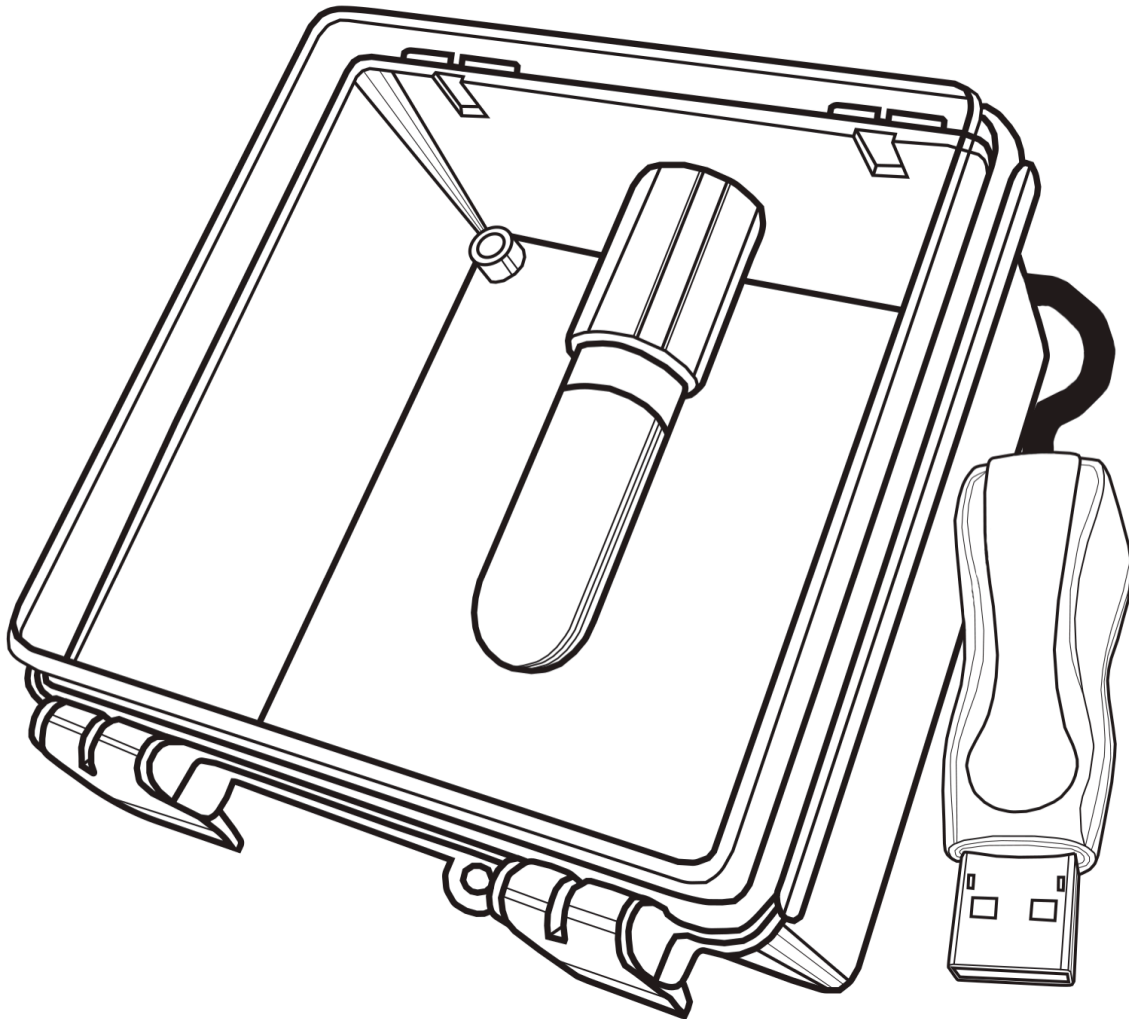# OPI Grain Curve Calibration

User Guide

Introduction

OPI Moisture cables measure the moisture content of grain through the principle of Equilibrium Moisture Content (EMC). This is the moisture content of grain when exposed to air of a constant Relative Humidity (RH) and Temperature (T). OPI Grain Curve Calibration Box has been developed to accurately determine the right grain curve and offset for use with your OPI moisture cables and standard moisture meter.

