



## **F&J SPECIALTY PRODUCTS, INC.**

*The Nucleus of Quality Air Monitoring Programs*

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# **GLOBAL MEGA HIGH VOLUME AIR SAMPLING SYSTEM F&J MODEL GAS-MHV300E**

### **NOTABLE FEATURES:**

- Precision machined DP flow sensor
- State-of-the-Art electronics
- Vacuum fluorescent display; 4 lines×24 characters
- Flow rate and Volume measurements corrected to operator selectable Reference Temperature and Pressure
- Automatic flow control
- Operator selectable units of measurement
- Dual RS-232 communication ports
- Flow rate accuracy: ±3.0% Full Scale
- Auto zero calibration feature of flow sensor
- Continuous or periodic sampling mode
- Multiple operator selectable data storage rates
- Display of Multiple on-board calculations
- Powerful 1800 Watt motor
- 200-240VAC; 50/60Hz, single phase
- Clam Shell sample inlet with 46cm x 57cm filter media



### **GENERAL DESCRIPTION:**

The GAS-MHV300E Series Air Sampling Systems are designed for remote unattended continuous air sampling applications. The GAS-MHV300E Series Air Samplers feature a brushless motor with electronic motor speed control that maintains a user selectable flow rate. The flow rate range attainable through the filter media is dependent upon the air porosity of the filter media. Flow rates as high as 176 CFM (300 m<sup>3</sup>/hr) are attainable with glass fiber filter media. The GAS-MHV300E Series design accommodates rapid field service and component replacement. The clam shell dual hemisphere inlet supports 46cm x 57cm filter media.

For durability and weather resistance, the system is housed in a freestanding powder coat painted aluminum enclosure. The sample air is drawn in under upper hemisphere in an omnidirectional geometry and is exhausted near the bottom of the enclosure. The locking swing door on the enclosure provides convenient access for servicing the equipment inside. A lockable latch of the top cabinet restricts unauthorized tampering of components within the enclosure. The clam shell sample inlet also has a locking mechanism.

The electronic flow control measurement sub-system of the GAS-MHV300E Series provides an operator selectable reference standard corrected flow measurement and a constant flow of air through the filter medium. The air velocity is measured by a precision-machined DP sensor. The controller can be readily set to any sampling flow rate between 50 and 200 CFM (85-340 m<sup>3</sup>/hr). The flow rate obtainable depends on the filter paper air resistance and dimensions. The bright VFD readout displays multiple air sampling information including current flow rate, average flow rate, current temperature and totalized volume. The filter holder can be custom designed to accommodate many large filter size and types. The GAS-MHV300E standard model utilizes a 46cm x 57cm filter. Software is available to download air-sampling data via an RS-232 port. The software provides various management reports, file archiving and setup via a PC device.

# GAS-MHV300E (200 – 240VAC)

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## Performance:

Basic components of the system are modular and independently serviceable. Sample flow rate can be set between 50 and 200 CFM (85 and 340 m<sup>3</sup>/hr). The standard filter holder has the dimensions 46cm x 57cm.

**Technology:** Microprocessor controlled state of the art electronics

**Operating Temperature Range:** 0°F to 122°F (-18°C to 50°C)

**Typical Flow Rate Range:** 50 – 200 CFM (85 to 340 m<sup>3</sup>/hr)  
(Depending on filter paper dimensions and filter media air resistance)

**Motor:** Brushless: 2.4 H.P. (1800 Watt) motor with electronic motor speed control

**Power:** 200-240VAC; 50/60Hz; 20 amperes; single phase.

**Housing:** Powder coat painted aluminum      Locking hinged cover  
Removable hinged cover                      Locking swing door with key

**Dimensions:** 86”H × 44”W × 44”D (218cm H × 160cm W × 160cm D)

**Weight:** Approximately 200 lbs. (91 kgs)

**Shipping Weight:** Approximately 225 lbs. (102 kgs); Sample inlet and enclosure are shipped in separate boxes

**Installation Category:** Pollution Degree 3

**Enclosure Rating:** IPX3

**Sample Inlet:** Glass Reinforced Plastic

## Automatic Flow Control:

The system microprocessor monitors flow rate relative to the operator selectable preset Reference T and P corrected flow rate established during the setup procedure and electronically adjusts the electronic motor speed adjustment, if necessary, to maintain the flow within ± 3.0% of setting. The microprocessor computes the Reference flow rate by correcting the measured values of temperature and pressure to the reference values.

