APPLICATION NOTE
2016_0106 PPM2

Edgetech Instruments

Using the PPM2 Portable Trace Moisture Transmitter

The Model PPM2 Portable Trace Moisture analyzer is a compact, cost effective, analyzer specifically designed to continuously measure low levels of moisture in a sampled gas. It consists of the PPM1 trace moisture analyzer coupled with a battery pack and charging system. The sensor module is connected to the PPM1 via a 6 foot long cable with quick connector electrical fitting. This arrangement allows the sensor to be removed from the case and connected to the customer process point. Additionally, the PPM1 control module (PPM2) can be also be removed from the portable case and moved into a convenient location for viewing.

The Control Module displays the concentration in Parts Per Million (PPM) by volume or as a dew point (temperature). Its full range of measurement is 0.1 to 1250 PPMv moisture.

The PPM2 utilizes an electro-chemical (P_2O_5) sensor in combination with a proprietary semi-permeable diffusion membrane. Unlike other P2O5 Sensors, the Edgetech Instruments' special diffusion membrane allows **measurement 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 PPM1 is ideally suited to applications requiring precise, dependable measurement of trace water vapor. The PPM1 is typically used in relatively clean, dry, inert gas applications. Some applications may require particulate filtering or pressure regulation. The standard model is provided in a wall-mount configuration but may be configured as a battery powered portable instrument in the Model PPM2.

PPM2-FV **Positive Pressure Application, with Flow Valve**
Includes a Precision Metering Valve to adjust flow of positive pressure sample to sensor

or

PPM2-VP **Atmosphere/Vacuum Application, with Vacuum Pump**
Includes a vacuum pump to extract a gas sample from ambient pressure systems

The PPM2 offers many standard features including:

- **Portable Battery operated** trace moisture system
- FUNDEMENTAL MEASUREMENT: Electrolysis of water
- Two selectable Analog Outputs (4-20 mA) & RS-232 Serial Interface
- Two programmable electrically isolated alarm relays
- Universal VAC Power Charger (110 or 220 VAC 50/60 Hz)
- **Rugged Portable** carrying case
- Sensor can be mounted at process take-off point

Edgetech Instruments Inc.
An ISO 9001 Certified Company
399 River Road . Hudson . MA . 01749
Main: +1 (508) 263-5900 . Fax:+1 (508) 486-9348
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Sensor/ Sampling Configuration Options

- All versions feature the remote flow through head P2O5 Sensor
- A 6 foot long signal cable connects the sensor to the control unit via Plug & play connectors
- The standard sensor assembly is configured for flow through sampling where the sample flows through the sensor via ¼ inch tube Swagelok fittings (input / Output).
- The flow through head portion of the standard sensor assembly may be removed and the remaining portion used as a diffusion sensor assembly. In this case, we recommend the optional mounting bracket to suspend the diffusion sensor for free air movement.
- The flow through head should be retained for use when calibrating.

Flexible Design enables diffusion or flow sampling

- Diffusion sensing for Glove Boxes, Glove Bags, Environmental Chambers, Sealed Chambers
- Flow-Thru sensing for gas cylinder fill, gas purity, process lines, SemiCon, & Transformer Gas purity.
- Can be used in pressurized or ambient pressure systems

Basic Specifications

Operating Pressure: 0-5 PSIG regulated pressure with Flow Membrane in place
0-200 PSIG with Flow Membrane removed

Operating Flow: Flow independent when Flow Membrane is in place
Regulate to 0.5 to 3 LPM when Flow Membrane is removed

Range: 0.1 to 1250 PPMv, may be exposed to ambient for periods not exceeding 2 minutes

Sensor: P2O5 on ceramic substrate, flow through head (1/4 inch Swagelok fittings) may be converted to diffusion head. Shipped with capped ports and purged. Spare SS ferrules supplied with kit. Sensor shipped with 6 foot (2m) signal cable.

