

Using the OxyMaster Trace Oxygen & Moisture Analyzer

The Model OxyMaster analyzer is a compact, cost effective precision instrument designed to continuously measure the oxygen &/or moisture contents in gases. It can be configured to measure oxygen only, or it can be configured to also measure trace moisture content of gas samples. Both sensor technologies are based on direct measurement principles. Both sensors are individually housed within remote sensor housings configured for a flow through of extracted gas sample. The Remote sensor housings are connected to the OxyMaster unit via 10' (3.05m) harnesses.

The oxygen sensor used in the Model Oxymaster 16T is a Micro-Fuel Cell designed to directly measure the partial pressure of oxygen (O₂) in gas samples. It is a sealed plastic disposable electrochemical transducer. The active components of the Micro-Fuel Cell are a cathode, an anode, and aqueous KOH electrolyte. The Cell converts the energy from a chemical reaction into an electrical current in an external electrical circuit. Its action is similar to that of a battery.

The Trace Moisture configuration utilizes an electro-chemical (P₂O₅) sensor in combination with a proprietary semi-permeable diffusion membrane. Unlike other P₂O₅ Sensors, the Edgetech Instruments' special diffusion membrane is very unique in that it enhances the performance of the sensor such that **measurement is independent of sample flow!**

The P₂O₅ sensor principal of operation applies the Faraday's Law of Electrolysis. As a **fundamental measurement** of the moisture present, the Edgetech Instruments moisture sensor is ideally suited to applications requiring precise, dependable measurement of trace water vapor. The P₂O₅ sensor is typically used in relatively clean, dry, inert gas applications. Some applications may require particulate filtering or pressure regulation.

The OxyMaster System offers many standard features including:

- Oxygen measurement and/ or moisture measurement
- Multiple oxygen ranges including trace to percent
- Remote flow through sensors
- User Programmable Ranges
- Stainless Steel Flow Through Sensor Modules
- Configurable, isolated 4-20 mA analog output
- Configurable relay alarms. 1 for system alarm, 1 for moisture, 1 for oxygen
- Data Logging capability, programmable
- Multi-Line LCD graphic display & Multi-function keypad
- RS-232 Serial Interface
- Universal VAC power, 24VDC optional



Trace Moisture Trace oxygen

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Environmental Configuration Options

- Wall Mount Enclosure: Plastic

Sensor Ranges: Oxygen

- 0-10,000 PPM (1% O₂)
- 0-25% GP
- 0-100% HP

Sensor Ranges: Moisture

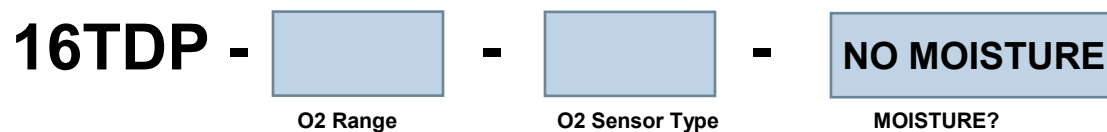
- 0-1,000 PPM Moisture

Special Sensor Features

- Moisture Sensor (P2O₅) may be configured for diffusion Sampling
- Oxygen Sensor options include standard general purpose and special for CO₂/ Acid Gas

TO ORDER:

1. Select Analyzer Range Setting for Oxygen
2. Select type oxygen sensor: Standard or Special for CO₂/ Acid background gas
3. Indicate if you do not want the moisture measurement
4. List as separate line items additional choices such as Accessories, Spare Parts, special configurations, and Extended Warranty.



For Example: **16TDP-4-MFC/PPM-NO MOISTURE** would be OxyMaster configured for trace oxygen with a PPM sensor for CO₂ background and no installed moisture sensor

First Step – Choose Analyzer Range Setting for O₂:

- 1: 0-10 PPM
- 2: 0-100 PPM
- 3: 0-1000 PPM
- 4: 0-10,000 PPM
- 5: 0-1%
- 6: 0-25%
- 7: 0-100%

Step Two – Choose O₂ Sensor Type:

- PPM: 0-10,000 PPM
- GP: 0-25%
- HP: 0-100%

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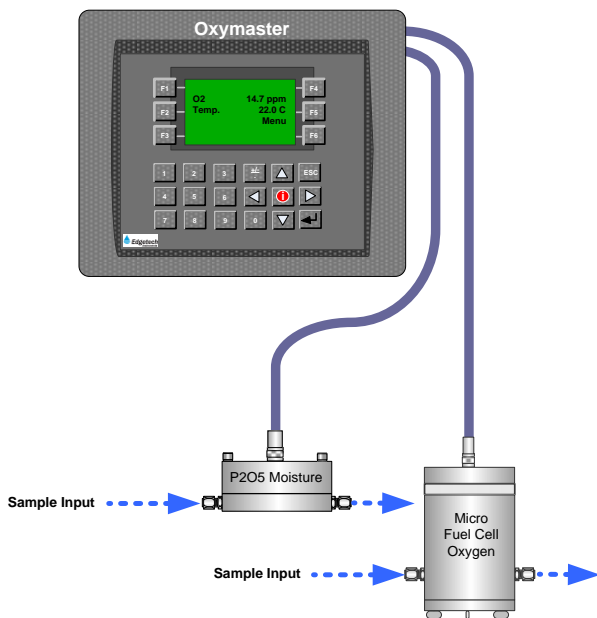
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Step Three – Do you want to measure moisture?

