

Calibrating the SRI Mudlogger GC Total Gas FID using PeakSimple version 3.99 or later

The SRI Mudlogger GC configuration typically includes a TotalGAS FID detector which continuously measures the total hydrocarbon concentration in whatever gas is presented to the GC's inlet. The inlet pressure must be held constant at some pressure like 10psi, but any pressure between 1 and 50 psi is OK so long as the pressure is held constant by a pressure regulator.

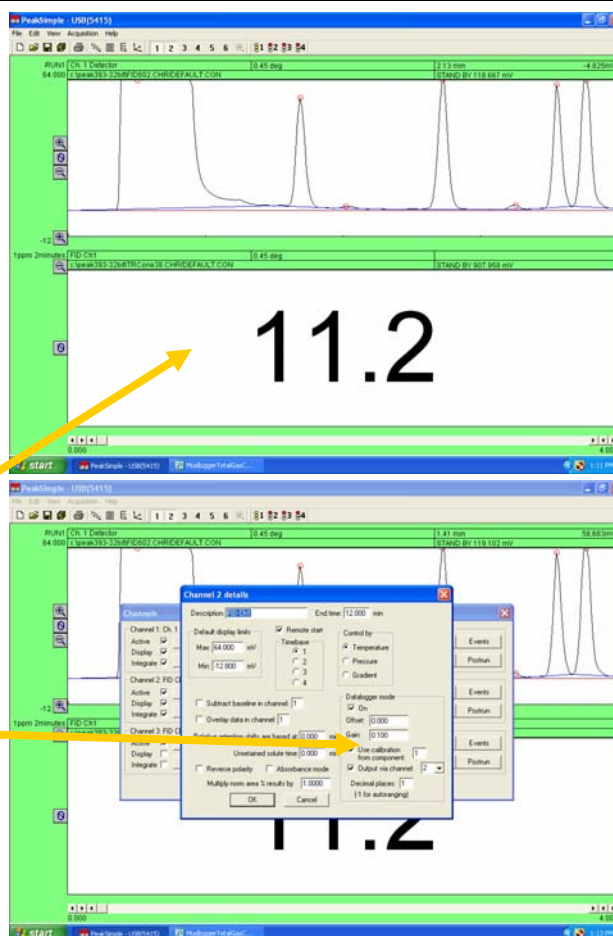
The TotalGas reading can be displayed by the PeakSimple data system as either a millivolt level strip chart or as a large number in the middle of the screen as shown at right.

To display the number instead of the stripchart, navigate to the Details Box. Click the Datalogger mode ON.

The millivolt signal from the TotalGas FID can be multiplied by whatever number is inserted in the "Gain" box. This is useful if you want to display the TotalGas in "Units" or "percent".

The TotalGas FID millivolt signal is not perfectly linear however. This can be corrected and compensated by using a calibration curve.

To calibrate the TotalGas signal click the "Use calibration from component" box with the number 1. This calibration curve linearizes the millivolt signal which is displayed in numbers on the screen. To output a linearized millivolt analog signal click the analog output channel desired.



Channel 2 details

Description: FID Ch1 End time: 12.000 min

Default display limits: Max: 64.000 mV Min: -12.800 mV

Remote start: Timebase: 1

Control by: Temperature

Datalogger mode: On

Offset: 0.000 Gain: 0.100

Use calibration from component: 1

Output via channel: 2

Decimal places: 1 (-1 for autoranging)

