Setting up ion-gauge interlock

EC-MS Technical Note #9

last updated 05-01-2022

Checking and setting-up external gauge and interlock

The external gauge is connected to the QMS via the analogue output. It has an identifier resistor, so it should be automatically recognized in PVMassSpec. The only requirement is that the gauge should be powered up before the QMS. The electronics box takes care of this with a time delay relay. How to set-up and check the external pressure gauge:

- Start PVMassSpec.
- In the configuration pane of the QMS, the pressure from the external gauge should be written in the lower left corner; see Figure 1

Figure 1: Set the pressure from external gauge.

- Click on the **Configure** button. Be aware, that the HPT200 gauge we are using is recognized as PBR260. Set up the mass spec to use *external gauge* and the units to *mBar* (see Figure 2).

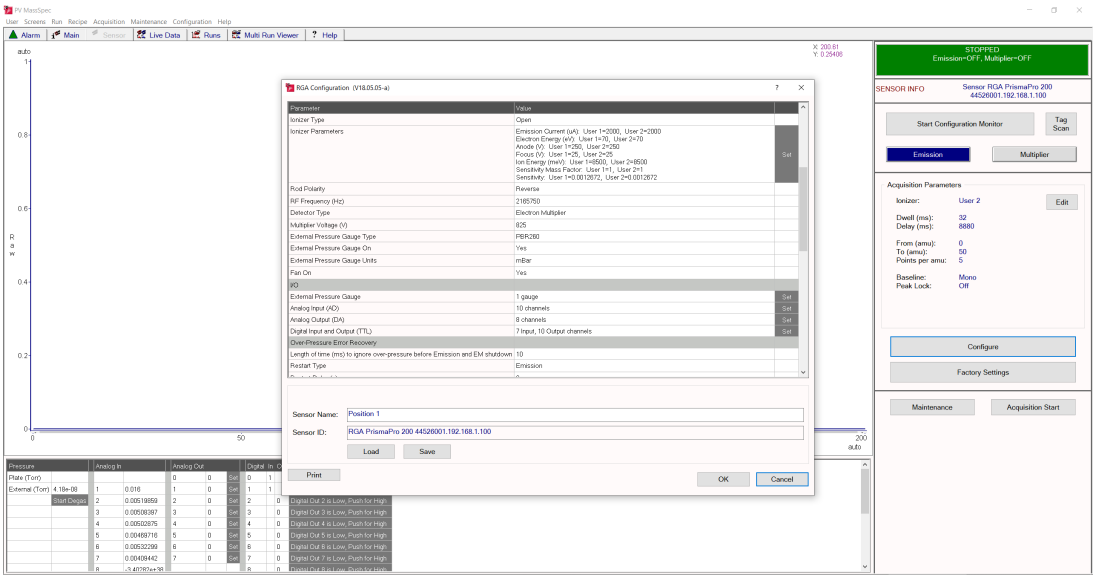

Figure 2: Configure external gauge.

- Set the external gauge as the reference pressure (see Figure 3).

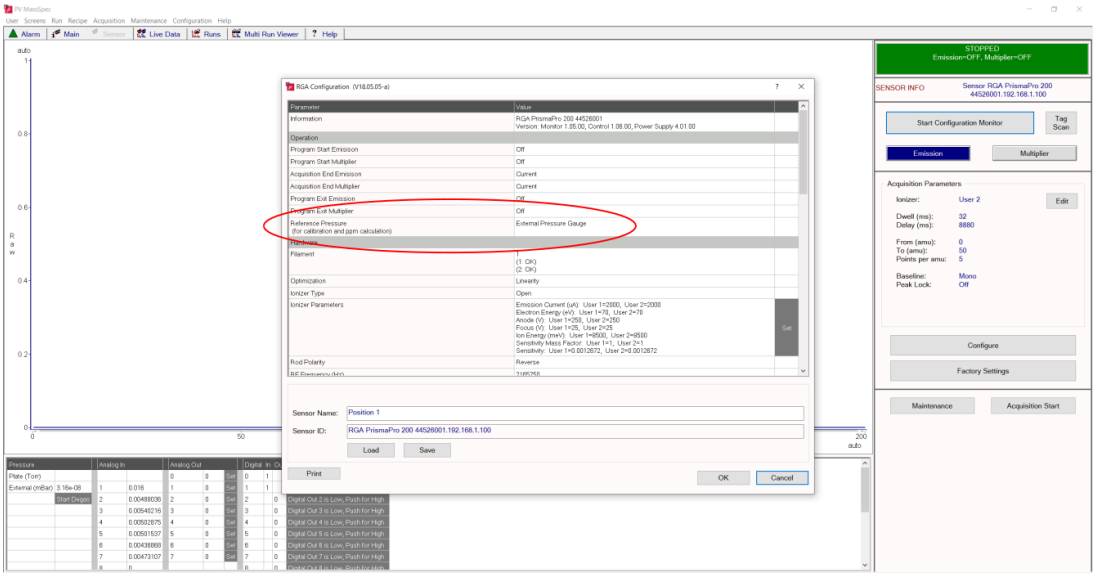

Figure 3: Set external gauge as reference pressure.