## On-Board Measurement, Calculations and Other System Features

### Measurements:

- Temperature of air flow through system
- Inlet pressure to the flow sensor
- Differential Pressure of the flow sensor
- Ambient pressure
- Pressure drop across the filter

### Calculations/Determinations:

- Totalized volume, Reference T and P\*
- Current flow rate, Reference T and P\*
- Minimum and maximum temperature
- Minimum and maximum inlet pressure
- Elapsed time
- Ambient flow rate and volume
- \* Operator selectable REF T and P

### Other System Features:

- Display of data in English or metric units by selection
- Automatic shut off of system on totalized volume or elapsed time
- Real time clock with battery backup
- Various data storage options
- Dual password protection  
Operator password  
System Administrator password
- Dual RS-232 communication ports
- Periodic sampling scenario based on periods within a week selectable by the user
- Utilization of 46cm x 57cm rectangular filters
- Vacuum Fluorescent Display; 4 lines ×24 characters

### Data Acquisition Software:

- Optional data communications software to download data from instrument to PC after completion of sampling activity

## KEY MEASUREMENT IN PROGRESS INFORMATION

### Elapsed Time and Flow Values

Elapsed time: 4,00:08  
 Current flow: 40.12 SCFM  
 Ambient flow: 40.24 CFM  
 Initial flow: 40.00 SCFM\*  
 \* Appears after 6<sup>th</sup> minute of operation

### Flow, T and Ambient Pressure Ranges

Std.f: 39.02—41.19 SCFM  
 Amb.f: 40.14—40.33 SCFM  
 Temp: 23.1—26.4 C  
 Amb.p: 29.81—29.99 InHg

### Average Flow Values and Volumes

Avg.std.flow: 39.12 SCFM  
 Avg.amb.flow: 40.24 CFM  
 Std.volume: 1.235E02 SCF  
 Amb.volume: 1.453E02 CF

### DP Range, Gas and Ref. Values

Diffp: 0.012—0.045 InHg  
 Initial flow: 40.00 SCFM  
 Ref. temp.: 21.1 C  
 Ref. press.: 29.92 InHg

### Temperature and Pressure

Temperature: 23.3 C  
 Diff.press: 0.012 InHg  
 Inlet press: 29.87 InHg  
 Amb. press: 29.91 InHg

### Start time, End Mode, Current Time and Operating Mode Info

Start at: 29MAY2011 08:16  
 Stop at: 11JUN2011 08:16  
 Time: Wed 01JUN2011 08:20  
 Op: 5min per:010011011101

## POST MEASUREMENT INFORMATION

### Start time, End Mode, Elapsed Time and Operating Mode info

Start at: 29 MAY2011 08:16  
 Stop at: 11JUN2011 08:16  
 Elapsed time: 0,12:11  
 Op: 5min per:010011011101

### DP Range, Initial Flow and Ref values

Diffp: 0.012—0.045 InHg  
 Initial flow: 40.00 SCFM  
 Ref. temp.: 21.1 C  
 Ref. press.: 29.92 InHg

### Average Flow Values and Volume

Avg.std.flow: 39.12 SCFM  
 Avg.amb.flow: 40.24 CFM  
 Std.volume: 1.235E02 SCF  
 Amb.volume: 1.453E02 CF

### Set up Flow and % Availability

Setup flow: 40.00 SCFM  
 % availability: 98.9%

### Ref. and Amb. Flow, T and Amb. Pressure Ranges

Std.f: 39.02—41.19 SCFM  
 Amb.f: 39.14—41.33 CFM  
 Temp: 23.1—26.4 C  
 Amb.: 29.81—29.99 InHg

### Gas, Storage Freq. and Power Outages Info

Gas: Air 27  
 Storage freq.: 1 min  
 Power outages: 1  
 Duration: 0,00:12

### Additional Power Outage Info

29MAY 08:14, L: 0,00:12

### Typical Maximum Flow Rates

Grade	Maximum Flow Rate	
	SCFM	SCMH
0540 – 46 x 57 cm	174	296
Whatman 41	180	306



**Frontal View – Sample Inlet Closed**

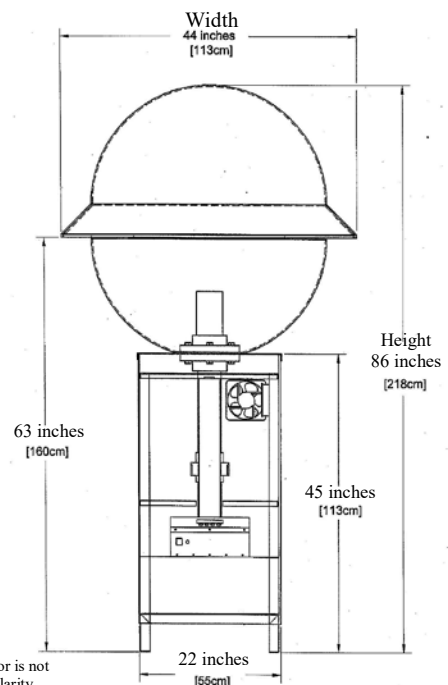


**Frontal View – Sample Inlet Open**



**View of Open Sample Inlet**

**High Volume Sample Inlet Design  
Air Sampling System**



NOTE: 1. Locking door is not drawn for clarity  
2. Width and depth dimensions are equal

**Dimensional Sketch**