OK Cancel

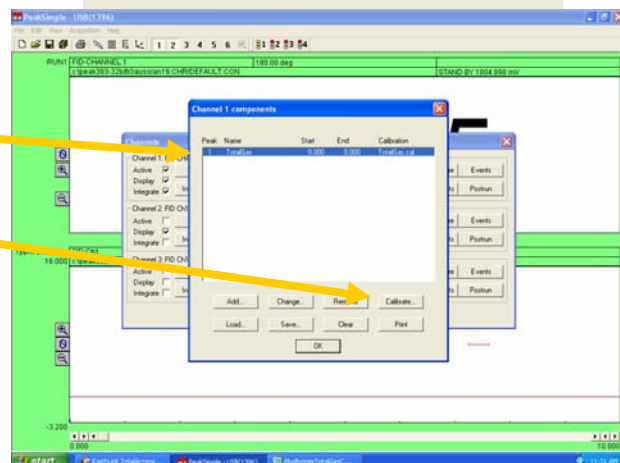
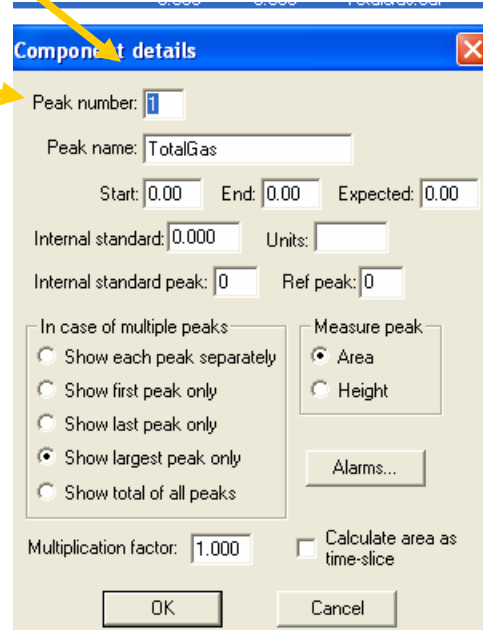
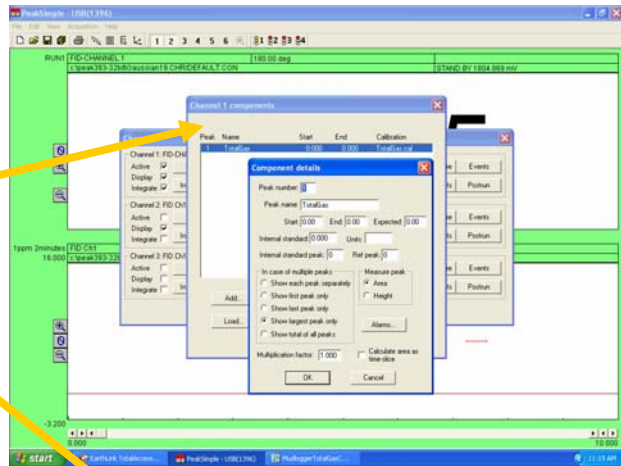
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Navigate to the Component Table screen and Add a Component which looks like the one shown at right.

Note that the Peak number is the number 1. This is the same number we entered in the Details Box on the previous page.

Once the Component Details have been entered, highlight the component in the list by clicking on it.

Then click the Calibrate button below.



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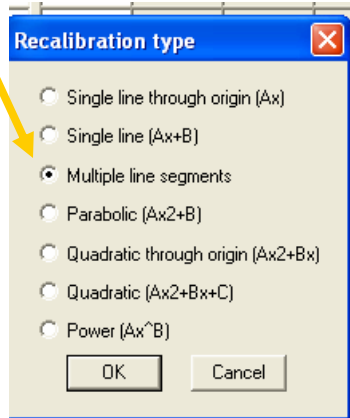
Enter the calibration information in the mini spreadsheet of the calibration curve.

In this example:
 A 2% methane gas mix resulted in a millivolt reading of 600, so 600 was entered in column 1 row 1.
 2 was entered in column 2 row 1.

