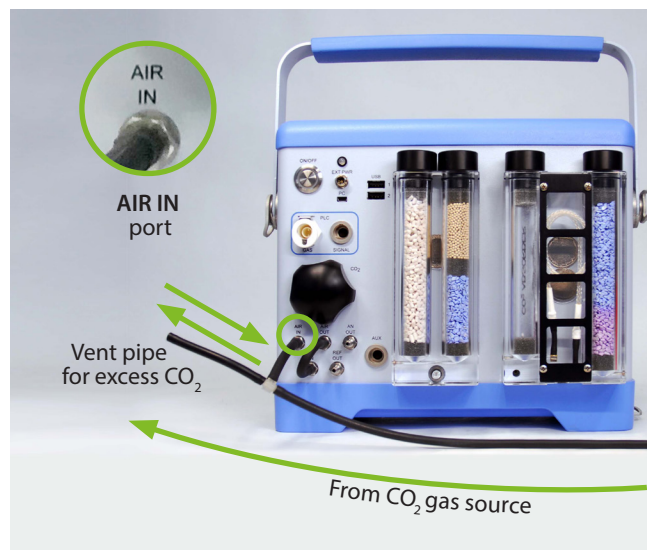


Using An External CO₂ Source with CIRAS-3

Some experiments may require the need to connect the directly to a larger external CO₂ gas tank mixture that can provide the CIRAS-3 with a specific CO₂ concentration (for example, 400 ppm with balance of air/nitrogen) as opposed to using the small CO₂ cartridges. The CIRAS-3 offers a simple solution that does not require the need to purchase additional hardware.

Important: To maintain the best accuracy, it is highly recommended to use CO₂ gas tank mixtures traceable to NIST (or similar standards) with accuracy of $\leq 1\%$.



- Using a known, accurate CO₂ mixture as described above, and a low-pressure regulator, connect to the CIRAS-3 **Air In** gas port on the CIRAS-3 console as shown above with a T-piece and vent pipe to avoid overpressure.
- Set the flow rate on the CO₂ gas mixture tank regulator to a rate of approximately 100 cc min⁻¹ greater than the **Cuvette Flow** rate set on the CIRAS-3 under **Settings - F2**.
- Make sure that the CO₂ cartridge holder is empty and is threaded in place.
- Remove the Soda Lime desiccant from the CO₂/H₂O control absorber column located next to the H₂O equilibrator on the back of the CIRAS-3 console and put the assembly back in place.
- Set the CO₂ Reference to **"Exact Reference Air"** and **"0"** ($\mu\text{mol mol}^{-1}$) on the CIRAS-3 under **Settings - F2**.

Check the vent pipe to ensure that you have excess flow out of it (a flow meter is handy to have here). Also make sure that the link pipe is in place connecting the **REF IN** and **AIR OUT**.



- If H₂O Reference control is desired, leave the Drierite desiccant in place in the other control absorber column next to the H₂O equilibrator. Set the H₂O Reference to **"Fixed % of Ambient"**. This will allow control of H₂O from 0-100% of ambient under **Settings - F2**. If H₂O Reference control is not required, the user can either remove the Drierite desiccant in the control absorber column, put the empty assembly back in place, and set the H₂O reference to **"Ambient"** or simply set the H₂O reference to **"Fixed % of Reference"** and concentration to **"100"** (%).



If you would like to learn more about this application or speak with one of our experienced technical staff, please feel free to get in direct contact with us via any of the contact information listed below:

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