Step 1: Collect Grain Samples

Collect a 2kg grain sample from the desired bin and seal in a Ziploc bag. Let the grain sample equilibrate to room temperature (in sealed bag) for 2-4 hours.

**Step 2: Measure the Moisture Content of the Sample**

Measure and record the grain moisture of each sample using the standard or regulated moisture meter for your country/region.

➢ Labtronics 919
➢ Dickey John GAC2100
➢ Oven Dry Standard
➢ UGMA (Dickey John GAC2500 or Perten AM 5200)

Step 3: Place Grain in Calibration Box

Fill the Calibration box to the top with the selected grain sample and close the lid. Make sure the entire top is sealed when closed with no grain in the seal, and that the sensor is completely submerged in grain.
Allow sealed box to sit at room temperature (about 70°F or 20°C) for a minimum of 4 hours. This time allows the air inside the box to reach equilibrium with the grain sample.
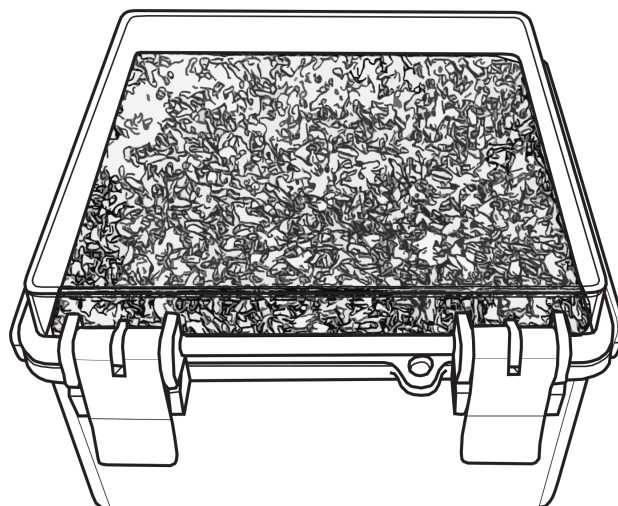
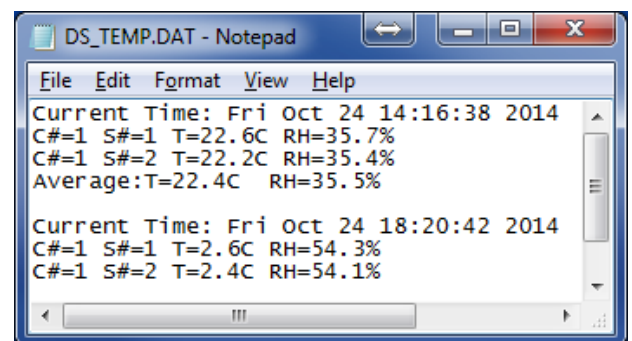**Step 4: Installing and Using the OPI Grain Curve Calibration Software**

