# SETTING GEM OFFSET

## INTRODUCTION

The offset adjustment is used to minimize error at low currents. The effect of offset has a greater effect on "current" readings (Amps) than on "power" readings (watts). Earlier GEM firmware versions did not have the ability to measure current therefore the effect of offset was negligible. With the introduction of COM firmware ver 2.30 and ENG firmware ver 1.40, the GEM is now able to read "current". It may now be required to adjust the offset using the GEM Network Utility (ver 4.8 or greater).

## WHAT IS OFFSET?

The offset value is a constant used to cause the electrical current measurement to display zero when there is no CT connected to the GEM or if the load that the CT is sensing has no current flow. If the current cannot be zeroed and a CT is connected, this may be caused by noise pickup from the CT leads.

## GOAL

The goal is set the offset value such that unused channels or channels with no CT signal displays "0 A" (no current). This is accomplished by changing the offset value between "-10" and "+10". The required value will be determined by trial and error. This single value will affect all 32 channels.

## PROCEDURE

Refer to the screen shot of the GEM Network Utility in Figure 1. This program should be installed and have a connection with the "Status" box changing to a green background.

In short, the procedure is to read the "Amp" value with no input signal, change the offset value if current is not zero, save it, wait at least one second, then read the current again. This procedure is repeated until the lowest current value is displayed for channels with no CTs connected or no load current.
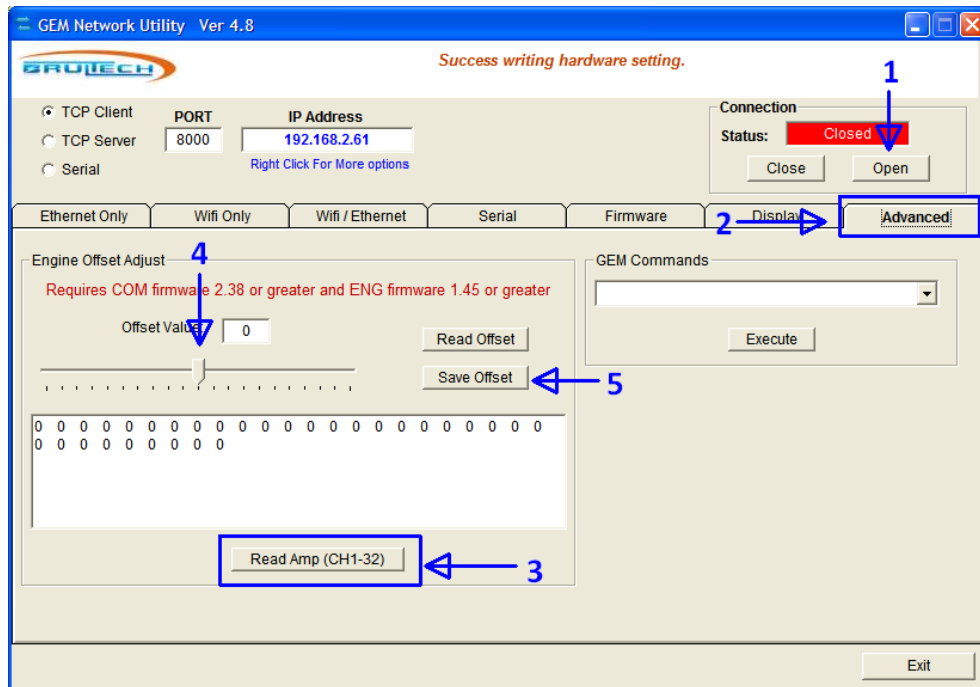
**Figure 1**

Before performing the steps below, run the "GEM Network Utility" software as shown in Figure 1 and establish a connection. The "Status" box should turn green.

If you not used the GEM Network Utility previously, it is available from http://brultech.com/software. You will need to refer to the "GEM-COM" document that corresponds to the communication option your GEM has.

## Steps

1. Click the **"Advanced"** tab (Figure 1-2).
2. Click the **"Read Amp (CH1-32)"** button (Figure 1-3). The 32 values of measured current will be listed consecutively and separated by a space.
3. If those channels with no load are displaying "0", then do not proceed to the next steps as the offset is properly set. If the no load channels are displaying values then proceed to the next step.
4. **Take note** of the displayed current value for unused channels or channels with no load.
5. Click **"Read Offset"** to read the active offset value
6. **Increment** the offset value by 3 using the slider (Figure 1-4) and click **"Save Offset"** (Figure 1-5).
7. **Wait 1 second** and click **"Read Amp (CH1-32)"** again.
8. If the displayed current value for unused channels or channels with no load has dropped, increment the offset value by 3 again and repeat until unused channels display 0A. If it has increased then subtract 3 from the original offset and repeat the test by subtracting 3 each time until the desired 0A is obtained.

# APPENDIX A

## CANNOT ZERO CURRENT

If the current cannot be zeroed when a CT is connected to the GEM and the breaker is off (no current flowing), this could be caused by noise pickup from the CT leads. If TypeB CTs are used, the noise effect may be reduced by installing a shorting jumper (wire) between terminals 1 & 2.