Accessories and Spare Parts:

- SSFIL SS Filter with Sintered Element
- SSPREG SS Pressure regulator for positive pressure systems
- SSFM SS Sample Flowmeter w/ Viton Seals
- SS2W SS 2 way isolation valve
- SS3W SS 3 Way selector valve
- MSV Molecular Sieve for Solder Reflow
- MSE Spare Molecular Sieve Elements
- SMU Sample Pump Unit
- MFC/CO2 New Micro Fuel Cell (trace oxygen sensor) for CO2 applications
- MFC/PPM New Micro Fuel Cell (trace oxygen sensor) standard

Standard OxyMaster **(Trace Oxygen and Moisture)** **16TDP-4-MFC/PPM**



Dual Measurement System; Oxygen and Moisture

P₂O₅ **Moisture Sensor** features a unique Polymer Diffusion Barrier that protects sensor and results in

Chemical Resistant Micro-Fuel Cell Oxygen Sensor available for Trace or Percent Range measurement.

- Glove Box Applications
- Solder Reflow
- Semicon
- Pharmaceutical/ Chemical Reactors/ Centrifuges
- High Purity Welding
- Laboratory Use
- Heat Treat Chambers
- Chemical Storage (prevent polymerization of sensitive monomers)
- Lithium Battery Manufacture
- Semicon Process
- DUV Lithography
- Diffusion Furnace
- Chemical Storage
- Air Separation
- Engine Test Cell Monitoring

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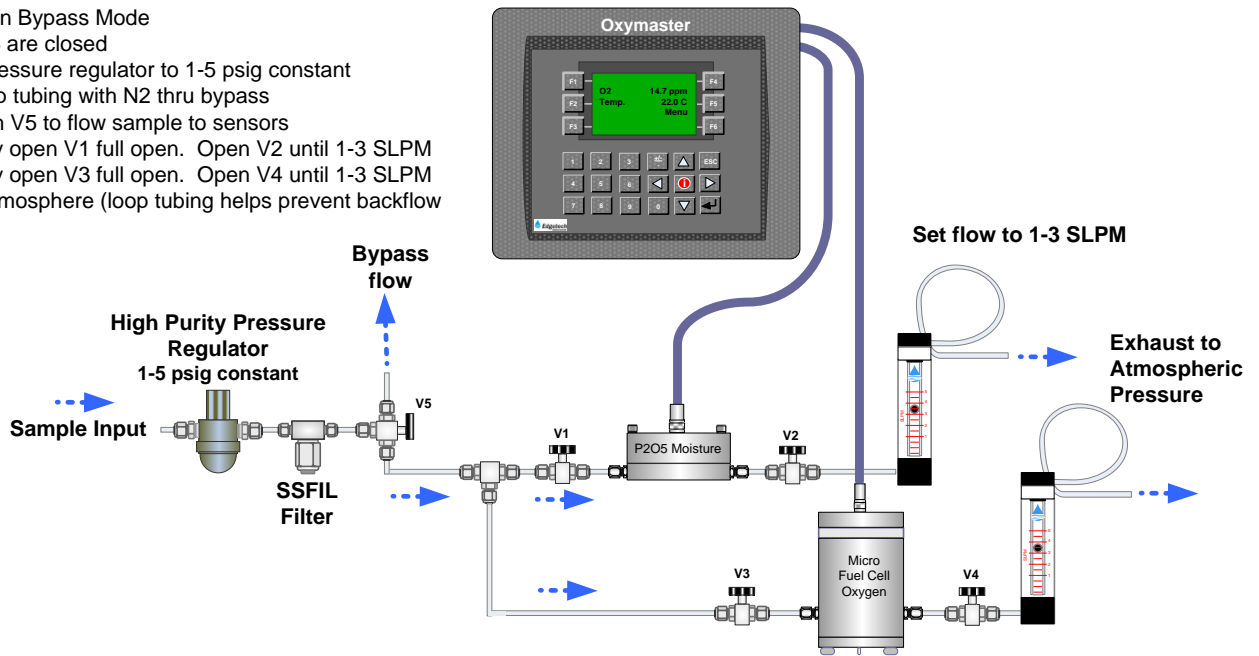
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OxyMaster for High Positive Pressure Sample

(Trace Oxygen and Moisture)
Sampling Sold Separately

Positive Pressure Sampling:

1. Use clean 1/4" SS tubing.
2. V1-V4 are high purity SS needle valves.
3. V1 -V4 are normally closed to prevent exposure to room air.
4. To start up:
 - a. V5 is in Bypass Mode
 - b. V1-V4 are closed
 - c. Set pressure regulator to 1-5 psig constant
 - d. Sweep tubing with N2 thru bypass
 - e. Switch V5 to flow sample to sensors
 - f. Slowly open V1 full open. Open V2 until 1-3 SLPM
 - g. Slowly open V3 full open. Open V4 until 1-3 SLPM
5. Vent to atmosphere (loop tubing helps prevent backflow)