a. A USB memory stick containing all necessary software is included with the OPI Grain Curve Calibration Box. Plug the memory stick into your computer, locate and click "setup.exe" and follow the on-screen instructions to install the program. A shortcut to the OPI Curve Calibration software will be saved to your desktop.
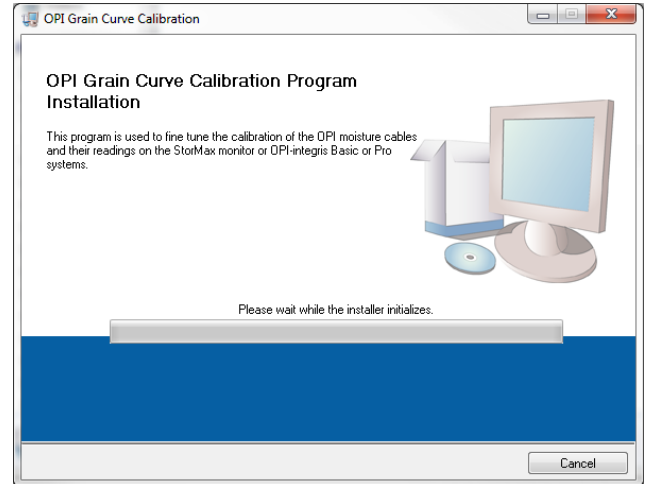
b. Once the grain has been sitting for 4 hours, connect the OPI Grain Curve Calibration Box's USB adapter into the PC and open the OPI Grain Curve Calibration program previously installed. Select Fahrenheit or Celsius. Press the "Measure" button on the bottom left of the window to read the T and RH.
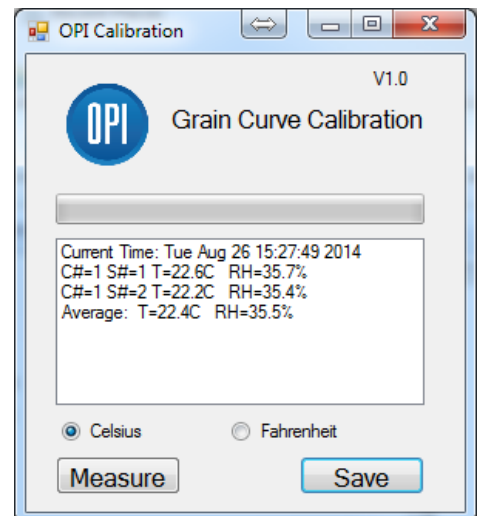
c. The window will show the time of the reading for each of the two sensors and the average for both T and RH. Press the Save button to Save and take note of these readings. The data will be stored in the file C:\Program Files(86)\OPI-Grain Curve Calibration\DS_Temp.dat
NOTE: This data will be required input in the Curve Calibration section of the OPI-Integris webpage.

d. To validate the accuracy of the selected curve at cold temperature, place the sealed box in the refrigerator (about 36°F/3°C) for a minimum of 4 hours. Once these steps are complete, plug the OPI USB adapter into your computer and use the OPI Grain Curve Calibration software to measure and save the cold T and RH readings as before.

Step 4: My OPI-integris Curve Calibration

a. Log into your 'My OPI-integris' account. If you do not have an 'OPI-integris' account you can register for one at: http://advancedgrainmanagement.com/MyOPI/Signin.aspx Complete the following information on the "New Customer Account" section of the My OPI Sign In page, or if you already have an account, enter your User Name and Password in the "Returning Customers" field.

b. Open the 'Curve Calibration' tab.

c. Choose one of the following options:

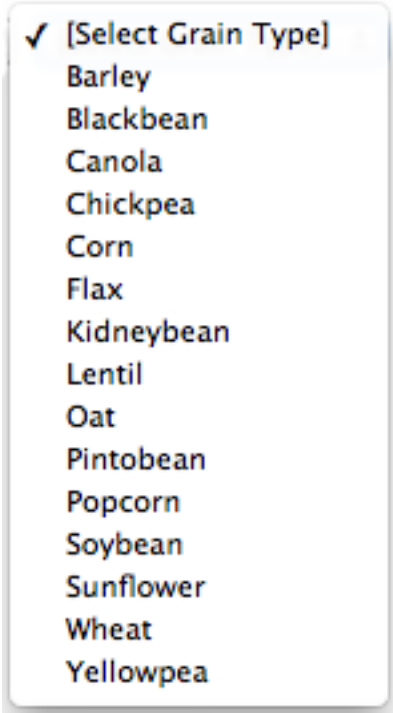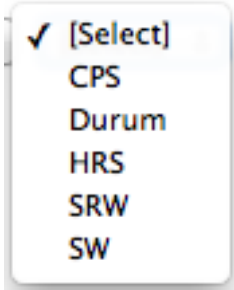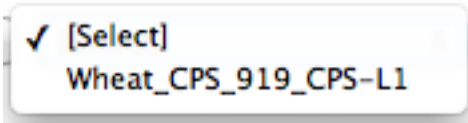| Standard (meter)	Standard
Choose the appropriate standard/regulated moisture meter that matches your standard moisture meter. There are 4 choices to choose from: 1. Labtronics 919™ Meter has been the standard in Canada for many years. Choose OPI's 919 curves when matching the 919 meter. 2. Dickey-John GAC 2100™ - this has been the standard in the US for many years and has widespread use. Choose the OPI curves for the Dickey-John GAC 2100™ to have the best match between OPI-Integris and your GAC 2100™. 3. Oven Dry Standard – this most closely matches the moisture content in the grain when using the ASABE standard methods. 4. UGMA Meters (Dickey-John GAC 2500™ and Perten AM 5200-A™). These meters have been approved as new standards in the US since May 2013 replacing GAC 2100™ and have increased accuracy. OPI's UGMA based curves are your best choice when matching to the UGMA meters.	✓ [Select] 919 G2100 Oven UGMA

