Mass Flow Controllers, Mass Flow Meters and Pressure Sensors

Apex Vacuum is the provider of the most versatile Mass Flow Controllers on the market today. The Apex Mass Flow Controllers are designed for vacuum and vacuum coated but can be used in many applications. The Apex Mass Flow Controllers and Mass Flow Meters have many important features for vacuum coating but lack the full feature price tag.

Below are important FAQ's that users have asked us in the past. We have attempted to break these FAQ's into sections for quick reference.

FAQ Sections

Multiple Gas Capabilities

Q. How does the 30 gas capability work?

A. The Apex Mass Flow Controllers (MFC) and Mass Flow Meters(MFM) can be equipped with an on-board display that allows the user to change the gases, monitor the pressure, temperature and flow rate. On the MFC's the display also lets you set the flow.

To change gases, you simply hit the mode button till you see the gas list and change the gas to one of the 30 listed.

Q. How can the Apex Mass Flow Controllers and Mass Flow Meters allow this while your competition cannot?

Apex uses pressure to determine mass flow, while most others use resistive temperature. In using the Ideal Gas Laws and other equations, we can determine the volumetric flow with the reading from the pressure gauge on the Apex unit. Also knowing the temperature of the gas allows us to determine mass flow. In our equations, the only element that changes between gases is the viscosity of the measured gas. With the viscosities stored on-board, you can have a reading that is calibrated for that gas.

Q. What is the downside to measuring pressure instead of resistive temperature? Any advantages?

A. Due to the construction of the sensor, at present we cannot control or measure corrosive gases. Maximum gas pressure allowed is 125 psi.

There are advantages to using pressure instead of resistive temperature. Since no heat up is required there is ho 20 minute warm-up needed. Our speed is a great advantage to many users. Our response is 10 milliseconds, while time to control is 100 milliseconds. Most of our competitors are on the order of 2-3 seconds to control.

Our Mass Flow Meter can be powered by a 9V battery for portable use. Typically one battery will last for 6-7 hours of operation.

Q. Can Apex do other gases than the 30 on-board? What about mixtures of gases?

For a small one time charge, other gases and mixtures of gases can be added to the display list.

The Cost

Q. How do you compare in cost?

A. The cost of our Mass Flow Controllers and Mass Flow Meters are very competitively priced. When you consider the cost of expensive power supplies and displays others need that we do not require, there are great savings to go with Apex.

Q. How do you power the units then?

A. For end users, there is a wall outlet and plug similar to what you would use on a CD Player for Power. That cost is about $25.

For integration into systems, 24V power can be fed to the unit.

Q. Can you get the Apex MFC's and MFM's without the Display?

A. Yes, all are available with or without display's. We do recommend that users try the display first and then if they do not use it, then it can be eliminated. Many just like to know they can get a direct reading.

Display and Control Options

Q. What are my options for controlling the Apex MFC's and MFM's?

A. The Apex Mass Flow Controllers and Meters can be controlled via the 1) On-Board Display 2) Through 0-5V, 010V or 4-20mamp(your choose one) signals 3) Through Hyper-Terminal(found on most PC's) 4) FlowVision Software.

Q. How many Apex MFC's can I control and output with the FlowVision Software?

Up to 26 Apex Mass Flow Controllers or Meters can be individually controlled or monitored through one RS 232 Port. We use addressable RS-232, thus you can monitor, control and even graph the flow on any one of the up to 26 devices on your gas system.

For one MFC or MFM, you can connect direct to your computer. We offer a BB9 box for more than one device. You can power and connect up to 9 MFC's or MFM's with one BB9 box. You can then connect the BB9 box to your PC.

Q. What communication cable(and power cable) is right for my application?

This usually depends if you are integrating the MFC into a system or if you are an end user.

For end users using software, the MD8DB9 is a 9 pin mini-din that fits to the Apex MFC and a DB9 that is a typical RS-232 type connector that goes to your PC. Some end users just want to control with the display alone, thus no communication cable is needed. You just need a power cable like the PVPS or a PVPS24.

For those integrating into a system, usually the DC-61(6 ft long) or the DC-251(25 ft. long) cable is the proper choice. One end is the 9 pin mini-din to connect with the APEX MFC and the other end is blank wires to connect typically to the PLC. Power can also be supplied with a 24V power supply, thus no power cable is needed.

Q. What is the difference in the PVPS and the PVPS24?

The PVPS cable is used for Mass Flow Controllers and Meters less than 20SLPM. Above 20SLPM the PVPS is needed.

Limitations

Q. What are the limitations for using the Apex Mass Flow Controllers and Meters?

Limitations for this technology are that the pressure in the gas line needs to be 125 psi or less. Also, no corrosive gases can be run through the controller or meter.

Options

Q. What is the totalizer option for?

Should the user want to measure the total amount of gas flow through the device, the totalizer option can be specified. The tare or reset can be actuated via a signal or on the device itself.

Q. Are there any remote display options?

The Remote Digital Display(RDD) is available. This remote display is connected by cable that pass through input and output signals. This is usually used where a display is needed but the display on the device is concealed.

Q. Which units can be powered with the Battery Pack(BPACK)?

Apex Mass Flow Meters can powered with the BPACK that uses a 9V battery. Mass Flow Controllers cannot use the BPACK. Typical time on a 9V battery is 6-7 hours of operation.