



Abstract

This document outlines the procedures for calibrating the inputs and outputs of Graphite® I/O Modules.

Products

GMPxxxxx, GMINI800, GMINV800, GMOUT400, GMT8000, GMRTD600, GMSGxxxx, and GMUIN400

Use Case: Calibrating Graphite® I/O Modules

Step by step procedure to calibrate the inputs and outputs of Graphite® modules.

Required Software:

Crimson 3.0™

Required Firmware:

573.001 or higher

Input and Heater Current Monitor Calibration

The order in which the calibration inputs are applied does not matter, i.e. when calibrating a 4-20 mA input, one can calibrate for 4 mA, then 20 mA, and then 0 mA. The only order that does matter is when calibrating a thermocouple input; the mV calibration must be done prior to calibrating the Cold Junction.

1. Connect the Graphite® HMI with the module to be calibrated to the PC, and ensure the correct connection is selected under *Link-Options*.
2. Click *Link-Calibration*.
3. Select the Module Number (position in the rack), the Model, the Channel (if applicable) to calibrate, and finally the Command.
4. Using a calibrated source device, apply the Command value to the appropriate channel of the selected module and allow the signal to stabilize for 5-10 seconds.
5. Click the *Read* button and make note of the value.
6. Click the *Send* button.
7. Click the *Read* button. The value read back should be very close to the value from step 4. If it is not, verify the input wiring and signal, and repeat the procedure from step 4.

Repeat steps 3 through 7 for each of the inputs to be calibrated.

When finished calibrating, select Command *Save Calibration to EEPROM* and *Send*.

****The calibration must be saved to EEPROM; or could be aborted by simply removing power****

COLD JUNCTION CALIBRATION

- Cold Junction Calibration is only needed for Thermocouple inputs, and should be performed after the mV calibration procedure
 - Requires a way to access the PV value of the input that is being calibrated, such as watching a block or tags in Crimson 3.0.
 - The Graphite® module should be mounted to a Graphite® host device, in the proper orientation, and the front of the module and terminal blocks should be shielded from drafts. Do not enclose the module, such that normal convection is affected.
 - The setup should be powered up and allowed to stabilize thermally before calibrating the cold junction (30 minutes or more, depending on the environment).
1. Connect the Graphite® HMI with the module to be calibrated to the PC, and ensure the correct connection is selected under *Link-Options*.
 2. Click *Link-Calibration*
 3. Select the Module Number (position in the rack), the Model, the Channel to calibrate, and finally the Command.
 4. Connect the thermocouple to the input to be calibrated.
 5. Place the thermocouple with its tip touching a known calibrated temperature sensor (with display) in the same location. A thermally stable environment, such as a box, is a good idea to ensure that there are no outside forces (drafts etc.) that may cause the 2 probes to record a slightly different temperature reading.
 6. Click *Read*.
 7. Change the read value by the amount of error between the PV and the reference temperature sensor, i.e. if it reads 1/2 degree higher than the external source, lower the value by 1/2 degree.
 8. Click *Send*.

Repeat steps 5 through 7 until the read value matches the external reference.

When finished calibrating, select Command *Save Calibration to EEPROM* and *Send*

****The calibration must be saved to EEPROM; or could be aborted by simply removing power****

ANALOG OUTPUT CALIBRATION

1. Connect the Graphite® HMI with the module to be calibrated to the PC, and ensure the correct connection is selected under *Link-Options*.
2. Click *Link-Calibration*
3. Select the Module Number (position in the rack), the Model, the Channel to calibrate, and finally the Command.
4. Connect a calibrated meter to read the output type that is being calibrated.
5. Click *Read* and then click *Send*; the module should output the commanded value.
6. If the output is not within spec, adjust the read value accordingly, and then click *Send*.

Repeat steps 5 and 6 until the output is correct.

When finished calibrating, select Command *Save Calibration to EEPROM* and *Send*

****The calibration must be saved to EEPROM; or could be aborted by simply removing power****

For more information: <http://www.redlion.net/support/policies-statements/warranty-statement>