Power: Battery Operated with 110/220 VAC charger adapter

Interface: Standard (2) analog outputs, configurable, 4-20 mA or Voltage
RS-232 Serial Bi-Directional
(2) adjustable relay alarms Form C

Display: 2 line Alpha Numeric LCD

TO ORDER:

1. Determine type of measurement: Flow Through or Diffusion or both.
2. Determine if you need the Mounting Bracket (for diffusion sensing- yes).
3. If you decide that you need flow through sampling, is the gas pressurized? If not, you may need to choose the Optional SMU sample pump for sample extraction.
4. Also decide if you need to filter the gas in a flow through application. If yes, then you may need to choose the SS filter.
5. Select PPM2-FV for Positive Pressure Applications or the PPM2-VP for Atmosphere/Vacuum Applications.
6. Order as a spare part the Mounting bracket for Diffusion Sampling if needed. The Flow Through sensor is always standard.
7. List as separate line items additional choices such as MB, SMU, Filter Kit, and Extended Warranty.

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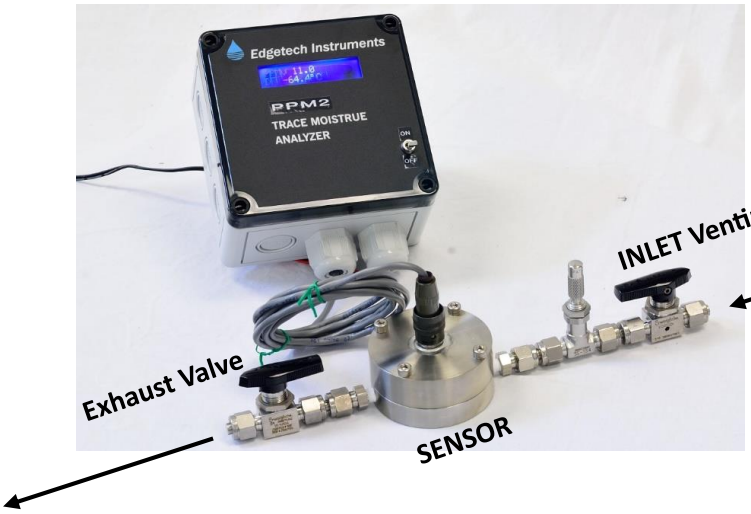
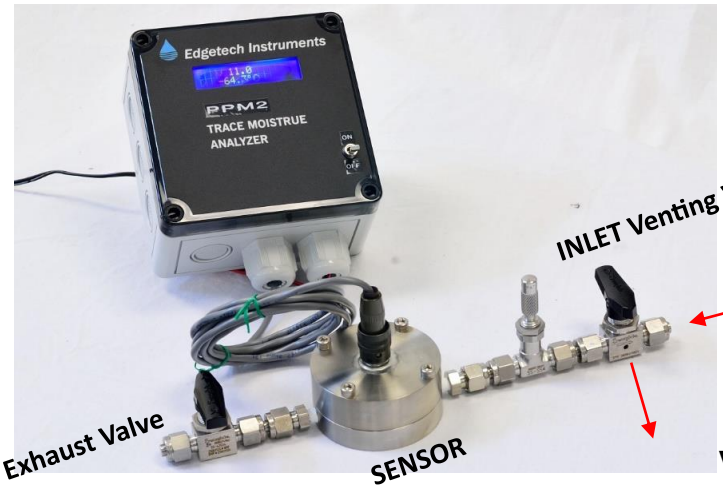
Accessories/ Options Available:

-DIFF Diffusion Mount, Flow Through is still included
-SMU Vacuum Pump Package
-MB Mounting Bracket – always order this item when you select Diffusion
-SSFIL SS Filter Kit
-SMU Sample Module Universal 115/230 VAC operation
-PIV Purge Isolation Valve Kit



OPTIONAL PURGE ISOLATION Valve Kit

Valves open during sample mode



Valves in isolation mode- sample line is purging while the sensor is isolated

For fast response in between samples, purge unit on dry gas (Air for example, that is less than 1 ppm moisture) and then adjust valve positions to isolation mode. Keep unit powered on (plug in charger). Power On mode helps keep sensor dry when not in use. Then to measure new sample, connect the sample line to the inlet venting valve (keep in isolation mode) and flow sample gas at 5+ SCFH through your sample line for 30 seconds/ 1 meter length of tubing. After the purge, switch valves to Sample Mode. Reading will stabilize within 1-2 minutes and accurate readings of near zero moisture are available within max of 1-5 minutes total elapsed time.