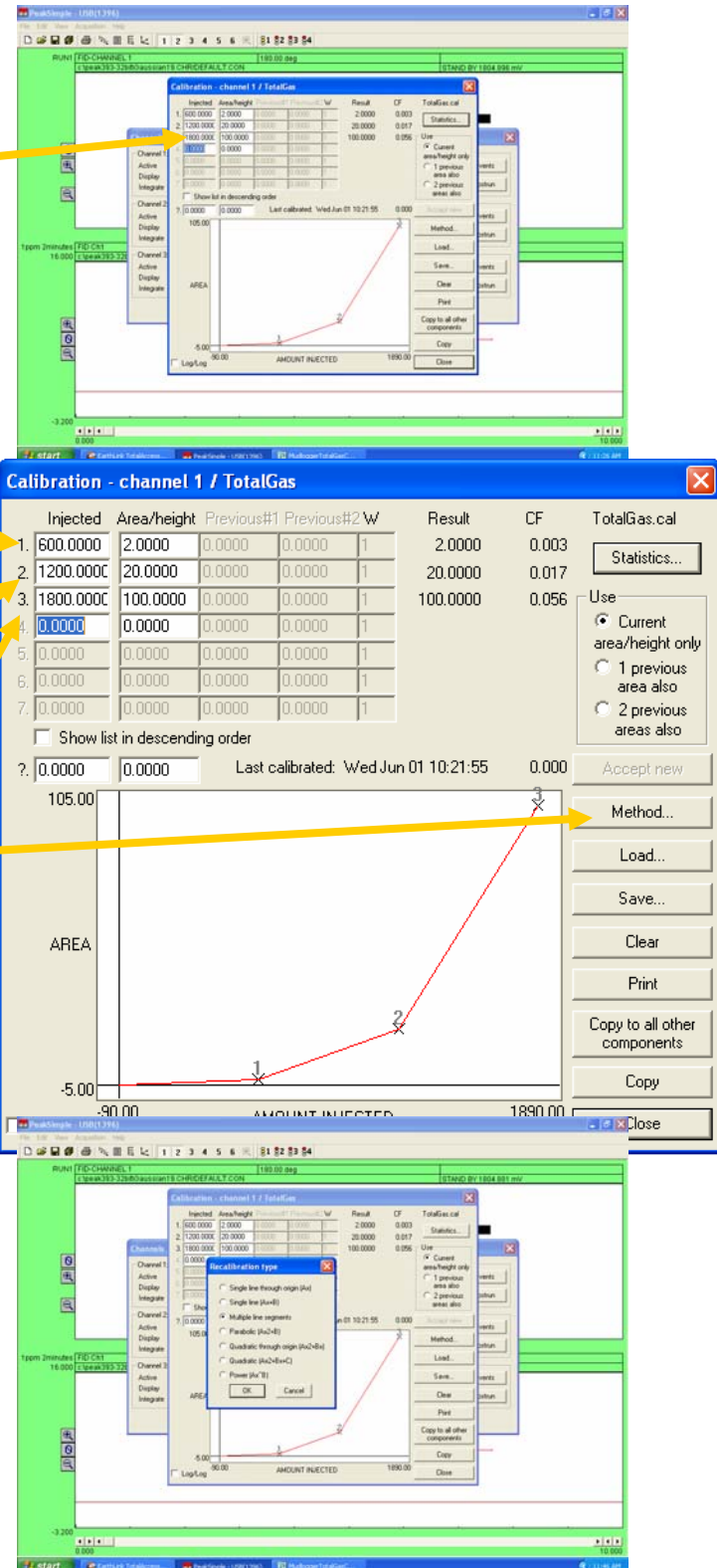
A 20% methane standard resulted in a millivolt reading of 1200 millivolts

A 100% methane standard resulted in 1800 millivolts.

The three point calibration curve was modeled using the multiple line segment method.



The TotalGas now reads correctly on the screen even though the millivolt response is not linear.

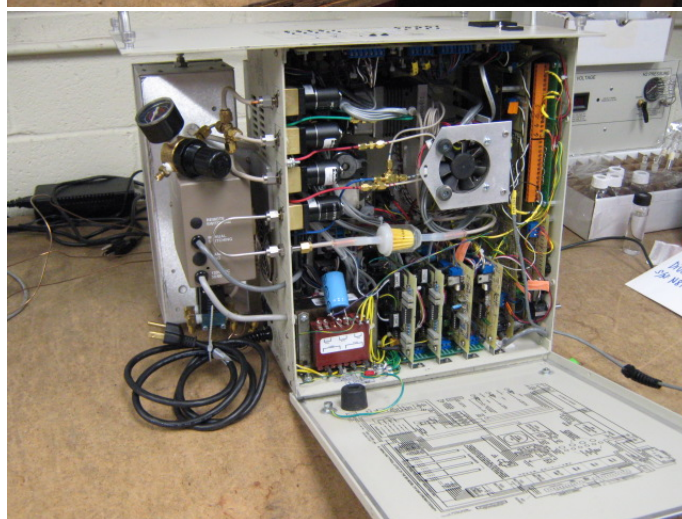


Calibrating the SRI Mudlogger GC Total Gas FID

Most Mudlogger GCs are configured on the Model 410 Rack Mount chassis shown at right, but the procedure is the same for Mudlogger GCs configured on the 8610C or 8610V chassis.

Remove the screw holding the bottom plate on the GC and tilt the GC on its back to expose the inside.

The A/D board is mounted along the right side of the GC.