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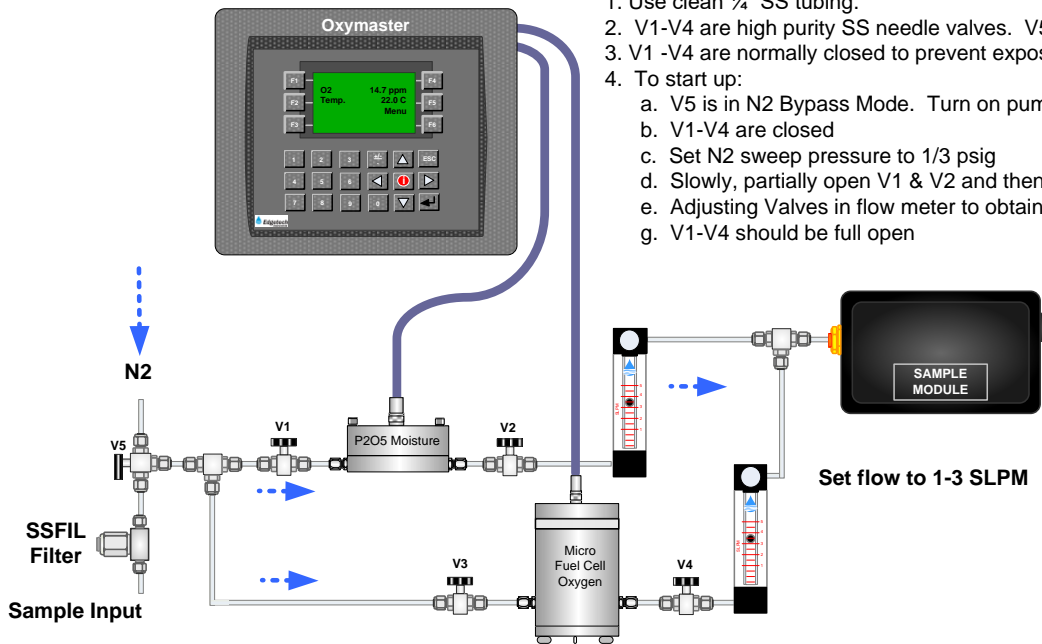
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OxyMaster for Atmospheric or Mild Vacuum Sample (Trace Oxygen and Moisture) Sampling Sold Separately

Extract Sample gas using pump:

1. Use clean 1/4" SS tubing.
2. V1-V4 are high purity SS needle valves. V5 is high purity 3 way.
3. V1 -V4 are normally closed to prevent exposure to room air.
4. To start up:
 - a. V5 is in N2 Bypass Mode. Turn on pump.
 - b. V1-V4 are closed
 - c. Set N2 sweep pressure to 1/3 psig
 - d. Slowly, partially open V1 & V2 and then V3 & V4.
 - e. Adjusting Valves in flow meter to obtain 1-3 SLPM
 - g. V1-V4 should be full open



