

SONO Guide Interfacing SM-USB

Last Updated: April 19, 2018

Before Beginning:

Required Equipment and Software:

- **SM-USB** (M100020) module connected to one or more SONO probe(s).
- **SONO-VARIO** (M308070, M308074, M308090) probe(s) powered by a 24 VDC or 12 VDC power supply.
- **SONOConfig software**, available via MESA USB drive or <http://mesasystemsco.com>
- **SONO cable**, available in 4m (M308029) or 10 m (M308032)

Required Actions:

- Ensure **SONO-VARIO** probe(s) are properly installed according to MESA guide “**SONO Guide_Installation**”
- Ensure SONO-VARIO probe is properly wired to SONO-VIEW according to MESA guide “**SONO Guide_Wiring_SM-USB**”
- Install SM-USB drivers and SONOConfig Software on a **Notebook computer or PC**.
- Identify analog input the PLC or batch panel accepts.

Overview:

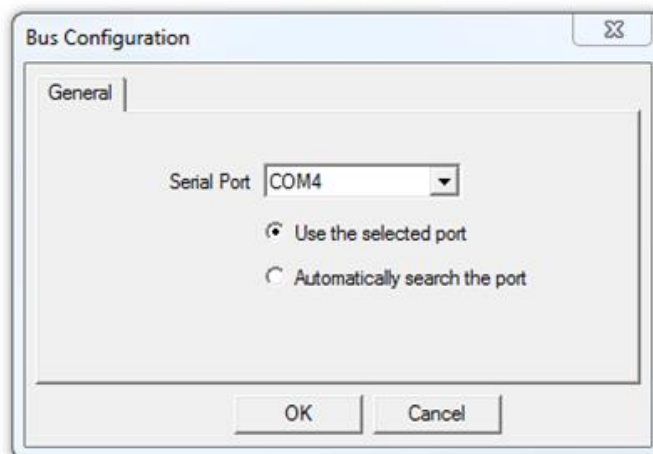
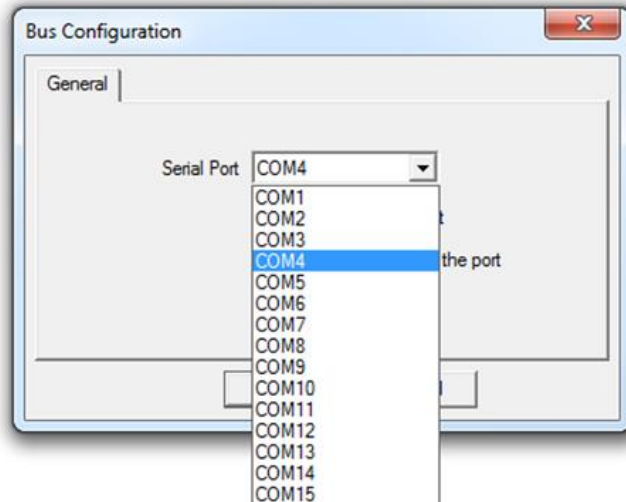
- Using the SM-USB module and SonoConfig software, you will interface your SONO probe(s)
- You will need to complete a bake-off to get a reference moisture value for calibration
- Before you can make an offset adjustment the SONO probe should be measuring and the moisture visible on the SONOConfig.

Step-by-step guide for New Installations: Part 1: Establishing a connection

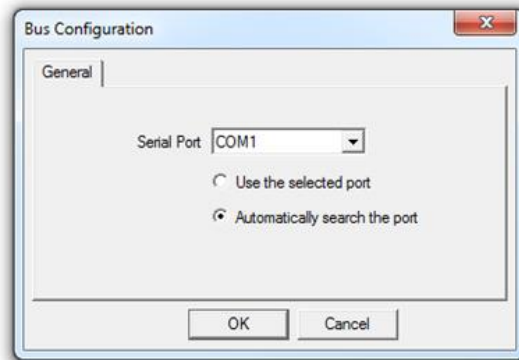
- 1) Open SONOConfig software. Navigate to **Bus** for the drop-down menu, then select **Configuration**.
- 2) The following window will open. Select the appropriate **Serial Port** (for example **COM4**) from the drop-down menu. **Select OK**.

Note:

- a. Use Window's Device Manager located in your computer's control panel to identify the **COM port** number. For example: USB Serial Port (COM4).

