

# Fixed Pump Module Operator Manual



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## Preface

Congratulations for purchasing the AMI fixed pump module. This unit is designed to be used with an AMI analyzer such as the model 2010BR or “Watchdog” to add the capability of drawing a sample from a low pressure or vacuum source.

**The unit is approved for Class 1, Div 2, Groups C,D, Temp Code T6**

Please read and understand this manual fully before attempting to use the instrument.

## Contact Information

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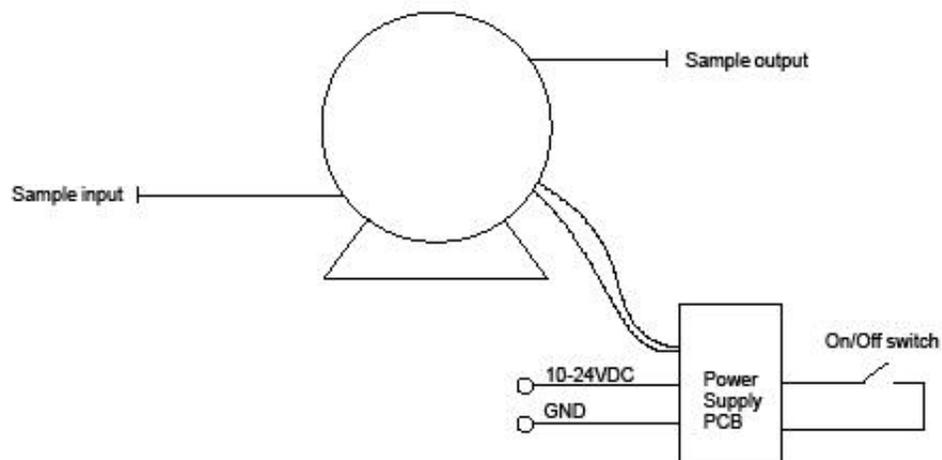
[www.amio2.com](http://www.amio2.com)

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OM-300-017 Rev B

## Introduction

The fixed pump module is an auxiliary unit that is designed to be used with a standard AMI trace or percent oxygen analyzer. The design of the fixed pump minimizes diffusion into the sample to prevent contamination by atmospheric oxygen. Less than 1ppm of oxygen can be expected to be added to the sample by the pump. The exact amount depends on sample flow rate and temperature.



**Figure 1. System Schematic**

## System Components

The fixed pump module contains three basic components.

### Flow block

The flow block is a machined block of anodized aluminum that supports the input and output ports (normally, ¼" Swagelok fittings) connected to the pump.

