

# Gauge Quick Use Guide

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Quick reference for setting extractor gauge calibration factor and troubleshooting RGAs.

## Motivation

This aims to be a quick instruction guide on how to set the extractor gauge calibration factor in the IM 520 controller unit and the proper sequence for using an RGA along with troubleshooting for when there are problems with the RGA

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## Extractor Gauge Calibration Factor

1. Hit the Para button then hit the up arrow
  2. Hit Para 4x to access “\_\_.\_ C<sup>E</sup>” screen
  3. Adjust cal factor to specified value for that gauge using up/down arrows
  4. Hold Para button until it flashes, then finishes flashing (~10 seconds) to store
  5. Press Auto button to get back to measurement
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## RGA Usage and Troubleshooting

1. Connect, making sure to use “com1” instead of “soft0”
  2. Filament on
  3. Mass scan in faraday cup (FC) mode – this ensures that the Channel electron multiplier (CEM) isn’t turned on when the pressure is to high
  4. If nonsense in FC mode
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- a. Is the pressure below  $1 \times 10^{-10}$  Torr (good baked chamber, NEG pumps working)?  
The FC can't resolve this, use CEM mode
- b. Should the pressure be above  $1 \times 10^{-10}$  Torr? If so, things to try
  - i. Calibrate head (head menu, calibrate)
  - ii. Degas the head
  - iii. Try a different electronics unit
5. If the peaks are below  $1 \times 10^{-6}$  Torr, turn on the CEM
6. If nonsense in CEM mode
  - a. Try average function in Utility menu – turning on an average of 12 linear will average 12 runs and peaks will become distinct from noise
  - b. If pressure is high enough ( $10^{-10}$  Torr or more), try adjusting CEM parameters in the Head menu. The “calibrate head” option calibrates the FC readback vs. an internal calibration, then the calibrate CEM gets the CEM output to match the FC output by adjusting CEM Bias and gain. This can't be done unless the FC can read something, and you'll get errors like “can't calibrate below  $x^{-13}$  Amps.
  - c. Try a different electronics head – even with a good FC reading, the CEM bias voltage in the electronics may be bad.
  - d. There are ways to adjust the voltage/gain in the labview interface to the RGA – Marcy can help if necessary and try to diagnose and repair electronics units or replace filaments as they wear out.