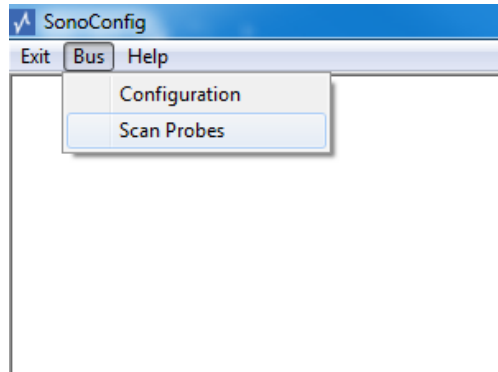


3) Alternatively, you can select **Automatically search for port**. Select **OK**.

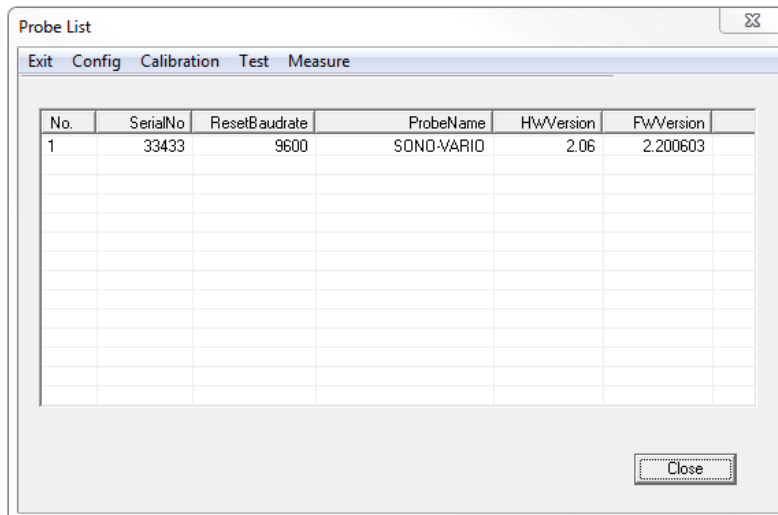


Part 2: Configuring the probe

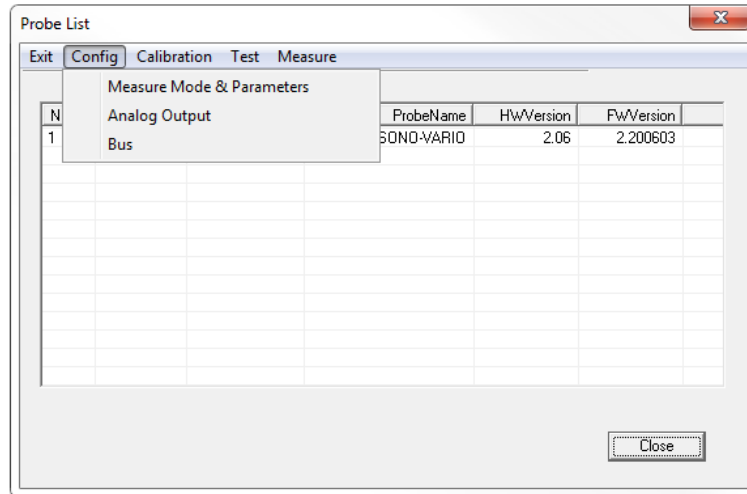
- 1) Next you must Scan the bus for probes. Selecting **Scan Probes** from the **Bus** menu.



- 2) SONOConfig will display all probes connected to the Bus. You will see a **Probe List** by serial number. If there is more than one probe, **highlight** to select the probe you wish to work with,

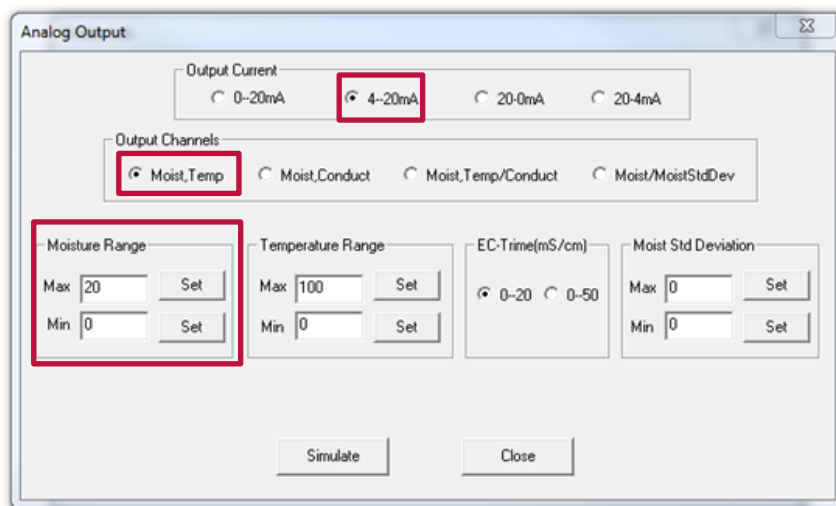


- 3) Under **Config**, in the drop-down menu, select **Analog Output**.