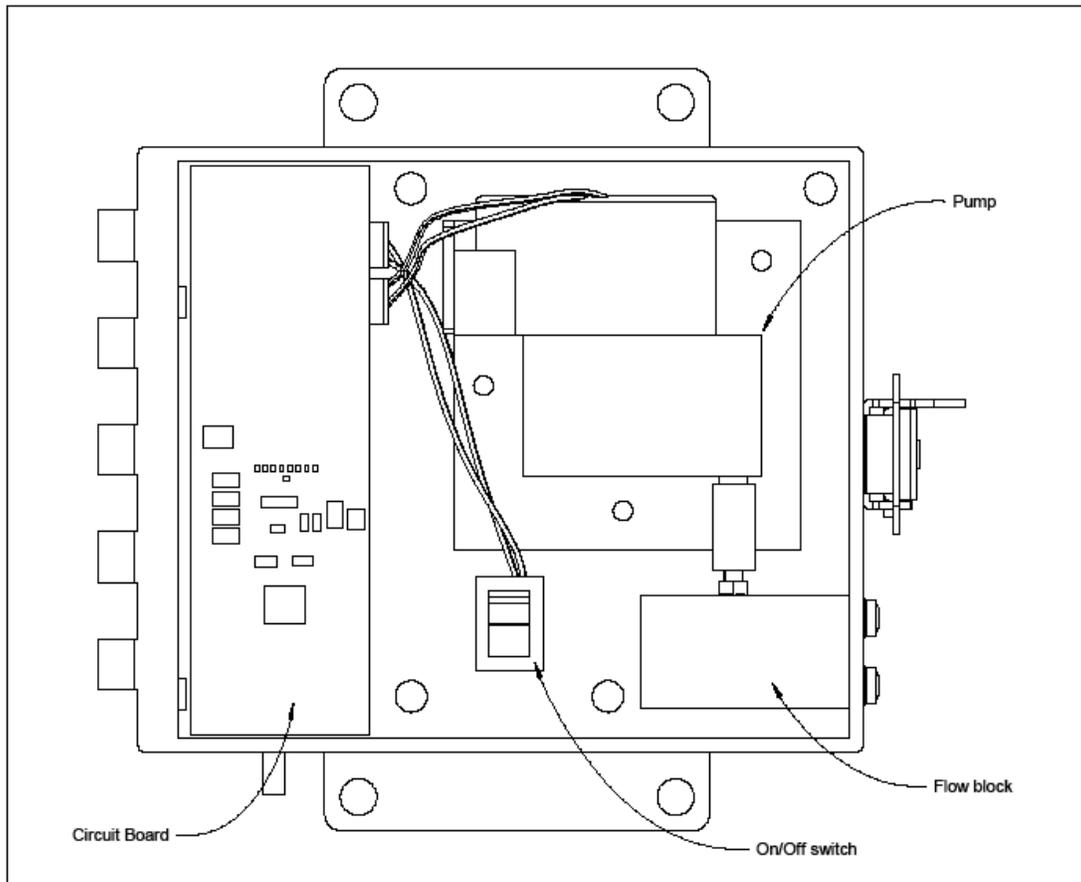
### Pump

The pump is a long life design that uses a brushless DC motor. It is close-coupled to the flow block using two very short lengths of low-permeability, thick-walled Viton tubing.

The pump is capable of producing a pressure of approximately 28 PSI and a maximum flow rate of 4 SCFH while drawing from ambient pressure. If drawing from a vacuum, the pump provides a 28 PSI differential.

### DC power supply

The power supply is designed to operate off a voltage input of 10 to 24VDC (12VDC @ 1A)