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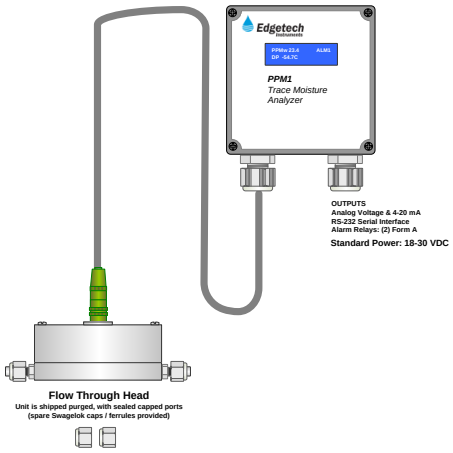
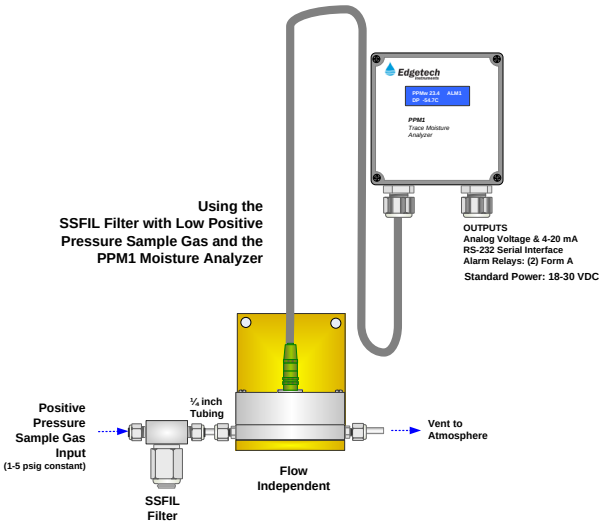
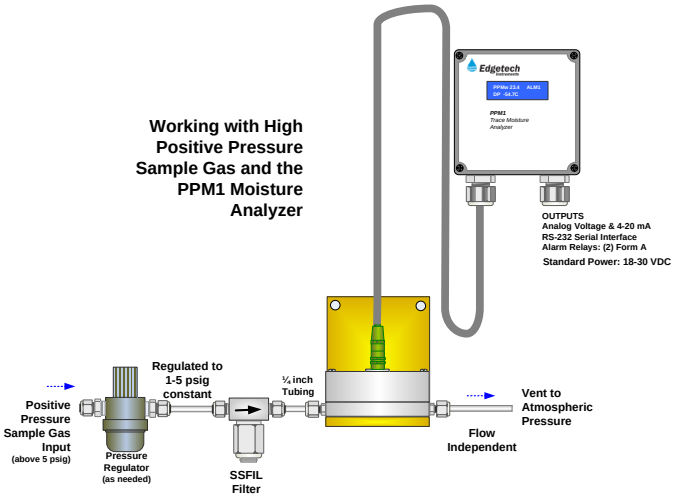
PPM2 Trace Moisture Analyzer with Flow Through Head



PPM2 Trace Moisture Analyzer With SS Filter – Low Positive Pressure

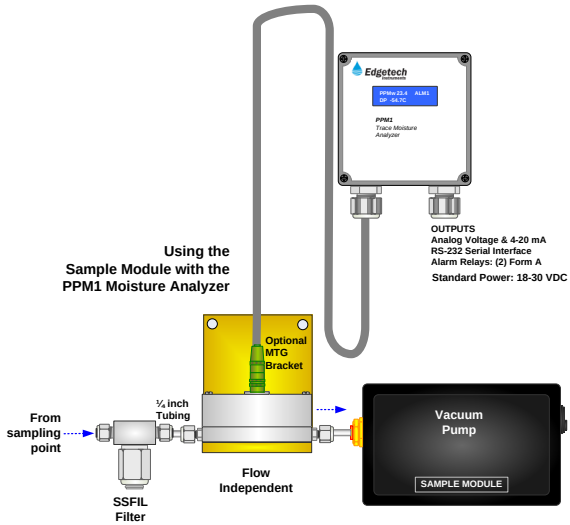


PPM2 Trace Moisture Analyzer High Positive Pressure



PPM2 Trace Moisture Analyzer W/ SMU Vacuum Pump Module

Atmospheric Pressure/ Slight Vacuum



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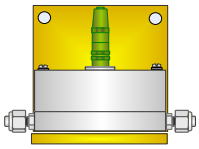
Converting the Flow-Through Head to Diffusion Sensing Mode