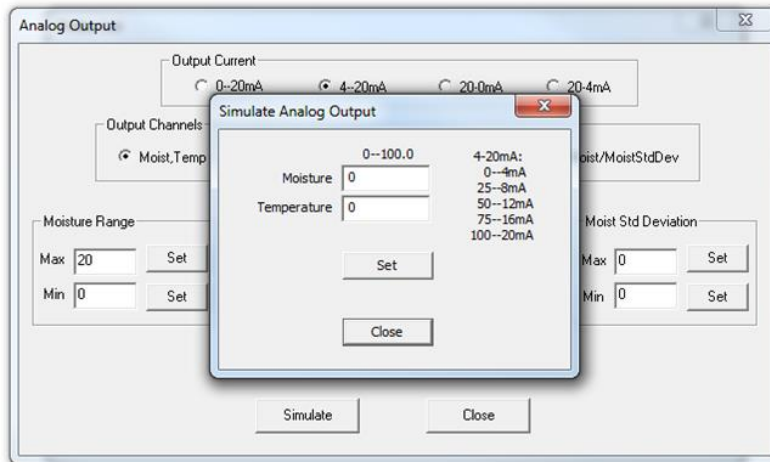


- 4) This step allows you to confirm/configure each SONO probe's analog output and to simulate the analog outputs to the PLC or Batch Panel. **You must know what analog input the PLC or batch panel accepts, to confirm these settings.** This SONO probe is set as follows, which are the default settings:

Output Current 4...20mA
Output Channels: Moist, Temp.
Moisture Range: Max 20%, Min 0.0%



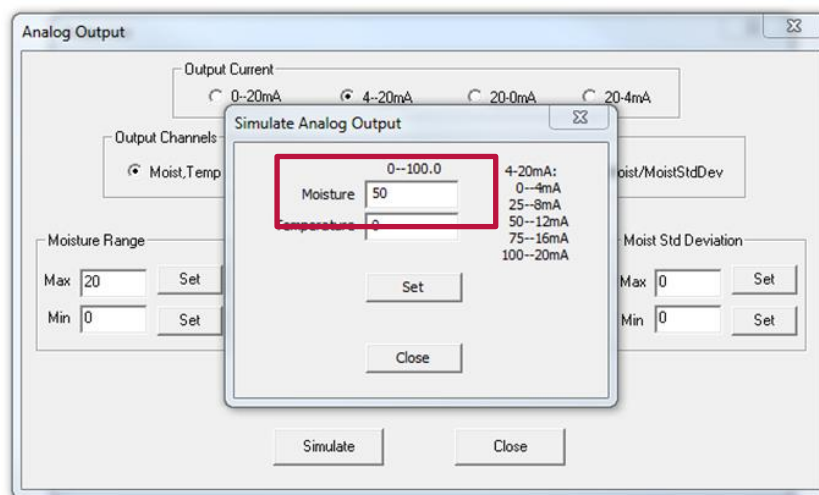
- 5) To confirm that the analog output (**Output Current**) is set correctly and **Moisture Range** is scaled correctly, **Simulate** the moisture to the PLC or Batch Panel. Select **Simulate** and the window **Simulate Analog Output**, will open.



Notes:

This allow you to simulate the moisture to the Analog output connected and displayed on the batch panel as a percent of scale.

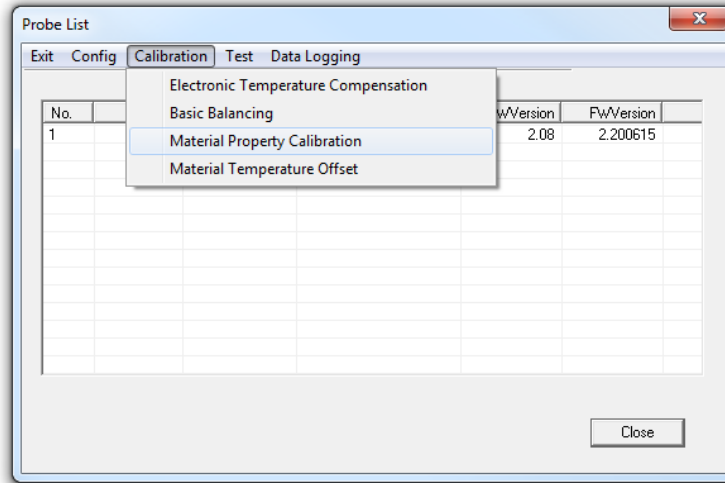
Example: Enter **50** and select **Set**, **Moisture 50** = 50% of the 0...20% **Moisture Range** = 10% moisture. On the control panel you should see 10% moisture.