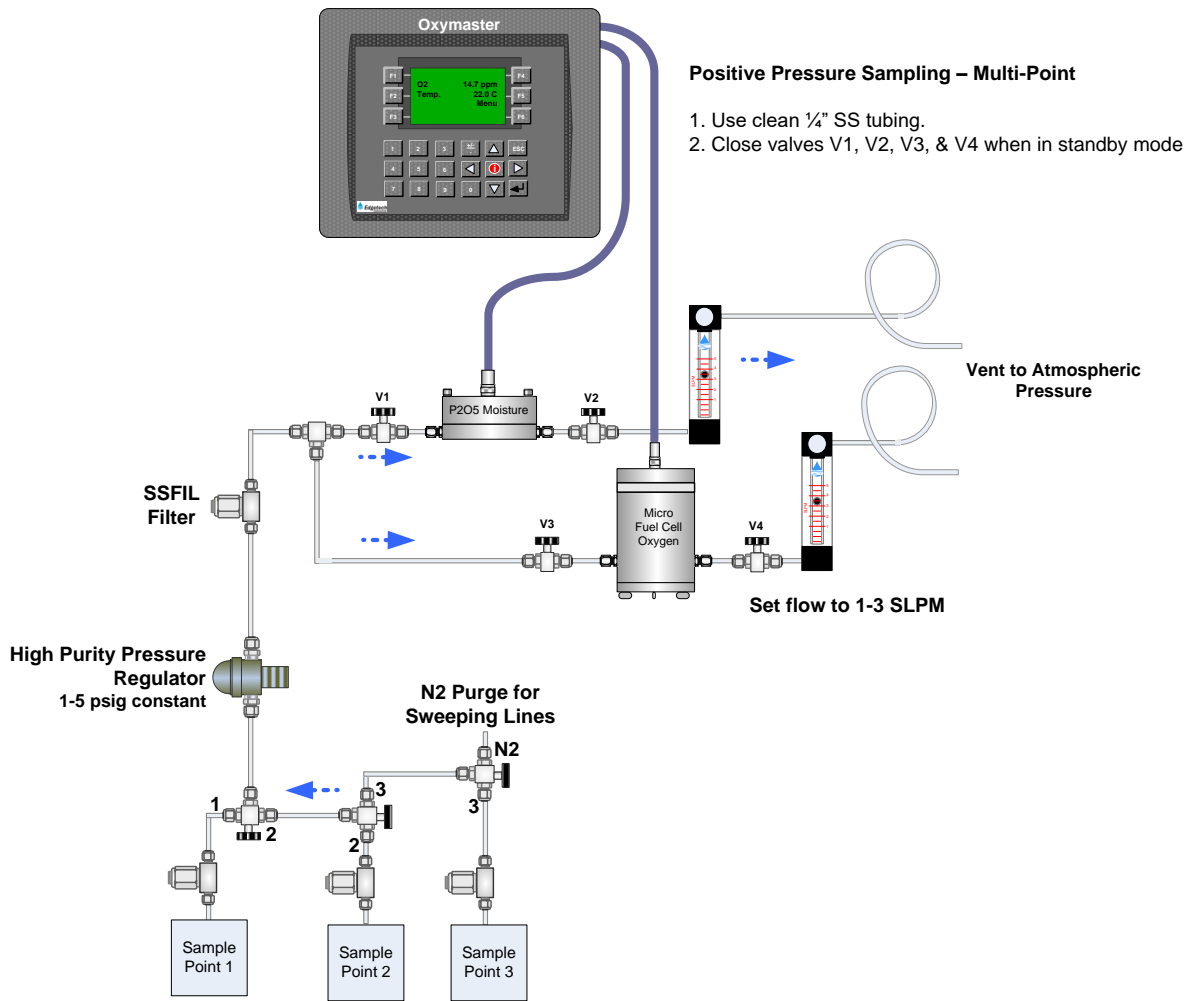
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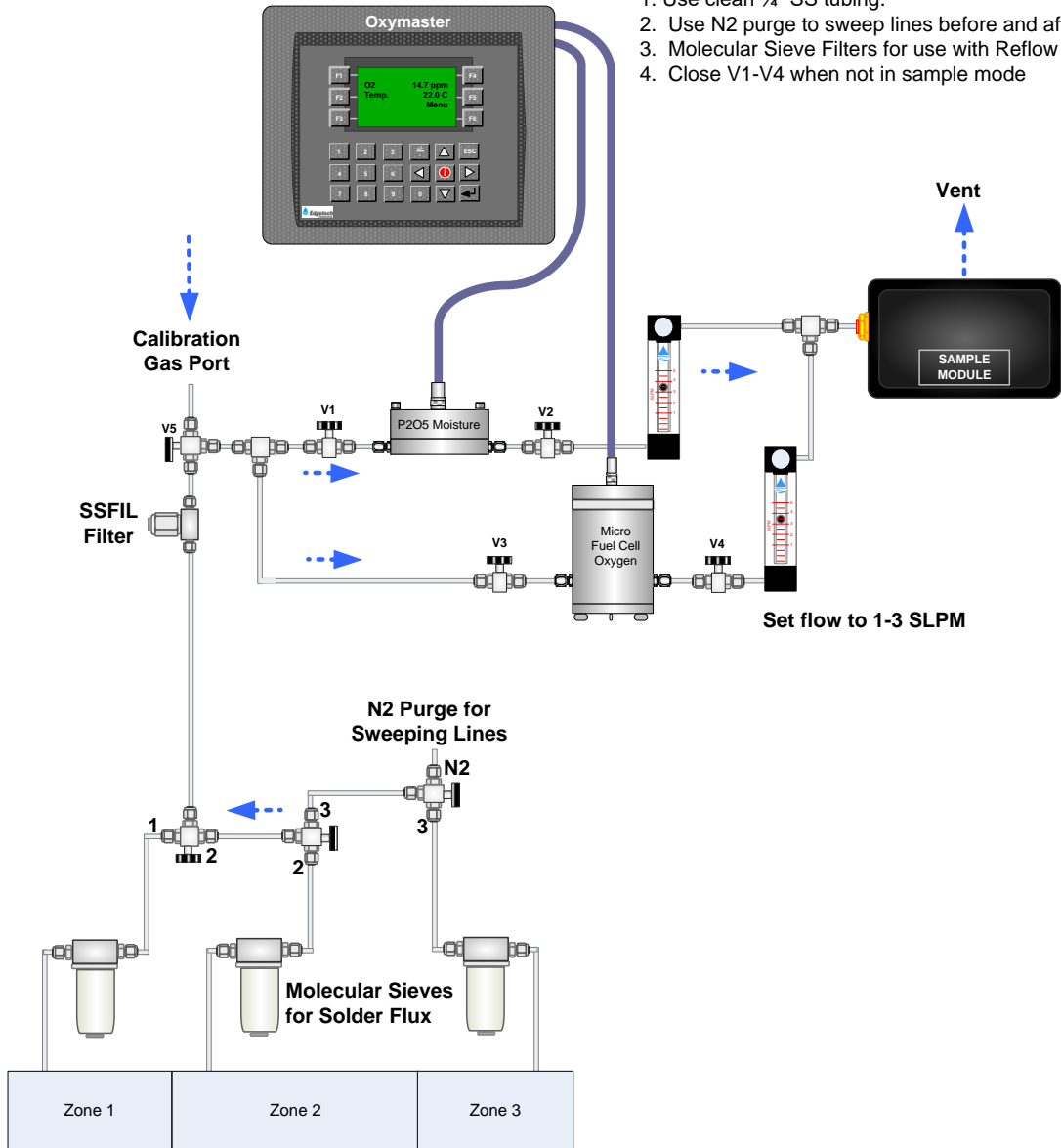
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OxyMaster for Multi-Point Positive Pressure Sample (Trace Oxygen and Moisture) Sampling Sold Separately



OxyMaster for Solder Reflow Oven (Trace Oxygen and Moisture) Sampling Sold Separately

1. Use clean 1/4" SS tubing.
2. Use N2 purge to sweep lines before and after sampling
3. Molecular Sieve Filters for use with Reflow Fluxes
4. Close V1-V4 when not in sample mode



