

# Moisture Sensor Notes

#HM-401-1.0

HM-401 HarvestData Application Note

October 9, 1998

Most moisture systems (on-combine) are of the capacitive type. Measuring moisture with this technology requires you to calibrate your system as close to the way you harvest as possible. It also requires you to be consistent in the way the sample is distributed into the test chamber from plot to plot. The below outlined procedures will help you get more accurate moisture data with your HarvestData GrainGage & Bucket system.

- Insure that your system is properly grounded (see “HM-305 or HM-405 Moisture Sensor Grounding Notes” as outlined below). \*\*
- When calibrating, use averaged moistures from your bench top standard.
- Keep your calibration samples at the same temperature as the combine environment.
- Calibration should be performed within 2 hours of the time the samples were checked on the bench top standard.
- Calibrate with the combine throttled at harvest speed and the thresher running.
- Repeat cycling through the system while viewing the “Moisture VLTS” reading in “Diagnostics” to get an average voltage for each sample.
- Enter the averaged readings into the moisture curve if desired.

Once you have a good calibration for your system, it is not needed to recalibrate again. HarvestMaster recommends that you use the same moisture curve each year, however; you must check the curve for accuracy. When checking the moisture curve each season, you must follow the same procedures as you did when calibrating; otherwise you will experience error in your results.

In many cases, we have found it to be sufficient to use a precalibrated curve. In order to do this, you must choose the curve that best matches your system and crop. We have listed a few moisture curves for different crops below. For a doublewide system, it is recommended that you use the same curve for each side and adjust the points to match a calibration standard. We suggest that you check different points over the entire curve and compare them with a moisture standard to make sure the slope of the curve is correct.

If you are comfortable with your calibration procedures or precalibrated curve but would like to shift the entire curve one direction, (all moistures are equally too high or too low) an easy way to shift the curve one direction would be to adjust the calibration temperature. For example, if you are consistently measuring 1% high over the entire curve, adjust the calibration temperature 10.9 Degrees higher.

e.g.: [ Moisture Difference./ Calibration Constant = Degree to Change ]

## **\*\* Model HM-305 or HM-405 Moisture Sensor Grounding Notes:**

It is critical that your system is properly grounded. If it is not, you may not be getting as accurate moistures as desired. The following steps will help you to determine whether any grounding modifications are needed on your system.

1. Start the combine and in the HarvestData software, move to “DIAGNOSTICS” and then “MOISTURE VOLTS”.
2. Press F6 (Singlewide systems) or a “R” (Doublewide systems) to RETARE the system.
3. Verify that the “RELATIVE VOLTS” is at 0.00V.
4. Start the combine, engage the thresher, and throttle it up to harvesting Rpm’s.
5. Watch the “RELATIVE VOLTS” for at least 60 seconds to see if the voltage fluctuates outside  $\pm .03$  Volts.

**NOTE:** If the voltage fluctuates outside the above stated specification, you will need to perform the following grounding modifications.

## **Grounding Modifications:**

1. Make sure that the “Test Chamber” is grounded by running an 18 AWG ground wire from the back of the moisture sensor to the side of the test chamber. Solder all ring terminals used (Figure #1).
2. Make sure the chassis ground to the test chamber is at the same potential as the “HM-401 SCCU” (console that the hand held plugs into) by running a 16 AWG wire from the Test Chamber to the “SCCU” mounting screw (See Figure #1).

**NOTE:** It is recommended that you solder all power and ground terminal connections. Clean and check all power and ground terminals yearly.

**\*\*\*Wire per Diagram Below \*\*\***

## **Additional Information:**

For additional information about moisture accuracy’s and procedures for calibration, please contact HarvestMaster’s technical service department at 435-753-1881.