GasSens

# Modular Gas Detector

## A21 Gas Sampler

## OVERVIEW

Model A21 is a gas sample pumping system designed to draw samples from ducts or hard to access locations and deliver the samples to gas sensors located in a more convenient area. A21 sampling systems use a high quality diaphragm pump operated by a brushless DC motor to provide continuous sampling over long periods of time. Sampling pumps are rated for over 10,000 hours of continuous operation and diaphragms in the pump may be changed easily if necessary. The pump will draw samples against a vacuum of up to 10 in. Hg for sampling negative pressure duct systems when necessary.

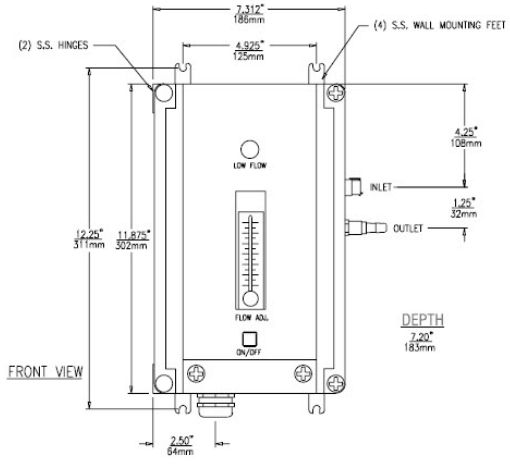
In addition to the sampling pump, A21 systems contain various components needed to insure reliable sample measurement. A flowmeter mounted on the front panel allows the user to adjust the sample flow rate to the desired value, normally around 500 cc/min. Internal to the system is a loss of flow detector that will warn of sampling system problems that could compromise the gas measurement system. A loss of flow alarm light on the front panel provides local flow loss indication while an internal relay can be used to indicate this alarm remotely.



## FEATURES

- **Integrated Sampling System.**
- **Standard Loss of Flow Alarm.**
- **Variable Flow Rate Adjustment.**
- **AC or 12V DC Systems Available.**
- **NEMA 4X Enclosure.**

## DIMENSIONS




## INSTALLATION

Monitoring gas levels using a sample draw system requires that the installation be done carefully and that the nature of the target gas be considered. In general, it is best to locate the gas sensor on the vacuum (inlet) side of the sample system. This insures that the gas sample will be measured before contacting pump or flow detection components that might affect gas concentration. This is especially important when sampling for reactive gases such as chlorine, sulfur dioxide or acid gases.

The type of tubing used on the portion of the sampling system between the sample point and the inlet port of the gas sensor is another important consideration. Reactive gases require the use of Teflon or other fluorocarbon tubing, while non-reactive gases can be sampled using flexible PVC tubing. Sampling from gas streams saturated with moisture may require heated sample tubing, and the effect of condensation on the gas sensor must be carefully evaluated.

For fastest response, gas sample lines between the sample point and the inlet to the gas sensor should be kept as short as possible. Sample transport time depends on the internal diameter of the sampling tube used as shown below. Values are based on a flow rate of 500 cc/min.

| | |
|---|---|
| 1/8 in. I.D. (3 mm) tubing | 29 seconds per 100 feet |
| 3/16 in. I.D. (5 mm) tubing | 65 seconds per 100 feet |
| 1/4 in. I.D. (6 mm) tubing | 116 seconds per 100 feet |

Badger Meter

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Product Data Sheet

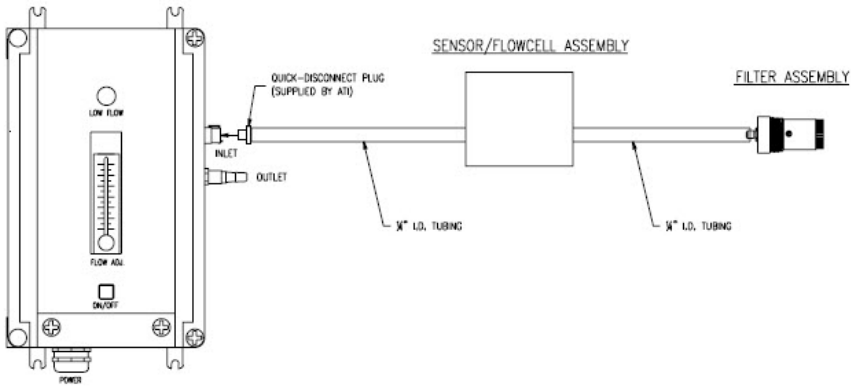



*Figure 1: Typical installation*

## SPECIFICATIONS

| | |
|---|---|
| **Power** | 85…265V AC, 50/60 Hz., 1A or 12V DC, 1A max |
| **Pump** | 12V DC powered diaphragm type, brushless motor rated 10,000 hours |
| **Flow rate** | Adjustable, 300…1000 cc/min, 500 cc/minute recommended |
| **Inlet** | Quick disconnect hose barb fitting for 1/4 in. I.D. flexible tubing |
| **Outlet** | Hose barb for 1/4 in. I.D. flexible tubing |
| **Pump rating** | Maximum 10 in. Hg vacuum on inlet or 4 PSIG pressure on outlet for 500 cc/min. |
| **Alarms** | Low flow alarm lamp on front panel<br>SPDT alarm relay for low flow for remote indication<br>SPDT power fail relay located on DC power supply (AC version only) |
| **Enclosure** | NEMA 4X fiberglass with clear polycarbonate window |
| **Temperature** | Operating: –10…45° C<br>Storage: –25…55° C |
| **Accessories** | 1 - Quick disconnect inlet fitting<br>1 - 25 ft length of PVC tubing |
| **Options** | Inlet filter assembly with package of 10 replacement inlet filters |

## ORDERING INFORMATION

| | |
|---|---|
| 00-0676 | Complete AC powered gas sampling system |
| 00-0852 | Complete DC powered gas sampling system |
| 00-0703 | Inlet filter assembly |

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