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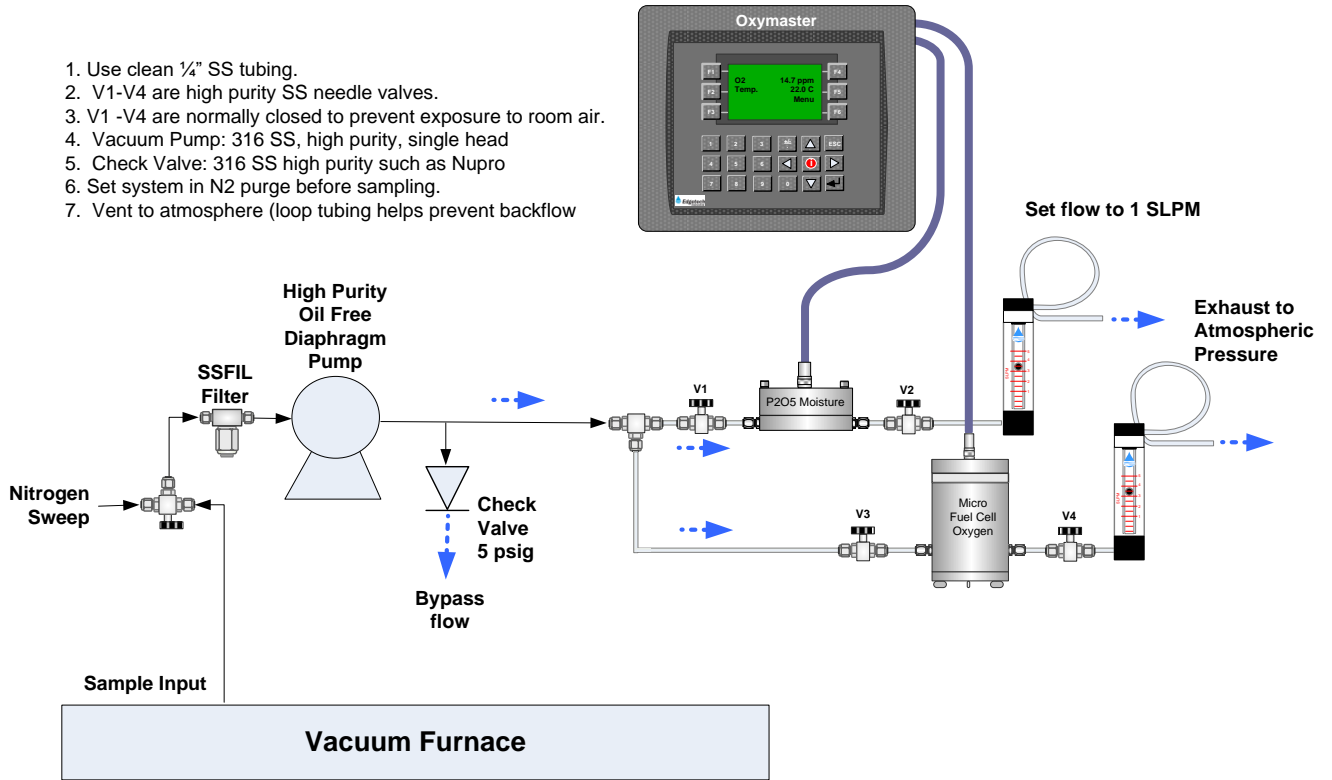
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OxyMaster for Vacuum Furnace

(Trace Oxygen and Moisture)
Sampling Sold Separately

1. Use clean 1/4" SS tubing.
2. V1-V4 are high purity SS needle valves.
3. V1 -V4 are normally closed to prevent exposure to room air.
4. Vacuum Pump: 316 SS, high purity, single head
5. Check Valve: 316 SS high purity such as Nupro
6. Set system in N2 purge before sampling.
7. Vent to atmosphere (loop tubing helps prevent backflow)