1



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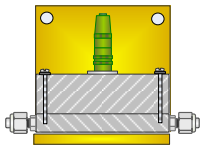
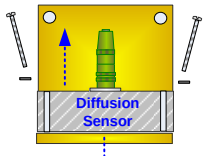


Flow Through Head
With cut-away view of assembly screws

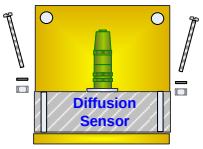
3



Remove screws & Lockwashers And separate the flow through head from the diffusion body

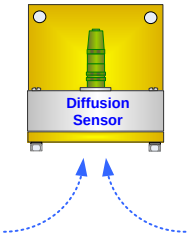
retain for calibration

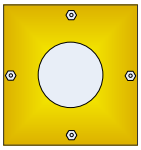
4



Install screws and mounting hardware to hold diffusion sensor in place on the mounting bracket

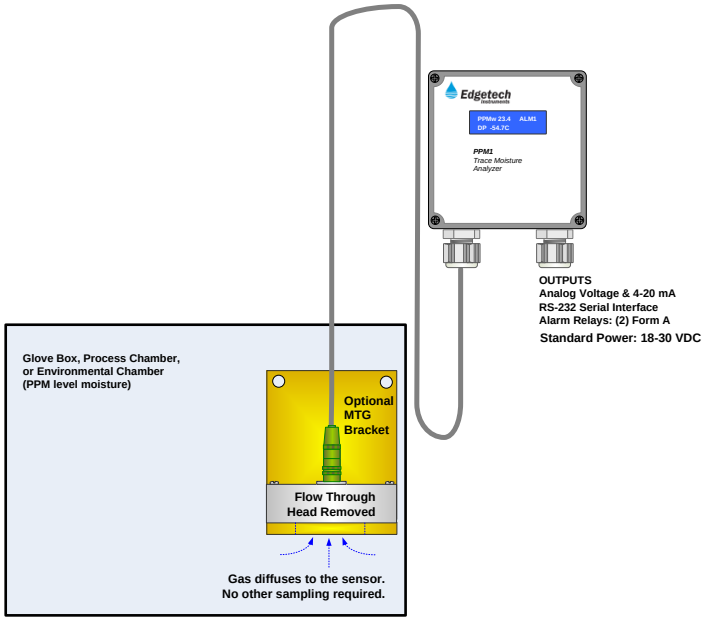
5



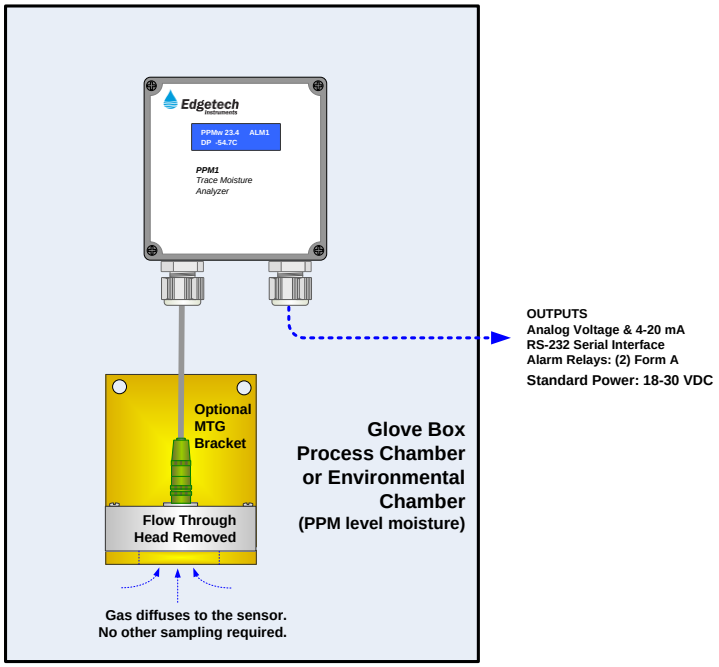


Diffusion Sensor (tilted up)

Remote Sensor Diffusion Sampling



Diffusion Sensor and PPM2 Control Unit mounted together in Trace Moisture Environment



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