaged material in the equipment.
- There are two options: Press **OK** to measure type 2 or removing the sample from the grain cell to continue the process.

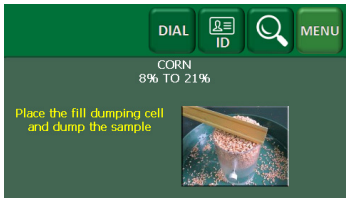
SELECT FUNCTION



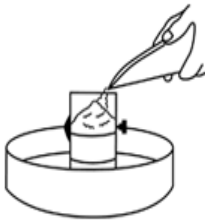
TEST WEIGHT measure the sample weight, moisture, and temperature.

1. Select test weight kit type (SCHOPPER grain tester, PINT or 0,5 Liters).
2. Select sample type and the unit result (kg/hl, lb/ A bu, lb/ W bu, g / 0.5L).
3. Prepare the sample.
4. Dump it inside the instrument .
5. Press **OK**.

MEASUREMENT PROCESS

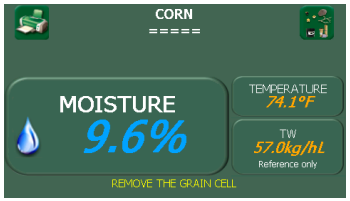


1. Make sure that the instrument is on a level surface.
2. Turn the instrument on and wait for the startup process to finish.
3. Select the desired chart in 🔍.



4. Place the dump cell inside a proper container, like a tray, and overfill it with the sample you want to measure the moisture of. With a straight edge remove the excess. The filling of the dump cell must be done in a constant and controlled way.

5. Dump the sample into Grain Cell.



6. The moisture result is shown in this screen. If desired, repeat the process, remove the sample and restart from step 4.

Notes:

- When the average mode is enabled, the moisture result is only shown after the third reading.
- If the humidity or temperature is outside of specification limits, the equipment will inform it and/or no results will be displayed.
- If you need to set any parameter before the measuring process, access 🔍 then **SETTINGS**.

CARE AND MAINTENANCE

The instrument is factory calibrated with a Manufacturer Standard Tester, which goes under periodic verification to assure that it meets the tolerances defined by the USDA and CGC.

To assure its accuracy, the instrument must be periodically submitted to the manufacturer, where it will be calibrated and fully checked.

We strongly recommend that the instrument is submitted yearly to maintenance, during the off season, when its usage is reduced. The presence of foreign material inside the cells directly affects the instrument accuracy. It is recommended to clean the accessible parts with a damp soft cloth. The use of alcohol or other chemicals can damage the instrument.

Keep the instrument indoors and away from the external environment. Avoid strong impacts to the external enclosure, as it can directly affect the scale.

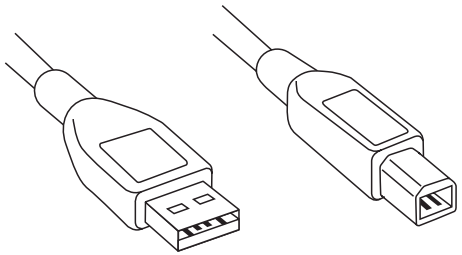
Do not let liquids get in contact with electrical parts, 2 way radios and other RF equipment near the instrument, since the RF can cause interference on the measurement.

For maintenance, please place your instrument in the original box, with all accessories and send to the manufacturer.

SERIAL COMMUNICATION

The instrument is equipped with an internal RS-232 module. To connect it to your PC, please use a USB cable (see figure below). It is necessary to install the module driver, which you can find at http://www.ftdichip.com/Drivers/VCP.htm.
Serial Port Settings:

Baud rate = 9600
Data Bits = 8
Parity = none
Stop bit = 1
Flow control = none



OUTPUT RECEIPT SAMPLE

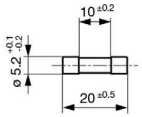
```
--------------------------------------------------
XXXXXXXX                          S/N:00000
S/W: XXXXXXX                      F/W: XX1.0
CALIBRATION DATE:                 01/01/2015
COMPANY:                          XXX
DATE:01/01/2015                   TIME:12:00:00
ID 01:
ID 02:
SAMPLE:                           1
PRODUCT: CORN
8% TO 21%
MOISTURE:                         11.3%
TEMPERATURE:                      19.3C
TEST WEIGHT:                      80.8kh/hl
FOREIGN MATERIAL:                 4.8%
PURITY:                           95.2%
DAMAGED KERNEL:
TYPE1:                            2%
TYPE2:                            4%
FULL DAMAGED KERNEL               6%

--------------------------------------------------
```


SAFETY NOTICES

THE GROUNDING PIN ON THE LINE CORD CONNECTS DIRECTLY TO EQUIPMENT. WHEN USING AN ADAPTER, MAKE SURE THE GROUNDING WIRE IS CONNECTED PROPERLY TO A GOOD EARTH GROUND.

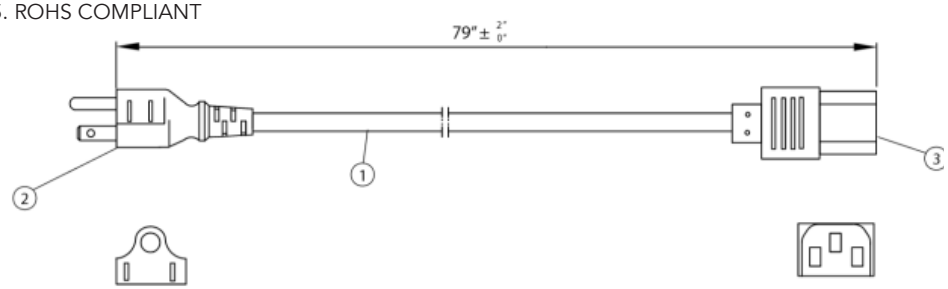
WHEN REPLACING THE FUSE MAKE SURE THE EQUIPMENT IS DISCONNECTED FROM THE POWER LINE. USE ONLY REPLACEMENT FUSES THAT MATCHES TO THE SPECIFICATIONS BELOW.



Technical Data	
Rated Voltage	250VAC
Rated current	1A
Breaking Capacity	35A
Characteristic	Time-Lag T
Admissible Ambient Air Temp.	-55°C to 125°C
Climatic Category	55/125/21 acc. to IEC 60068-1
Material: Tube	Glass
Material : Endcaps	Nickel-Plated Copper Alloy
Unit Weight	1g
Storage Conditions	0°C to 60°C, max. 70% r.h.
Product Marking	,Current, Dielectric strength, Characteristic, Breaking Capacity, Approvals

MAKE SURE THE POWER SUPPLY CORD IS UL 817 LISTED AND MATCHES THE SPECIFICATION BELOW.:

1 . CORDAGE: SJT, 14AWG/3C, UNSHIELDED, CEE COLOR CODE, TEMP. RATING 60°C, RATING: 125V 15A, JACKET COLOR: BLACK
2. PLUG: NEMA 5-15P
3. CONNECTOR: IEC 60320 C-13
4. APPROVALS: UL,CSA
5. ROHS COMPLIANT



THE GROUNDING PIN ON THE LINE CORD CONNECTS DIRECTLY TO THE INSTRUMENT CHASSIS. WHEN USING AN ADAPTER, MAKE SURE THE GROUNDING WIRE IS CONNECTED PROPERLY TO A GOOD EARTH GROUND.

TECHNICAL ASSISTANCE/ ASSISTÊNCIAS TÉCNICAS /CENTRO DE SERVICIO

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ANALYZERS