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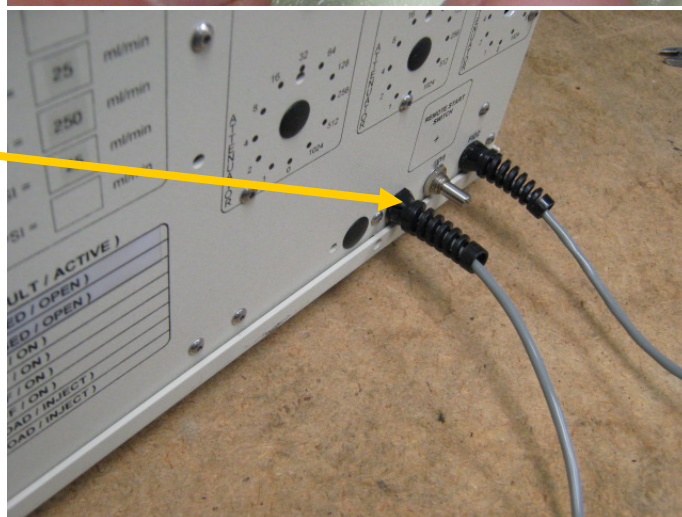
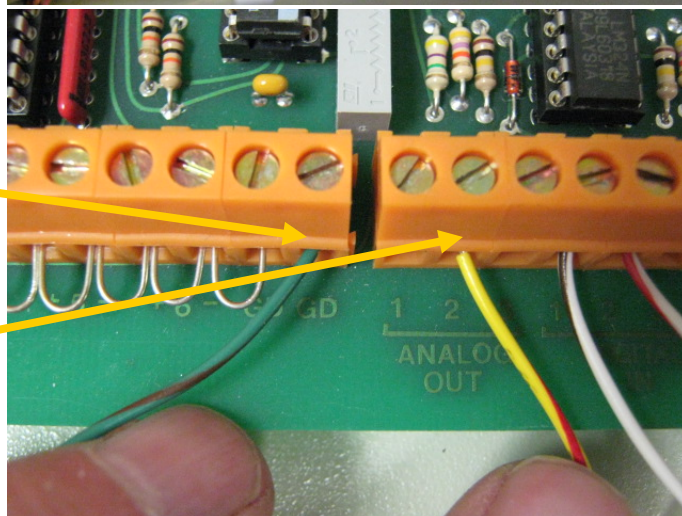
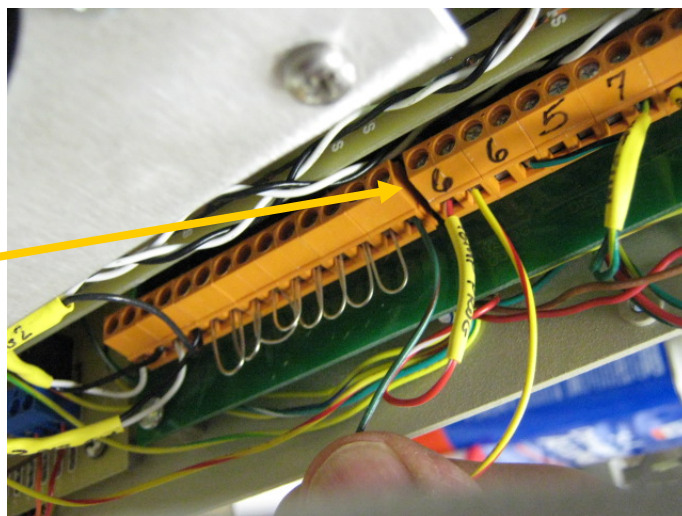
The A/D board has orange screw terminals which are labeled.

You will need two wires to connect the linearized analog millivolt signal to an external data system or strip chart recorder.

Connect one analog wire to the ground terminal labeled GD.

Connect the other analog wire to the terminal labeled Analog Out #2 (if that is the one you selected in the Details screen).

Route the analog wires out one of the available holes in the right side of the GC chassis and connect to your external device.