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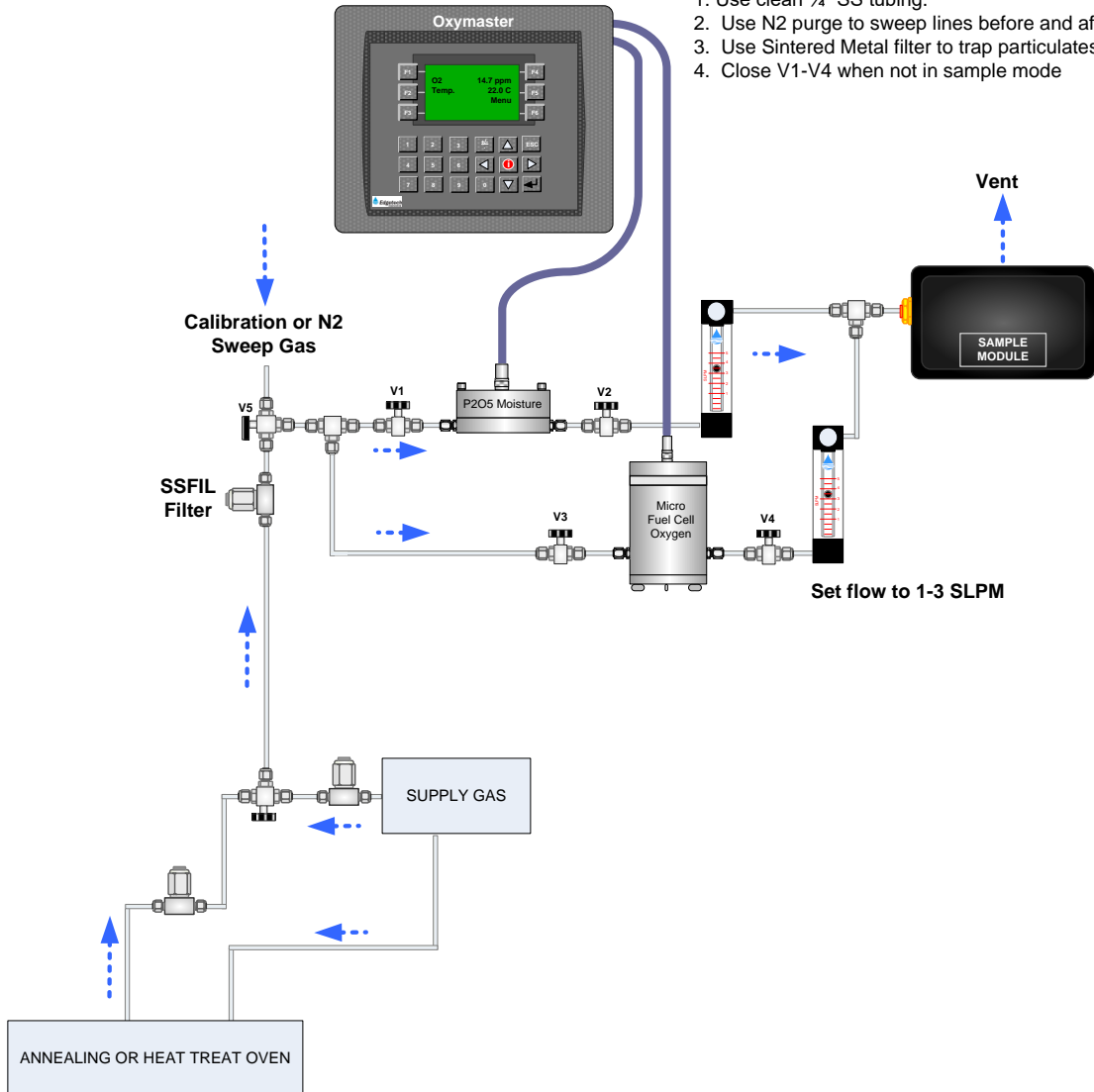
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OxyMaster for Annealing or Heat Treat Furnace (Trace Oxygen and Moisture)

Sampling Sold Separately

Annealing or Heat Treat Furnace Application:

1. Use clean 1/4" SS tubing.
2. Use N2 purge to sweep lines before and after sampling
3. Use Sintered Metal filter to trap particulates.
4. Close V1-V4 when not in sample mode



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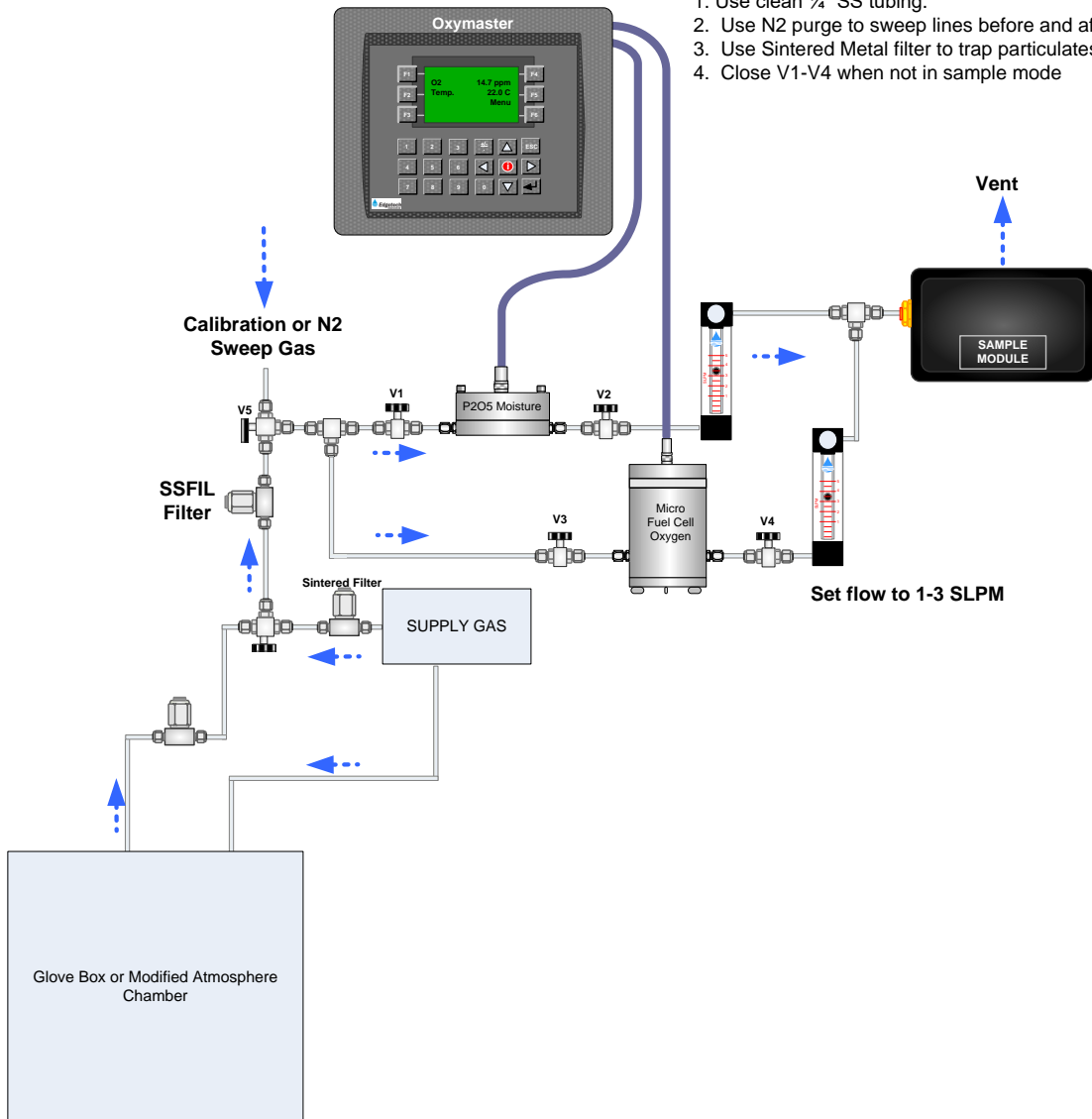
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OxyMaster for Glove Box or Modified Atmosphere Chamber (Trace Oxygen and Moisture)