- Click on **Set** to set up the interlock (see Figure 4). A new pane opens where the interlocks and actions at certain pressures can be set (see Figure 5).
- Set **Trip High Action** to *Emission & EM Off* and the setpoint to *5E-5* (see Figure 5)

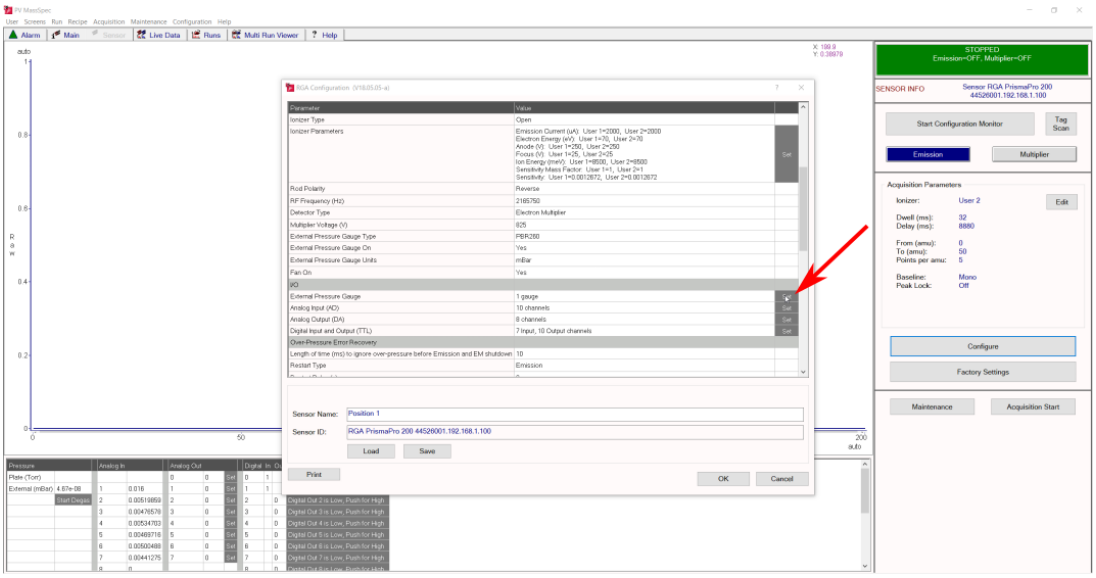

Figure 4: Enter interlock settings.

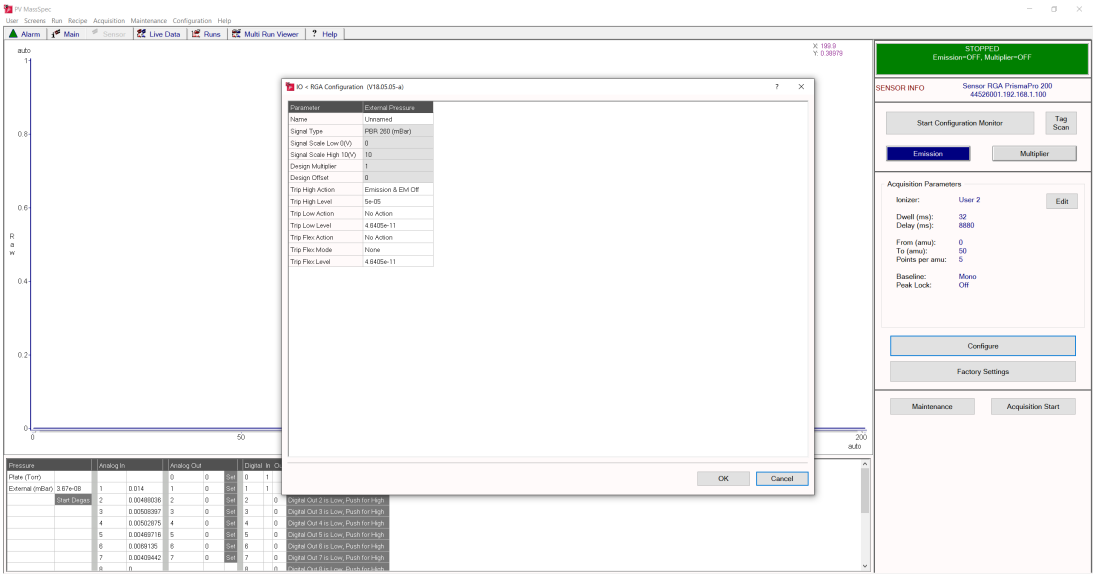

Figure 5: Interlock settings

Internal plate

The PrismaPro has a second option to protect the filament. In the ion source there is a plate measuring ion current (basically an ion-gauge). This has a set limit of 500 nA, which corresponds to approximately 5E-3 mbar. This is a factory-set limit that cannot be modified. However, this "gauge" must be calibrated as a standard maintenance procedure. For this in PVMassSpec go to sensor maintenance/calibrate total pressure. This is best to do between 1E-6 and 1E-5 mbar (open to chip) and after the emission has been on for at least 10 minutes.