TELEDYNE
INSTRUMENTS
Advanced Pollution Instrumentation

A Teledyne Technologies Company
9480 Carroll Park Drive, San Diego, CA 92121-5201
Phone (858) 657-9800 Fax: (858) 657-9818 Toll Free 1800 324-5190
E-mail: api-customerservice@teledyne.com http://www.teledyne-api.com

Service Note

98-048 Rev B
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TROUBLE SHOOTING HIGH PMT VOLTAGES WHEN ON ZERO AIR IN A M100A

I. SCOPE:

To help you trouble shoot your analyzer when you have high PMT voltage while you are running the analyzer on your zero air source.

II. PARTS:

DR0000002 X5

III. TOOLS:

9/16" wrench
½" wrench
7/16" wrench
Phillips screwdriver
Service note 98-018 leak checking API analyzers

IV. PROCEDURE:

1) If you have any warnings you will have to check into them & fix them before going further with this service note. (for example: if you have a high pmt temperature then you will have to figure out why the temp is high & fix it before continuing on with this note).
2) The next step in trouble shooting this analyzer is to do a leak check of the analyzer. If you do not know how to do a leak check use the API service note 98-018. If you do not have this service note please contact the service department & we will arrange to get you one.
3) The next step is to check the flow in the analyzer to make sure that the flows are correct. What this involves is using some external flow measuring device & actually measuring the flow through the analyzer.
4) Remove the cover from the analyzer.
5) Input zero air into the analyzer & push the test button until you get the PMT MV displayed on the front panel. Wait 6 minuets then write the PMT MV down on a piece of paper.
6) Put the cover onto the analyzer & see if the PMT MV goes down.
7) If it does then you have a light leak & you will have to use a flashlight to figure out where the leak is. If the pmt does not go down then go to step 9.
8) Place the flashlight on all of the mechanical connections & joints on the Rcell & PMT housing. If you are introducing light into the joint and that joint has a leak you will see the PMT voltage go up.

9) If the PMT voltage does go up at a specific joint then you will want to take that joint apart & find why there is a leak. Most joints have O-rings and if the O-ring is missing, pinched or cracked you can have a leak and the PMT voltage will be affected.

10) If the PMT voltage does not go up or down during the light leak check then press "SETUP_MORE_DIAG_ENTER_ENTER" then push the "NEXT" button until you see "DARK_SHUTTER". Push the button under "OFF" and the shutter should close & you should hear click when the shutter closes.

11) When it closes you want to push the "NEXT" button until you get to "PMT_SIGNAL". This will be displayed in MV and it should be lower than 100 MV. If it is higher than 100 MV then you will want to remove the UV filter & check it. Typically when you have a bad UV filter you will notice that you have a good DARK PMT & a high PMT at zero & a high STRAY LIGHT level.

12) To check the UV filter remove it from the analyzer and go into a dark room with a small flash light. What we find works well is the small "mini-mag lights" the diameter of the flashlight is the same diameter of the UV filter. When you are looking "through" the UV filter you should see a uniform color and some "pinholes". The API definition of pinholes is that you will notice that the filter is a bluish, reddish color. In the filter you will find some white specks that are the flashlight shining though the filter. The white specks are the pinholes. The are not holes in the glass but holes in the filter material. If the specs that you are seeing are very white in color that you will not want more than one of these holes. If the specs are reddish in color that you will not want more than 5 of these holes. As you can tell this test is very subjective. Even if the filter passes this test, that does not definitely mean that the filter is good. But you can be relatively certain that if it fails this test that the filter is bad.

13) If the UV filter looks bad then this is what is wrong, and replacing the filter should fix the problem.

Ensure that the unit has the power removed before doing the following test.

14) If the PMT voltage is higher than 100 MV then we would recommend that you remove the sensor assembly from the analyzer and remove the PMT and high voltage power supply and make sure that there is no water on the PMT or in the PMT housing. If there is water in the housing then this is what is wrong with your analyzer. Contact the API service department, with the model and serial number of this analyzer.

15) If there is no water in the PMT housing you will want to follow the HVPS test procedure in the operators manual. If the HVPS is good then you might have a problem with the pmt or the preamp card.

Note: any time you open the PMT housing on an analyzer you will want to replace the desiccant baggies (DR0000002).

If you have questions regarding this procedure or any API equipment, please contact an API Customer Service representative at:

Phone: (619) 657-9800
Fax: (619) 657-9816
Email: customerservice@advpol.com