Sampling Sold Separately

Glove Box or Modified Atmosphere Chamber:

1. Use clean 1/4" SS tubing.
2. Use N2 purge to sweep lines before and after sampling
3. Use Sintered Metal filter to trap particulates.
4. Close V1-V4 when not in sample mode



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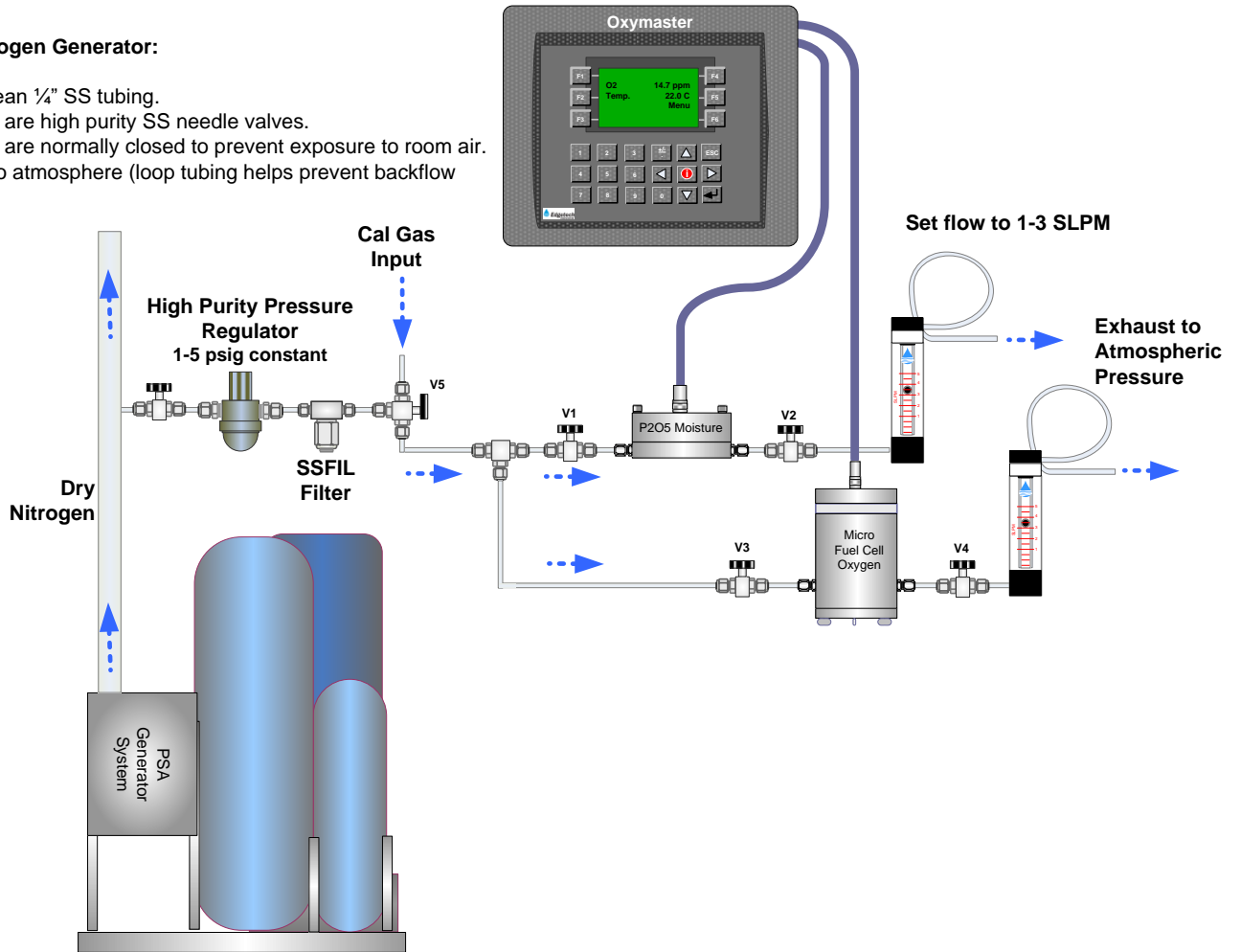
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OxyMaster for Pressure Swing Absorption System Nitrogen Generator (Trace Oxygen and Moisture) Sampling Sold Separately