**Figure: Part Identification Diagram (X-ray view)**

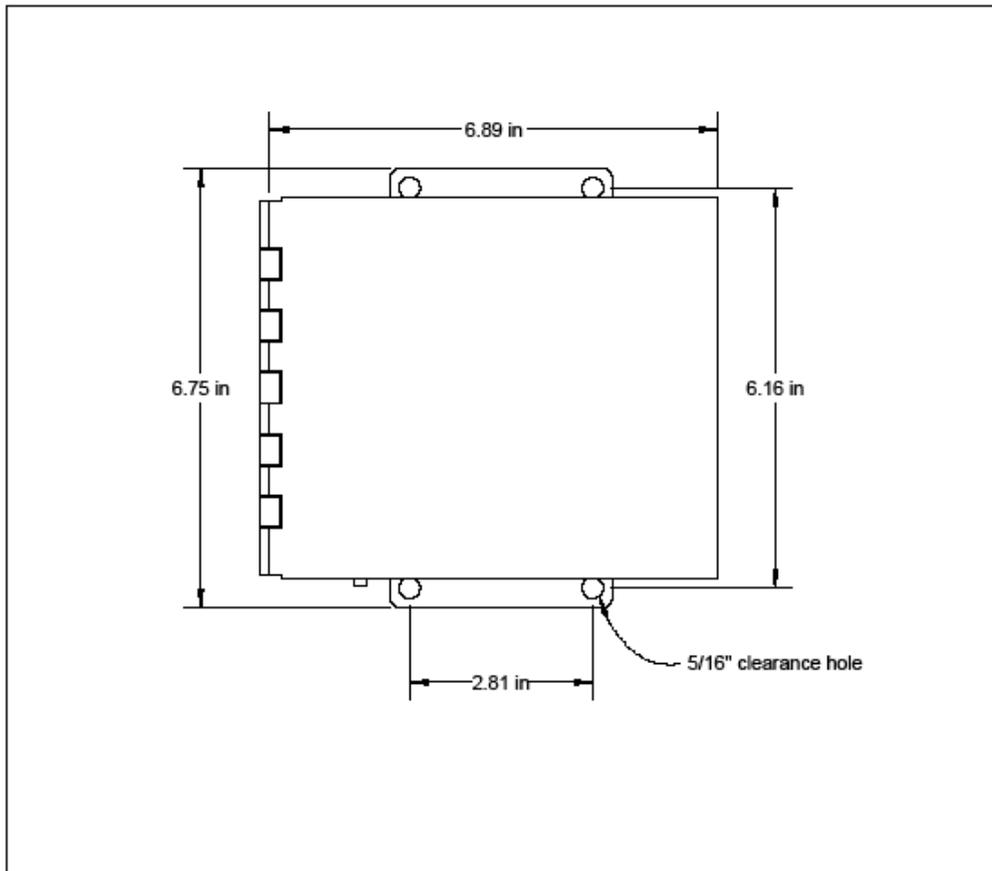
## Installation and Operation

### Receiving the Pump module

When you receive the instrument, check the package for evidence of damage and if any is found, contact the shipper.

### Installation

Shown below is the mounting dimensions for installation of the fixed pump.



**Figure: Mounting Hole Dimensions**

## Mounting Location

The unit is not intended to be mounted outdoors. The enclosure is vented for safety reasons. If it is mounted outdoors, provide some means of preventing rain from getting into the vent on the left side of the box.

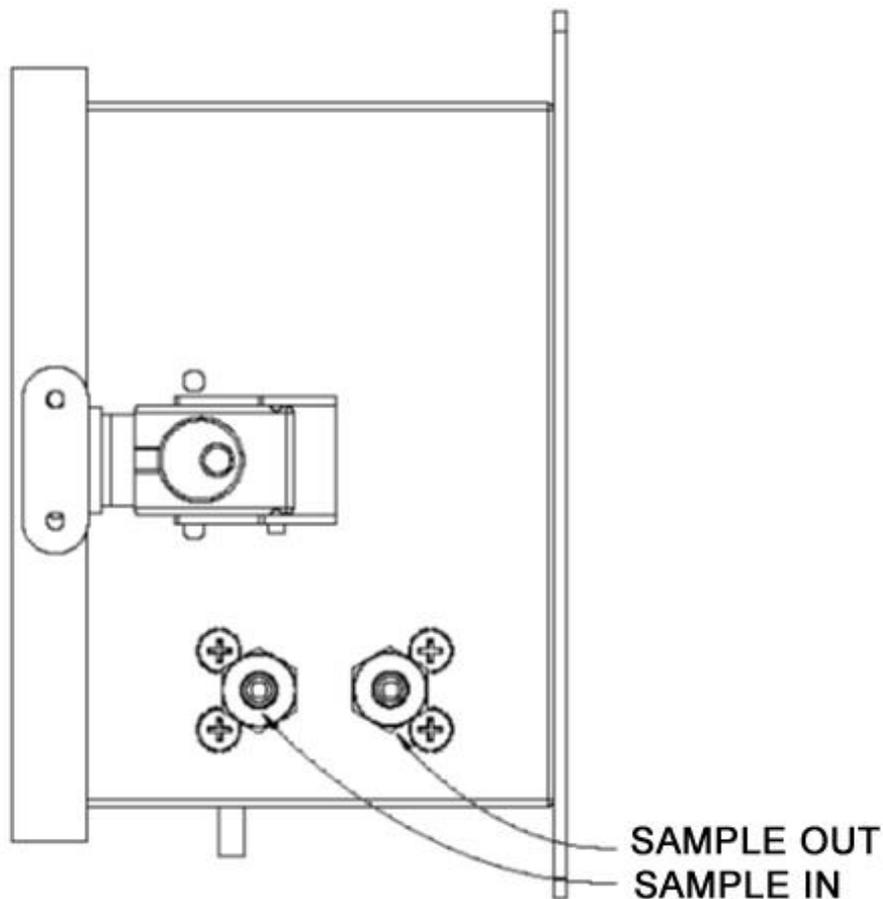
The pump is not designed for freezing temperatures.

