



**97-003 Rev B  
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## **VERIFYING DAC CAL BUG IN M200A**

**SCOPE:** This document shows how to test for the “DAC CAL” bug in the M200A.

### **BACKGROUND:**

The M200A prom versions H.9H, J.1 and J.3 have a “bug” in the software. This “bug” affects the DAC CAL in the analyzer. The symptom is that the NO<sub>x</sub>, NO and NO<sub>2</sub> voltage outputs do not match the concentrations on the front panel. The outputs will vary by a few millivolts, causing the datalogger to read a few PPB off (typically noticeable on the NO<sub>2</sub> channel). Performing a DAC CAL may or may not solve the problem. Not all analyzers will show the problem. If your analyzer exhibits this bug, you will need to replace your current software with K.0 software. This is available free of charge from API. You will also need to perform a temporary fix which will get the analyzer working until you receive the new version of software.

**TOOLS:** None.

### **PROCEDURE:**

To test if the “bug” is affecting your analyzer, do the following:

- 1) Perform a DAC CAL according to your manual.
- 2) Press SETUP-MORE-DIAG (you may have to press ENTR to input the password). Press NEXT to see “ANALOG OUTPUT”. Press ENTR. Press the button under “0%” and brackets will appear around the “0%”.
- 3) Record the voltages (in mV) for all three analog outputs. If any output exceeds  $0 \pm 3$  mV, stop as you have the bug. Proceed to the attached service note and replace the software.
- 4) If all three outputs are within 3 mV of 0, then power off the analyzer and wait 2 minutes.
- 5) Apply power to analyzer and repeat steps 2 and 3. If any output has changed by 3 or more mV, then you have the bug.
- 6) If you do not have the bug, then you are done with this service note.
- 7) If you have the bug, press the following to perform the temporary fix:  
Press SETUP-MORE-VARS. A.  
You will see the “818” password. Change it to “929” and press ENTR. B.  
Press JUMP and enter the number 37 (for H.9H) or 36 (for J.1 or J.3). C.  
You should be on the VAR which says “DAC0\_GAIN”. D.  
Press EDIT-ENTR-NEXT. E.  
Repeat step E for DAC1\_GAIN through DAC3\_GAIN and DAC0\_OFFSET F.  
through DAC3\_OFFSET variables.
- 8) Repeat steps 4 and 5 to verify the correct voltages are now available.