PSA Nitrogen Generator:

1. Use clean 1/4" SS tubing.
2. V1-V4 are high purity SS needle valves.
3. V1 -V4 are normally closed to prevent exposure to room air.
4. Vent to atmosphere (loop tubing helps prevent backflow)



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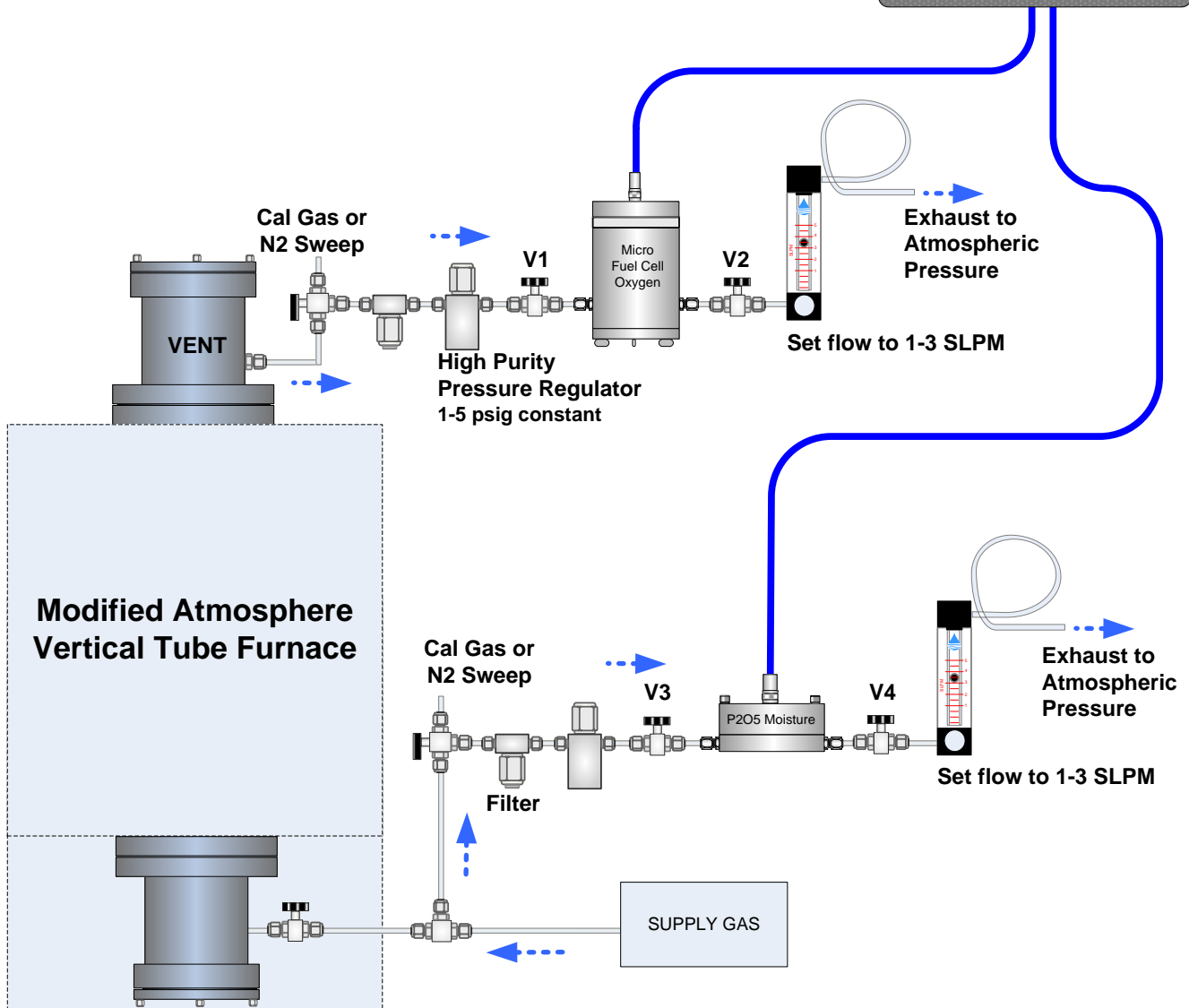
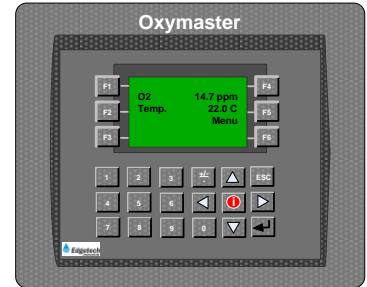
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OxyMaster for Vertical Tube Modified Atmosphere Furnace (Trace Oxygen and Moisture) Sampling Sold Separately

Vertical Tube Modified Atmosphere Furnace Application:

1. Use clean 1/4" SS tubing.
2. Use N2 purge to sweep lines before and after sampling
3. Use Sintered Metal filter to trap particulates.
4. Close V1-V4 when not in sample mode
5. This system shown for positive pressure sample gas.



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