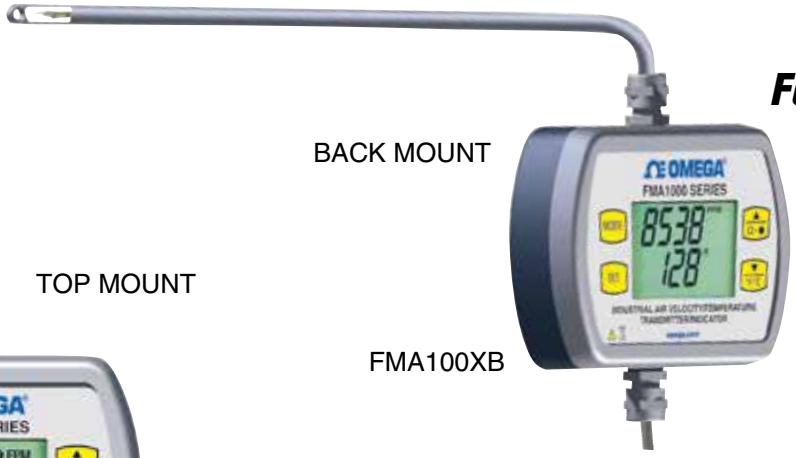
1 YEAR WARRANTY

OMEGA®

User's Guide

WITH REMOTE SENSOR PROBE

FMA100XR



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FMA1000 SERIES
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Section 1 - Package Inspection

Remove the packing list and verify that you have received all your equipment. If
you have any questions about the shipment, please call our Customer Service Department at **1-800-622-2378** or **203-359-1660.** We can also be reached on the Internet at **omega.com**, e-mail: **cservice@omega.com**. When you receive the shipment, inspect the container and equipment for any signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE:

The carrier will not honor any damage claims unless all shipping material is saved for inspection. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

Included Items

The following items are supplied with the FMA1000 air velocity transmitter:

- FMA1000 air velocity/temperature transmitter
- 15 feet shielded Power/Output cable with 10 pin female mating connector with 6 feet shielded USB cable with female mating connector
- Instruction Manual
- PC application program CD

The following items are optional accessories that can be ordered separately:

Model No.	Description
PSR-24S	Regulated +24 Vdc @ 400 mA power supply, screw terminal
PSR-24L	Regulated +24 Vdc @ 400 mA power supply, stripped leads
SSLK-14-14	Compression Fitting, ¼" tube OD, ¼" NPT
T-FER-1/4	¼" PTFE Ferrules (10 per pack) for use with SSLK14-14
TX8-100	8 conductor shielded cable, 24 AWG, 30m long

CAUTION & SAFETY INFORMATION

If the equipment is used in a manner not specified in this manual, the protection provided by the equipment may be impaired.

The installation category is one (I).

The output terminals of this product are for use with equipments (Digital meters, chart recorders, etc.) which have no accessible live parts. Such equipment should comply with all the applicable safety requirements.

Avoid contact with Hazardous live parts.

Do not operate the equipment in flammable or explosive environments.

The equipment comes with a 4.6 m (15') shielded multi-conductor power/output cable. This cable is an ten conductor 26 AWG stranded wire cable with rating of 300 Vdc, 105ºC (221ºF) PVC insulation. It also comes with a 2m (6') shielded USB + Four conductor cable.

Power must be disconnected before making any electrical connections.

The supply voltage to the equipment should not exceed 24 Vdc.

The recommended power supply should be VDE or UL approved. Rating of 15 to 24 Vdc @ 150 mA minimum power with overload protection, current limited to 500 mA.

There is no user replaceable fuse in this product.

The FMA1000 series passed all the EMC standards (EN61326 Emissions & EN61000 immunity) under normal mode of operation using the power/output cable provided and an external DC power supply.

Section 2 - Introduction

The FMA1000 series industrial air velocity/temperature transmitter/indicator measures and displays air velocity mass flow and air temperature of clean air flows in ducts & pipes, while producing very little pressure drop in the flow stream. The FMA1000 series can be used in research & development labs, HVAC applications, and other manufacturing processes. The sensor design is based on three RTD elements, one measures the air temperature and the other two measure the air velocity. The air velocity is measured based on the heat loss from the RTD velocity sensor as it cools down by the air flow.

The FMA1000 series offers many standard features such as dual display of air velocity & temperature, two analog outputs corresponding to air velocity & temperature, high & low voltage alarm outputs for air velocity, USB PC interface with a Windows based PC interface software. The FMA1000 displays the air velocity in feet per minute (FPM), meter per second (m/s), miles per hour (MPH), and kilometer per hour (Km/h). The air temperature is displayed in ºF & ºC.