## Connecting Sample In and Out

Run  $\frac{1}{4}$ " stainless steel line to the inlet of the module and a short length of  $\frac{1}{4}$ " line from the outlet of the module to the inlet of the analyzer. When making connections, make sure the lines are free of burrs and the tubing is smooth and clean. Push the tube all the way into the fitting, and tighten down the nut as far as you can by hand. Then tighten it with 1  $\frac{1}{8}$  turns to make a good compression seal.

Be sure to pressurize the system and leak check all connections. Please see Calibration and Sample Fitting options section for further information.

**Note:** If your installation has a potential to dead head the pump, we suggest you install a check valve between the inlet and outlet ports. This will prevent damage to the pump diaphragm. (See Next page)

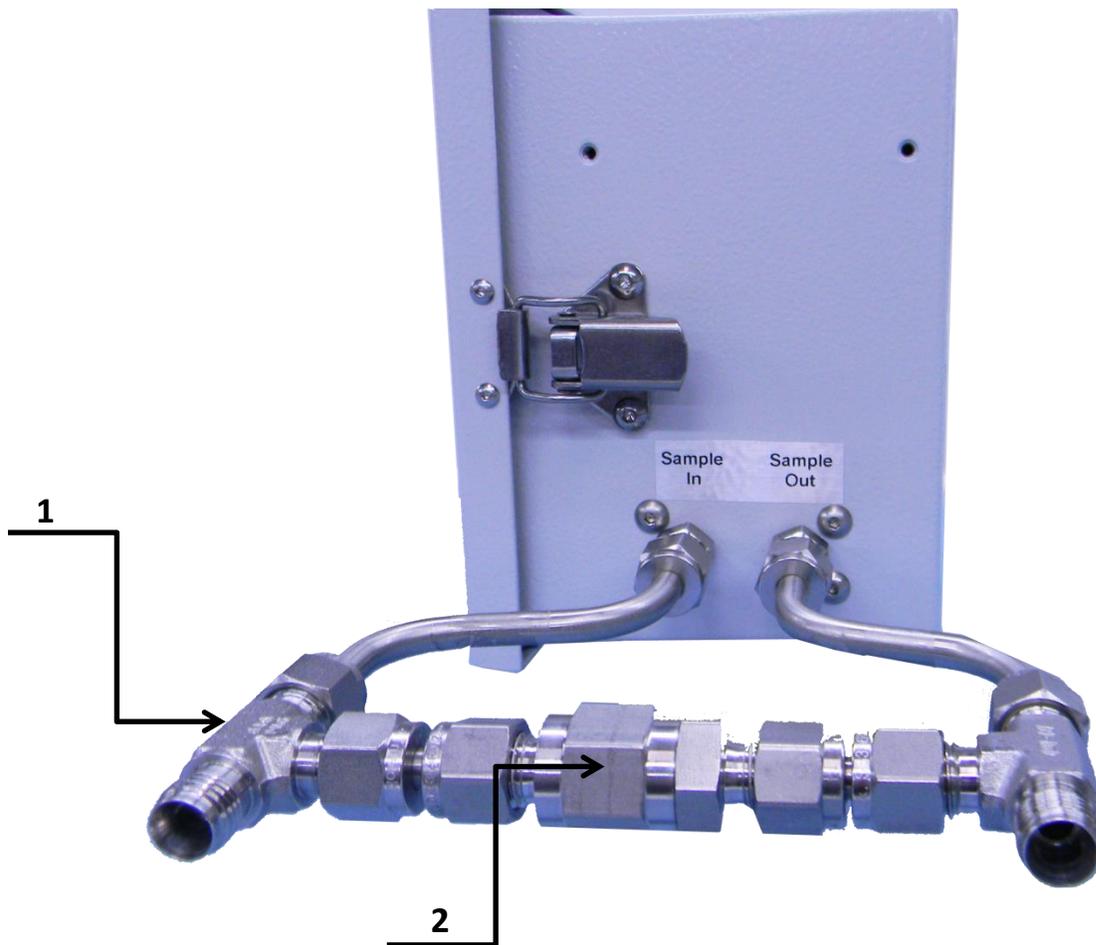


**Figure: Plumbing Connection Illustration**

### Protective Check Valve

A Check valve is to be used If you want to protect against potential "dead-heading" of the pump during operation or calibration of your analyzer. If the sample becomes blocked /dead-headed, then the gas will flow from the sample Out through the check valve then into the sample In. This will protect the pump until the dead-head is resolved.

