

# Portable Pump Module Operator Manual



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# Preface

## Thank you!

We would like to thank you for purchasing the Portable Pump Module. We have gone to great lengths to make this device as simple, and complete, as possible. It includes a long-life pump and a set of rechargeable batteries, and circuitry to make it usable in a Class 1 Division 2 area. The internal construction allows it to draw a sample from a vacuum line and present it to an analyzer at positive pressure, while minimizing oxygen contamination from the air.

Please verify that the device was not damaged in transit. If so please contact the shipper as well as AMI.

## Caution

Read and understand this manual fully before attempting to use the instrument. In particular understand the hazards associated with using flammable gases.

## Address

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# The Portable Pump Module

## Introduction



**Figure 1 Front view**

The Pump Module contains a high-quality, low-diffusion pump, suitable electronics and a set of rechargeable batteries. The pump is suitable for withdrawing a sample from a vacuum source (of as much as 14" Hg vacuum) such as a natural gas line just prior to the intake of a compressor, and forcing it through an analyzer such as the AMI model 1000RS. The analyzer provides the sample flow control.

The pump and electronics are such as to be suitable for a Class 1 Division 2 group BCD area. It **MUST NOT** be used in a Class 1 Division 1 area.

The electronics determines the state of the batteries, and shows when they are getting close to being discharged. They are good for about four and a half hours of continuous use, and the red light will come on when there is about 15 minutes of time remaining.

Recharge the unit by plugging it into the charger supplied for at least fourteen hours. The blue charging light will come on to show the batteries are being charged.

Although the pump is very robust, it isn't good to run it "deadheaded", that is, with either the input or the output plugged up. Don't run the pump for more than a minute with either the inlet or outlet plugged! For example, don't use sealing-type quick connects on the back of the case in place of the ¼" fittings provided.



**Figure 2 Rear view**

The front panel led indicators denote the current operational state of the pump. A lit green led indicates the battery is charged and the pump is running. A lit red led indicates the battery is close to being fully discharged and the pump is running. A lit blue led indicates the battery charger is connected and the pump is charging. More than one led can be on at any given time; the table below outlines the various pump conditions and their corresponding led states.

LED	State	Condition
Green	On	- Battery fully charged or disconnected while charger connected and pump running
Red	On	
Blue	On	
Green	On	- Battery Charged, charger disconnected, pump running
Red	Off	
Blue	Off	
Green	Off	-Battery drained and charger disconnected, pump running
Red	On	
Blue	Off	
Green	Off	-Battery charger connected, pump not running
Red	Off	
Blue	On	
Green	On	-Battery charged, charger connected, pump running
Red	Off	
Blue	On	
Green	Off	- Charger disconnected, pump not running
Red	Off	
Blue	Off	

## Using the Pump Module.



***Figure 2 Connecting to the 1000RS***

The picture above shows the pump module on the left, with an AMI model 1000RS on the right. The two are connected with a short length of flexible tubing from the sample out of the pump to the sample inlet of the analyzer. The coil of tubing lying in front is used to connect the inlet of the pump to a suitable port on the sample source. Only low-permeability tubing (such as that shown, supplied by AMI) should be used. Ordinary plastic tubing will diffuse excessive amounts of oxygen into the sample and give misleadingly high oxygen readings.

We suggest that you install a suitable sample port on your source including a shut off valve, so that you can make connections to it without allowing air to leak into your line.

1. Connect the pump module “Sample out” to the analyzer “Sample inlet” using the short length of flexible tubing supplied. See the picture above.

2. Connect the pump module “Sample in” to the source (such as your gas line) using a suitable length of flexible tubing.
3. Make sure the analyzer valve is turned to “Bypass”.
4. Turn on the valve on your gas line, so the pump has something to pump from.
5. Turn on the pump.
6. If it doesn’t start, crack the inlet line (let some air leak in) until it does.
7. Adjust the flow rate with the analyzer needle valve.
8. Allow the system to purge for a while and then turn the analyzer to sample.
9. When you have taken a reading, turn the analyzer valve to bypass, and then turn off the pump.
10. Disconnect the lines.

The pump uses up the batteries quite quickly – a full charge will last about four hours. So don’t use it unless you have to. But don’t turn off the pump while it is connected to the source, or you may get some leakage of air back through the analyzer into your system, sucked through the pump. At least turn the analyzer valve to the bypass position.



## Specification:

Area classification:

designed for Class 1 Division 1 group  
BCD

Lowest vacuum pressure: 14"Hg. Typical

battery lifetime: 4Hrs. Power requirements:

115/230 VAC +/-

10%; 50/60 Hz; less than 5 W

Box dimensions: 9.5"W x 11.0"H x 6.0"D

Weight 5 lbs