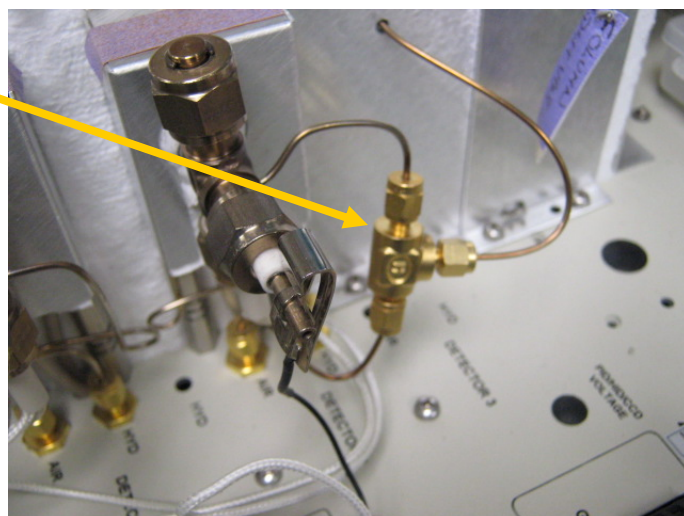
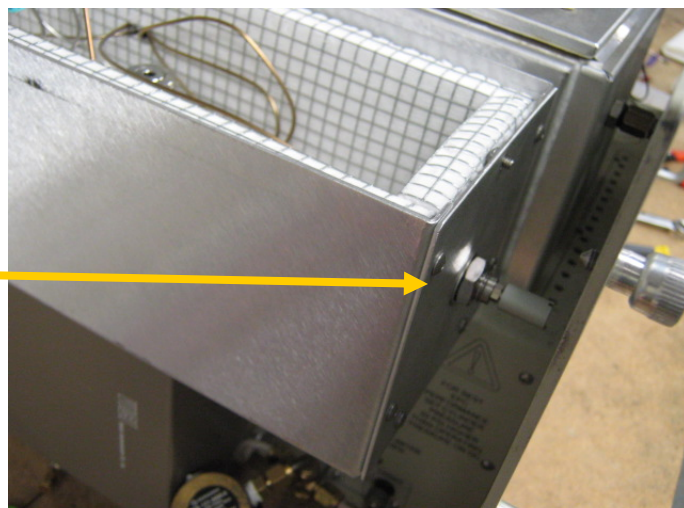
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A needle valve adjusts the flow of gas to the Total Gas FID (usually FID#2).

The needle valve is located at the front of the valve oven.

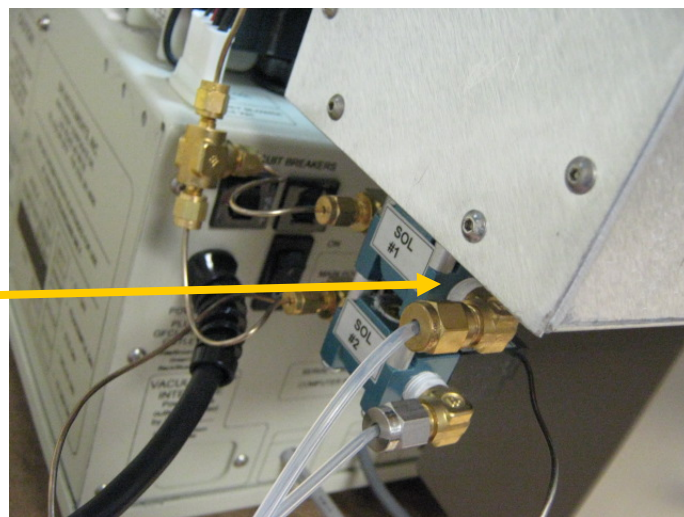
This is a 10 turn needle valve. Turning the knob clockwise reduces the flow.

The flow is directed to a "tee" fitting through which the FID combustion air flows typically at a rate of 250ml/minute.



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The Total Gas flow enters the GC through two solenoid valves located at the rear of the valve oven. Solenoid #1 is controlled by Relay A and Solenoid #2 by Relay B. Relays A and B can be actuated manually or automatically via PeakSimple software.



The Total Gas flow must be controlled by a pressure regulator. SRI suggests that the regulator be set to 10 psi, but any pressure up to 50 psi is OK as long as it is stable.



The better the quality of the pressure regulator, then more stable the pressure, the more stable the reading on the Total Gas FID.

A good quality pressure regulator, gauge and fittings is available from SRI under part# 8670-1358



Calibrating the SRI Mudlogger GC Total Gas FID

Set the FID#2 gain to medium.



Adjust the needle valve about one half turn from fully clockwise or until you get a reading of about 1000 millivolts for 100% methane at 10psi. You can adjust the needle valve for a slightly higher reading but at some point as you increase the gas flow, the readings will drop and the flame may even go out. This is because too much combustible fuel smothers the flame.

If you are working at a lower range (0-2% for example) you may wish to open the needle valve even further and perhaps switch to high gain.

You can adjust the gain to .1 to make the number equal 100. Or adjust the gain to any value to read out in your preferred "units".

The display has now been multiplied by .1 so 1000 millivolts reads as 100 on the screen.