Number	AMI P/N	Description
1	1FIT41	Fitting, Tee, 1/4T x 1/4Tx 1/4T, SS.
2	1GVC04	Check Valve, 10 psi Cracking Pressure, SS.



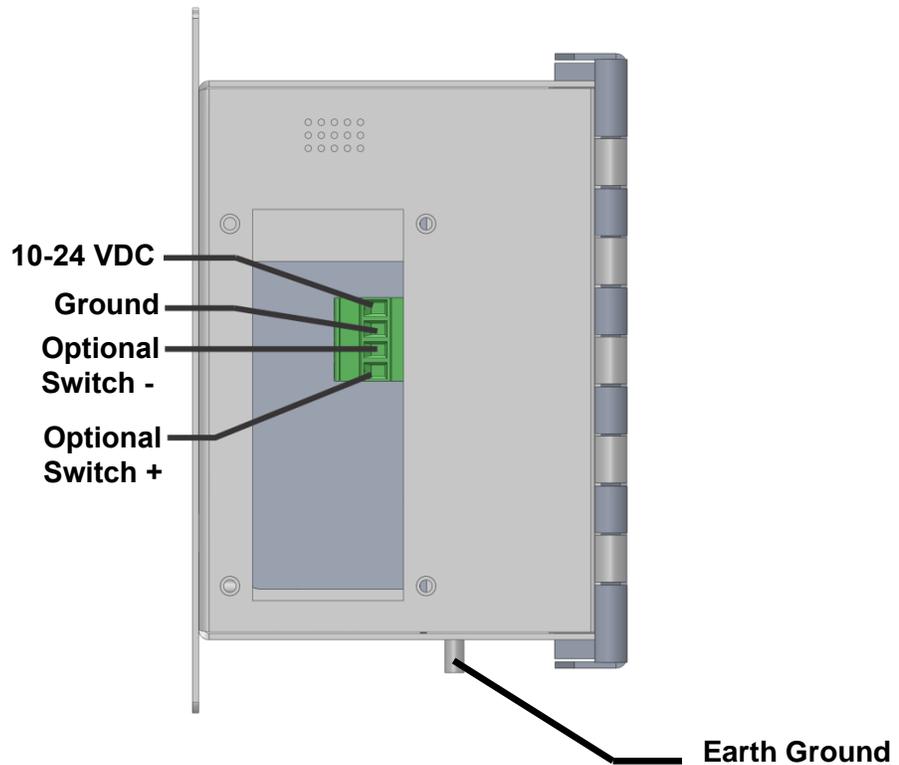
**Figure: Calibration Gas Fittings**

## Electrical Connections

The unit is designed for installation in either a general purpose or Class 1 Division 2 Group C,D area. It is essential that the module's earth ground is connected to a high quality earth ground.

The unit is designed to operate off 10-24VDC. Connect the power wires to the terminals as shown above. A conduit can be connected to either of the two conduit holes in the top or bottom of the box. The ground stud on the main panel MUST be made to a good earth, with a resistance to ground of less than 1 Ohm.

An optional switch connection is provided to turn on and off the pump from a remote location.