Grain Type Select the grain type for the grain in your bin of interest. If the grain type is not available, try a different meter or standard or contact OPI-integris.	**Grain Type** ✓ [Select Grain Type] Barley Blackbean Canola Chickpea Corn Flax Kidneybean Lentil Oat Pintobean Popcorn Soybean Sunflower Wheat Yellowpea
Grain Class The grain class choices available for the grain type selection will be available in the class selection drop-down menu to the right. **NOTE**: Only the grain class options available for the grain type will be present. Not all grain will have a unique class.	**Class** ✓ [Select] CPS Durum HRS SRW SW
Curve The available curves for your chosen selections will be shown in the curve selection drop-down menu to the right. This field shows the Grain Type Class Standard latest curves with their version number.	**Curve** ✓ [Select] Wheat_CPS_919_CPS–L1

NOTE: Each selection must be chosen before the next section becomes available

   d. Fill in the Room Temperature and RH, and Cold Temperature and RH of your grain and
the moisture readings from your standard meter.

e. Click the "Select Curve And Offset" button and the recommended curve with the required offset information (if any) will be displayed.

Standard	Grain Type	Class	Curve
919 ▾	Wheat ▾	CPS ▾	Wheat_CPS_919_CPS-L1 ▾

Measurement	Room Temperature	Cold Temperature
Temperature	22.4 / Celsius ▾	2.5 / Celsius ▾
RH %	35.5	54.3

Standard Moisture (% wb) 12.3

Select Curve And Offset

Use the Wheat_CPS_919_CPS-L1 curve with -0.3 offset.
Download IntegrisBasic/Pro
Download IntegrisAdvance

f. Click the download link to download the recommended curve and automatically install
in the OPI-integris Advance, Basic or Pro.
Integris Advance curves are saved in the C: drive in OPI-integris/Integris Advance/Data/Curves.
Integris Basic/Pro curves are stored in C:/opigi/data/curves. The OPI software must be restarted for any changes to occur.)

g. Restart the OPI-integris Advance, Basic or Pro software to have the new curves recognized. Enter the offset into the StorMax monitor or Integris Basic/Pro system according to their instructions.

Important!

This Grain Calibration Kit is intended to help a user of OPI-integris moisture cables choose and use the most accurate grain curve possible for the best results for their in-bin grain conditioning needs. OPI-integris however, does not guarantee the accuracy of moisture cables with or without the use of this Grain Curve Calibration Kit. Errors may exist in the accuracy of the standard meter being used, the grain sample may not be indicative of the entire bin's grain sample and errors may be introduced during the calibration process; all of which are beyond the control of OPI-integris.

An adjustment made using an offset of an inaccurate or inappropriate curve does not guarantee accuracy in the moisture cable readings, since grain curves are sensitive to moisture, temperature and RH among other factors. If the offset required at room temperature and at the cool temperature varies by more than 1.5% from the base grain curve, the curve chosen does not accurately reflect the grain type being measured. Contact OPI-integris if a curve cannot be found for the selected grain type. You may need to have a custom curve created.

Grain curves from different grain types vary significantly at different temperatures and RH readings. Only apply the offset method of calibration to grains of the same type for the chosen curve. For example do not apply an offset to the curve for Corn if you have Soybeans in the bin.

It is the responsibility of the user to ensure the moisture cable is providing accurate readings. OPI-Integris is not responsible for any damages or inconvenience resulting from the use of moisture cables, their reading devices and this calibration kit or method.