- 6) Once you have confirmed that the analog output is scaled correctly, and you can close the **Simulate Analog Output**, and the **Analog Output** windows.

Part 3: Confirm the material calibration

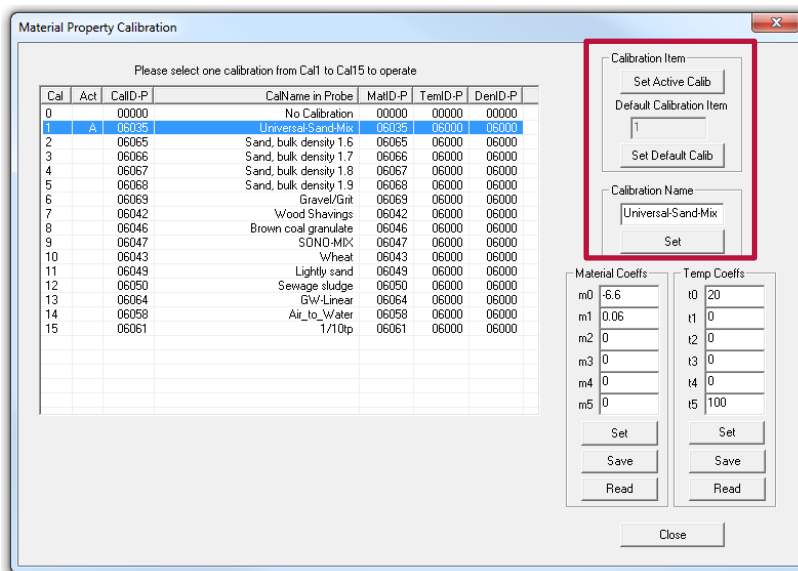
- 1) From the **Calibration** drop-down menu select Calibration then **Material Property Calibration**. **PLEASE WAIT!** It will take a few seconds for the calibrations to be displayed on the screen.



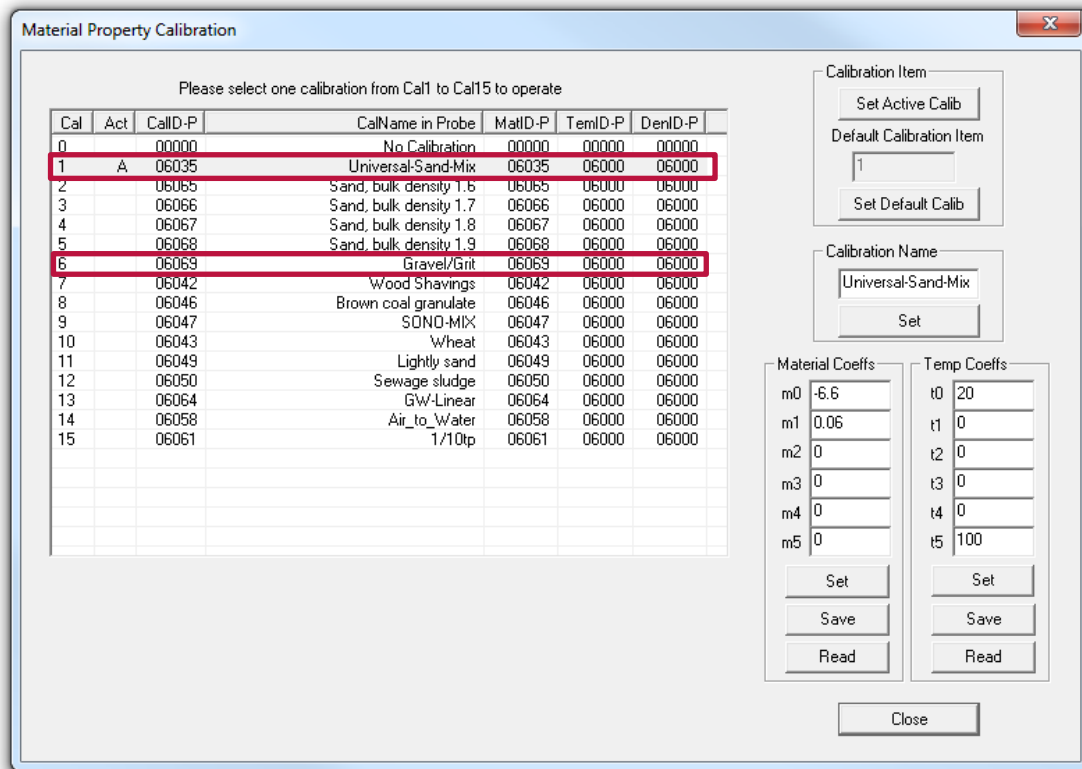
- 2) Identify the active calibration. An “A” is found in front of the **Active Calibration, Universal Sand-Mix. Universal Sand-Mix** is also set as the **Default Calibration**.
- 3) If you wish to select a new calibration, highlight the new calibration and select **Set Active Calibration** and **Set Default Calibration Item**.