**Figure: Electrical connections**

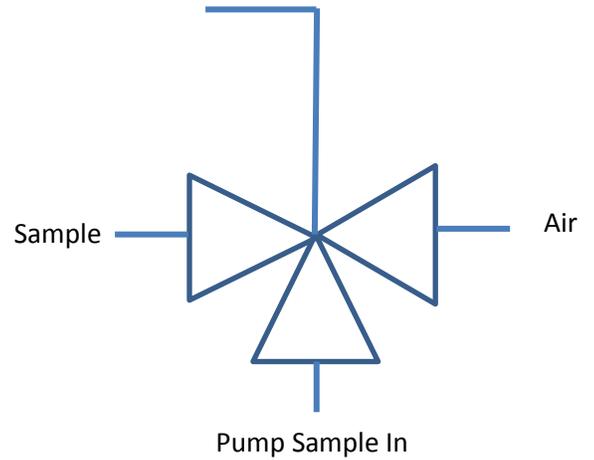
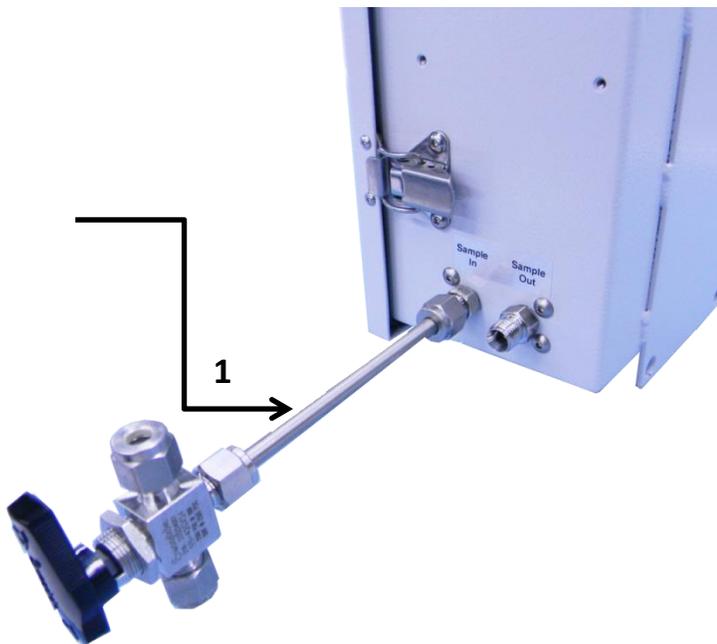
## Calibration Option For Connection to the Sample Inlet

The following discusses a configuration to connect your calibration gas and sample gas to the sample pump.

### Two way Valve for Air Calibration

The two way valve can be used if you use ambient air to calibrate your analyzer. The valve allows you to switch between ambient air and sample system gas.

Number	AMI P/N	Description
1	1FCV03	Valve, 3 way, use for customer calibration purposes



**Schematic of the  
Three Way Valve**

**Figure: Air Calibration Fittings**

## Warranty Information

Any failure of material or workmanship will be repaired free of charge for a period of two years from the original purchase (shipping date) of the instrument. AMI will also pay for one way shipment (back to the user).

Any indication of abuse or tampering will void the warranty.



# Certificate of Compliance

**Certificate:** Master Contract: 227773  
**Project:** 2512737 Date Issued: July 31, 2012  
**Issued to:** Advanced Micro Instruments, Inc.  
18269 Gothard Street  
Huntington Beach, CA 92648  
USA  
Attention: Roland Aldridge

*The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.*



*Ken Kowalski*

Issued by: Ken Kowalski

## **PRODUCTS**

**CLASS 2258 02** - PROCESS CONTROL EQUIPMENT - For Hazardous Locations  
**CLASS 2258 82** - PROCESS CONTROL EQUIPMENT - For Hazardous Locations -  
Certified to US Standards

**Class I, Division 2, Groups C, D, Temp Code T6**

Permanent Mount Sample Pump - Model 6ANA1060. Rated 14.4Vdc, 700 mA, Ta = +5°C to +40°C,

MWP = 68.9 kPa (10psig)

Notes:

NOTES:

- 1) This device is OPEN type equipment that must be used within a suitable end-use system enclosure, the interior of which is accessible only through the use of a tool. The suitability of the enclosure is subject to investigation by the local Authority Having Jurisdiction at the time of installation.
- 2) Wiring to or from this equipment, which enters or leaves the system enclosure, must utilize wiring methods suitable for Class I, Division 2 Hazardous Locations, as appropriate for the installation.

## **APPLICABLE REQUIREMENTS**