

# TECHNICAL NOTE TNPC19

## Title: Calibration Procedure for Modular Controller Modules

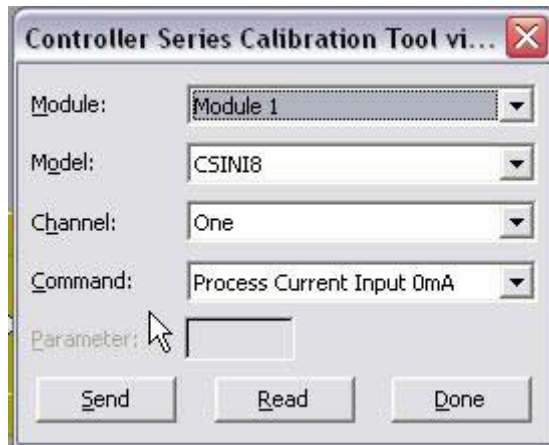
Product(s): CSPID1&2, CSINI, CSINV, CSSG, CSTC8, CSRTD6

### INPUT CALIBRATION

\*The order in which you calibrate does not matter i.e. calibrating a 4-20 mA input, you can calibrate for 4 mA, then 20 mA, then 0 mA. The only order that does matter is when calibrating a thermocouple input. You must do the mV calibration prior to calibrating the Cold Junction.

**Step 1:** Connect rack to your PC, and make sure the correct connection is selected under Link-Options, then click Link-Calibration.

**Step 2:** Click Link-Calibration, then select the Module Number (position in the rack), Model of said Module, the Channel (if applicable) that you wish to calibrate, and finally the Command.



**Step 3:** Using a calibrated source device, apply the Command value to the appropriate channel of the selected module and let signal stabilize for ~5-10 seconds.

**Step 4:** Click the Read button and make note of the value.

**Step 5:** Click the Send button.

**Step 6:** 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, then go back to Step 4.

**Repeat steps 2 through 6 for all of the inputs.**

**If you are 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**

\*This is only needed for Thermocouple inputs, and should be done after the mV calibration.

\*It also requires a way to access the PV value of the input you are calibrating, such as using the View Block or View Tags Online feature of Crimson 2.0.

\*The modular controller module should be mounted on a DIN rail, 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).

**Step 1:** Connect rack to your PC, and make sure the correct connection is selected under Link-Options.

**Step 2:** Click Link-Calibration, then select the Module Number (position in the rack), Model of said Module, the Channel that you wish to calibrate, and finally the Command.

**Step 3:** Connect your Thermocouple to the input you are calibrating.

**Step 4:** 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 make sure that there outside forces (drafts etc...) that may cause the 2 probes to see a slightly different temperature.

**Step 5:** Click Read.

**Step 6:** 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.

**Step 7:** Click Send.

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

**If you are 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**

**Step 1:** Connect rack to your PC, and make sure the correct connection is selected under Link-Options.

**Step 2:** Click Link-Calibration, then select the Module Number (position in the rack), Model of said Module, the Channel that you wish to calibrate, and finally the Command.

**Step 3:** Connect a calibrated meter to read the output type that you are calibrating.

**Step 4:** Click Read, then Send; the module should output commanded value.

**Step 5:** If the output is not within spec, adjust the read value accordingly, and then click Send.

**Repeat steps 4 and 5 until the output is correct.**

**If you are 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\*\*