Notes:

- a. To permanently change the calibration, you must **Set** it as the **Default Calibration Item**.



- b. All SONO probes are delivered set to: **#1 Universal-Sand-Mix** calibration. If this probe is to be used to measure the moisture of sand, you need not make a change. If you are working with coarse aggregate 5/32-inch up to 1-1/4-inch you should change the calibration to **#6 Gravel and Grit**.



- 4) After selecting the desired calibration, you will need to adjust the SONO probe's moisture reading to a reference moisture (bake-off). **This is done by adjusting the offset value m0.**
- 5) Do a bake-off moisture of sample collected from below the hopper to determine the moisture percent.

Notes:

- You need to write down the moisture values shown in the batch panel display, at the time you collect a sample from below the hopper.
- The SONO probe is reading the total moisture percent.

6) Calculate the **offset** between the SONO probe moisture reading and the bake-off moisture.

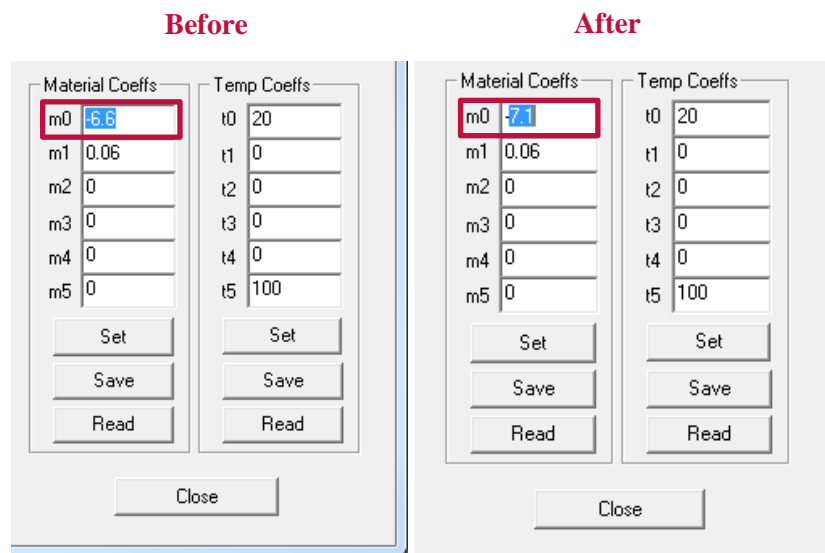
Notes:

- Determine the total dry weight percent moisture (%M) using the formula:
 - **(Wet weight – Dry weight) / Dry Weight = M x 100 = %M.**
 - *For example:* (940 gram – 915 gram) / 915 gram = 0.027 x 100 = 2.7 %M.
- *For example:* The batch panel displayed a moisture of 3.2%, during the batch, when the sample was collected, and the bake-off moisture was determined to be 2.7%. The offset of the SONO probe must be adjusted -0.5%.

7) To adjust the offset for the calibration, Universal-Sand-Mix we enter a new value in the **Material Coeffs m0**.

Notes:

- The current value is -6.6.
- To reduce the moisture values by -0.5% (difference between the panel and the back-off), you need to subtract 0.5 from -6.6: (-6.6 + -0.5 = -7.1).
- Enter -7.1 in m0 press **Set**. You have now adjusted the SONO probe moisture to the bake-off moisture reference.



8) Select **Close** and **Close** again, you may now Exit out of SONO-Config and safely remove the USB cable from your computer.

For complete technical details visit <http://mesasystemsco.com> for manuals and support documentation.

Additional Questions? Contact MESA at support@mesasystemsco.com or +1 (508) 655-6372.