



TOTALFLOW

Technical Bulletin 144

Field Repair of BTU 8000 GC Modules with Low Sample Flow Fault

Totalflow Technical Bulletin

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Purpose

This bulletin describes a method for field repair of a BTU 8000 GC Module that is exhibiting a **Low Sample Flow** fault alarm.

Description

From time to time a BTU 8000 GC will develop a condition where the sample pressure remains too high for the cycle to start. (The sample pressure must drop below 1psi within 15-20 seconds after the stream inlet is turned off for the cycle to progress normally). This problem will normally be indicated by a **Low Sample Flow** fault alarm. Sources of this problem can include;

- Blockage in the sample vent line
- Blockage in the tubing leading to the vent
- Blockage in the sample lines internal to the GC module
- An internal leak in the Stream Select module
- A diaphragm inside of the GC Module that is not sealing properly. (This problem could show up in a new or refurbished GC Module that has been sitting on the shelf for a while.)

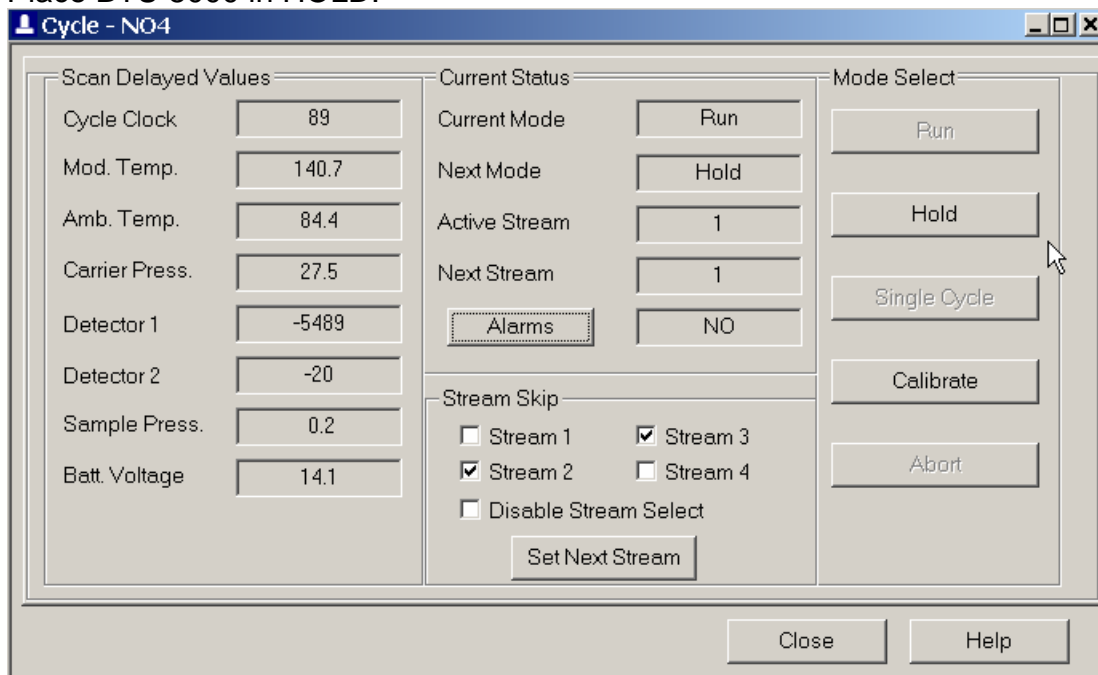
Checking for sample flow can be accomplished in the following manner;

Warm start the BTU 8000 and verify that all streams that have sample or calibration gas attached pass the startup and that the tests don't indicate a leak in the Stream Select Module. If this test is inconclusive, exchanging the SSM with a known good one may be necessary.

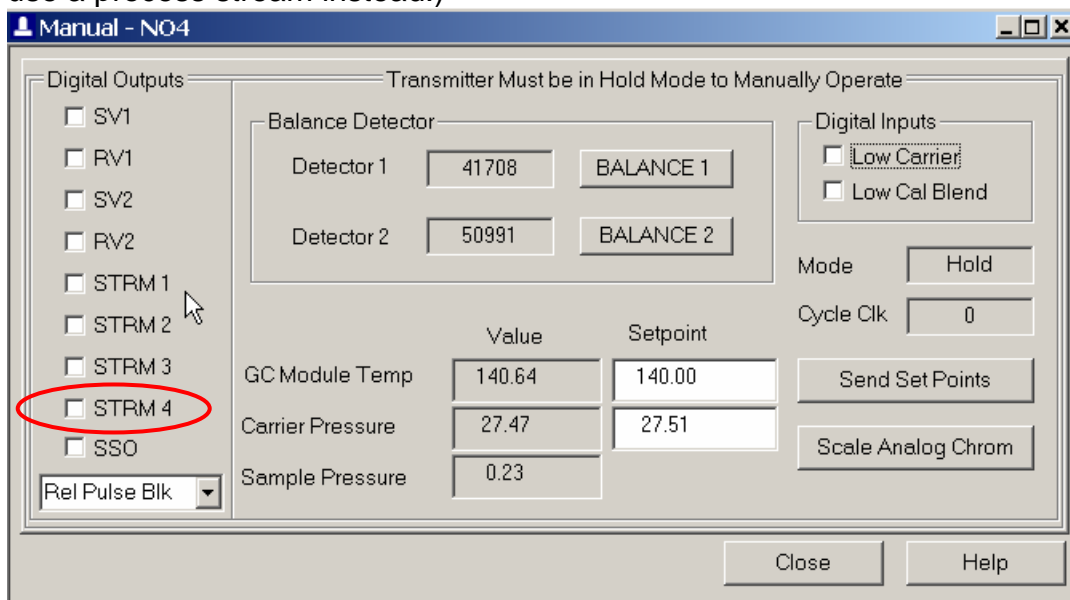
Use the Manual Operations screen in the BTUMMI software and [Technical Bulletin 128](#) to help determine if there is a flow problem. Monitor how fast the sample pressure drops after the stream inlet is turned off. If this test shows a flow problem, it is a good idea to remove the GC module and use helium or other clean, dry air source (not shop air or any solvent) to blow back through the sample vent. No more than 45psi should be necessary to verify that the line is clear. At this time Column vent lines could also be blown out, but this problem is not associated with low flow through Column vents.

If after performing these tests you are still seeing a Low Sample Flow Fault then the problem could reside inside the GC module. The following steps should be carefully followed. If care is not taken when performing these steps, permanent damage can be done to the GC. This process seems to work best if the module is at or near operating temperature (140 degrees F).

1. Place BTU 8000 in HOLD.



2. Increase the Calibration gas pressure to 30psi. (**Caution** – pressure greater than 60psi can cause damage to the pressure sensor.)
3. In the manual operation screen, turn the Stream 4 DO on and off using the Stream Digital Output as fast as the software will allow. (This will be about 1 time every 5 seconds) for about 20 times. (**Caution** – this will dramatically increase calibration gas usage. If you are concerned about calibration gas usage you may use a process stream instead.)





4. Be sure to leave the stream in the off position when finished (no x).
5. Reduce your Calibration gas/Sample gas pressure to 15psi. (Normal operating pressure.)
6. Place BTU 8000 in run and allow the BTU 8000 to complete an analysis cycle. Verify that the Low Sample Flow fault has gone away.

Conclusion

This procedure should help to condition the diaphragms that control the flow of gas through the sample loops. If this procedure does not have the desired effect, it could be because there is some blockage in the sample loop tubing inside the GC Module. In this case, the best solution is to return the Module to Totalflow for repair.