The sensor probe is 12" long as standard. The 304 Stainless steel sensor tubing is provided with inch marks for ease of insertion depths. The sensor probe comes in four different versions as follows:

- Fixed probe mount
- Right angle probe mount
- Remote probe
- Fixed short probe, 3.75" Long

The following table shows all the air velocity/temperature transmitter model numbers:

Model No.	Velocity Range FPM (m/s)	Probe Type	Temperature Measurment Range
FMA1001A-* FMA1001A-*-HT	0-1000 (0-5.1)	Fixed Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1001B-* FMA1001B-*-HT		Right Angle Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1001R-* FMA1001R-*-HT		Remote Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1002A-* FMA1002A-*-HT	0-5000 (0-25.5)	Fixed Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1002B-* FMA1002B-*-HT		Right Angle Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1002R-* FMA1002R-*-HT		Remote Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1003A-* FMA1003A-*-HT	0-10,000 (0-50.8)	Fixed Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1003B-* FMA1003B-*-HT		Right Angle Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1003R-* FMA1003R-*-HT		Remote Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1004A-* FMA1004A-*-HT	0-500 (0-2.54)	Fixed Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1004B-* FMA1004B-*-HT		Right Angle Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1004R-* FMA1004R-*-HT		Remote Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1005A-* FMA1005A-*-HT	0-2000 (0-10.16)	Fixed Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1005B-* FMA1005B-*-HT		Right Angle Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1005R-* FMA1005R-*-HT		Remote Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1006A-* FMA1006A-*-HT	0-12,000 (0-60.9)	Fixed Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1006B-* FMA1006B-*-HT		Right Angle Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)
FMA1006R-* FMA1006R-*-HT		Remote Probe	-40 to 121°C (-40 to 250°F) -40 to 171°C (-40 to 340°F)

* - Specify analog output for air velocity
-MA, 4-20 mA output
-V1, 0-5 Vdc output
-V2, 0-10 Vdc output
The air temperature analog output is 0-5 Vdc.

Important Considerations Before Installation

NOTE:

The FMA1000 air velocity transmitter is not explosion proof, nor is it Intrinsically safe. Do not use for flammable or hazardous gases, or in Hazardous areas.

The FMA1000 series air velocity transmitter is intended for use with clean air or Nitrogen ONLY. Do not use with other gases, as it will produce an un-calibrated and non-linear display measurement and analog output. In addition, air carrying dust or oil (such as found in blower/compressor systems that utilize oil) can lead to coating of the sensor and thus inaccurate readings. Refer to the Maintenance section for information on cleaning the sensor.

The FMA1000 is a bi-directional device, meaning the flow in the forward or reverse direction provides the same readings. The FMA1000 can be mounted vertically or horizontally without shift in calibration.

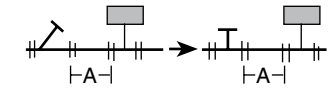
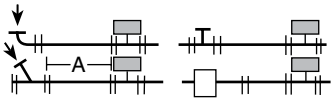
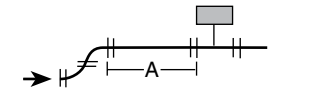
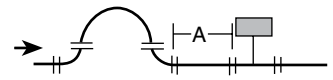
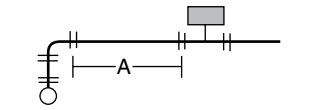
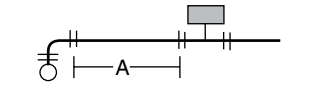
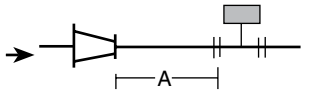
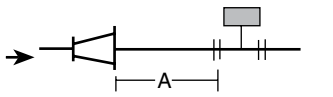
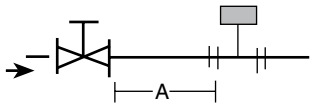
Section 3 - Installation

1. Remove the protective cap from the sensor tip.
2. Run a length of straight pipe before and after the flow sensor probe. The amount of upstream straight pipe required depends on the type of obstruction which is immediately upstream of the flow sensor. See Table 1 for specific requirements. Downstream of the flow sensor, in all situations, run 5 diameters of straight pipe regardless of the downstream obstruction.
3. Align the sensor probe with the air flow. Make sure the air flow is perpendicular to the sensor window. The score line on the sensor tubing is another way of aligning the sensor to the flow stream. The score line starts from the center of the sensor window and as a result it can be aligned properly.
4. One way of installing the sensor probe into a flow stream is to utilize a compression fitting such as Omega's SSLK-14-14 stainless steel compression fitting with Teflon ferrule, which allows adjustment of the insertion depth of the probe.
5. Connect the 15 feet shielded Power/Output cable to the transmitter's 10-pin male mating connector. Follow the wiring information below:

Power/ Output Cable Wire	Connection
Red	+ Power Input
Black	- Power Input (Common Ground)
White	Velocity Analog Output referenced to Common Ground
Green	Temperature Analog Output referenced to Common Ground
Brown	High Alarm voltage output-Velocity
Blue	Low Alarm voltage output-Velocity
Shield	Earth Ground
USB Connector	PC USB Port

Power/output Cable Wiring

NOTES:

Typical Piping		Recommended Straight Pipe Length "A"		Remarks
		Without Vanes	With Vanes	
All Fittings in Same Plane		15D	15D	Closed Branch
		20D	15D	Elbow. Tee, Branch Pipe
		25D	15D	Elbow, 2 planes
		25D	15D	Long-radius bends
Fittings in Two Planes		30D 25D	15D 15D	Elbow Long-radius bends
		40D 35D	15D 15D	Elbow Long-radius bends
Varied Section		20D	15D	Contracting Pipe
		40D	20D	Expanding Pipe
Valves		Recommend Meter Be Installed Upstream		Regulating, reducing valves Ball, check valves Shut-off valves

Note: Straight pipe length on the downstram side to be 5 pipe diameters minimum.
Note: D – Pipe internal diameter

Table 1 Piping Requirements

Figure 1 shows the FMA1000 transmitter with fixed probe mount and right angle mount.

Figure 2 shows the transmitter with a remote sensor probe connecting with 15 feet of flexible cable.

Figure 3 shows the transmitter's general dimensions.

Figure 4 shows the mounting holes dimension for mounting of the transmitter case on a wall.

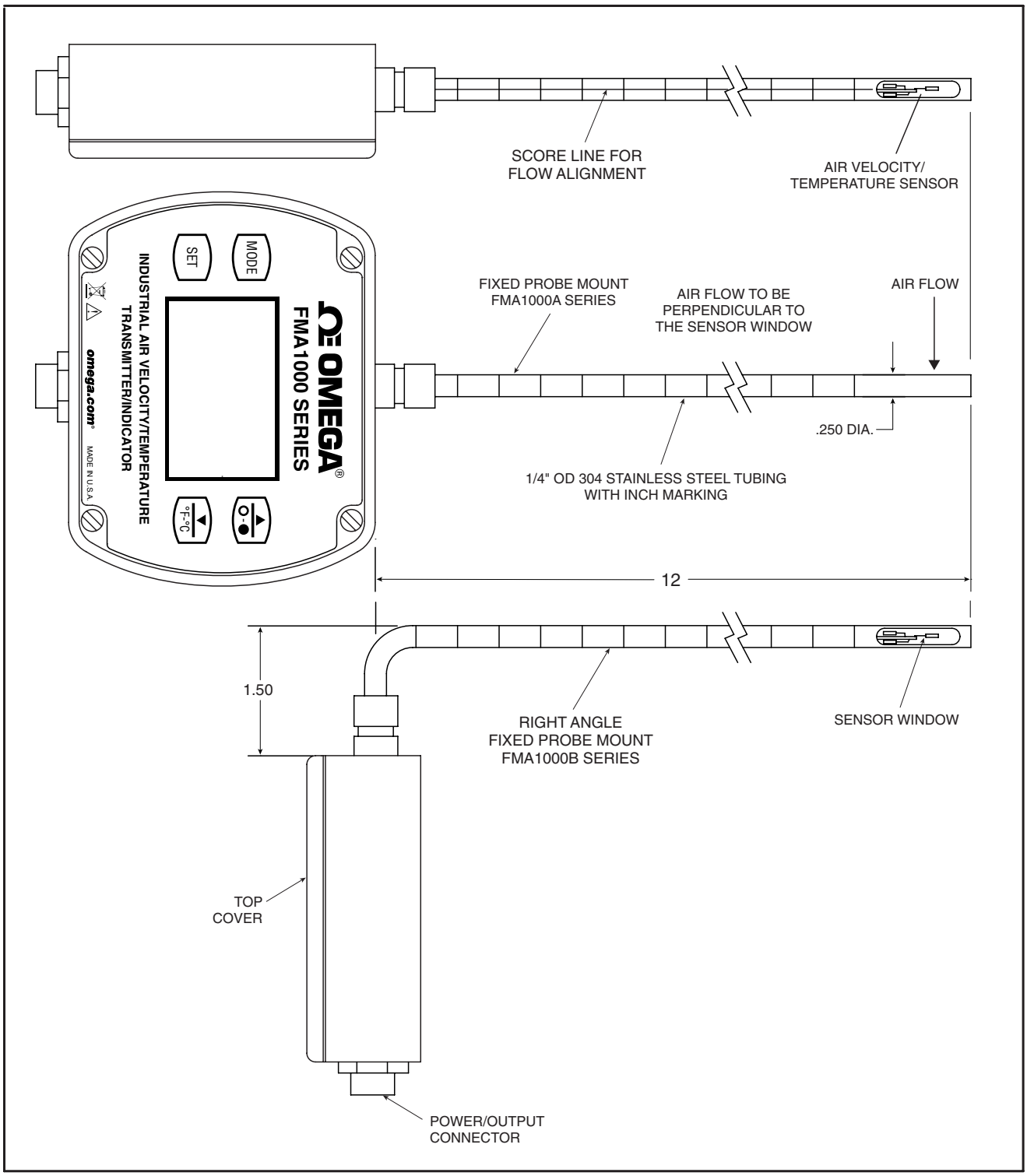


Figure 1. FMA1000 Transmitter with Fixed Probe Mount and Right Angle Mount

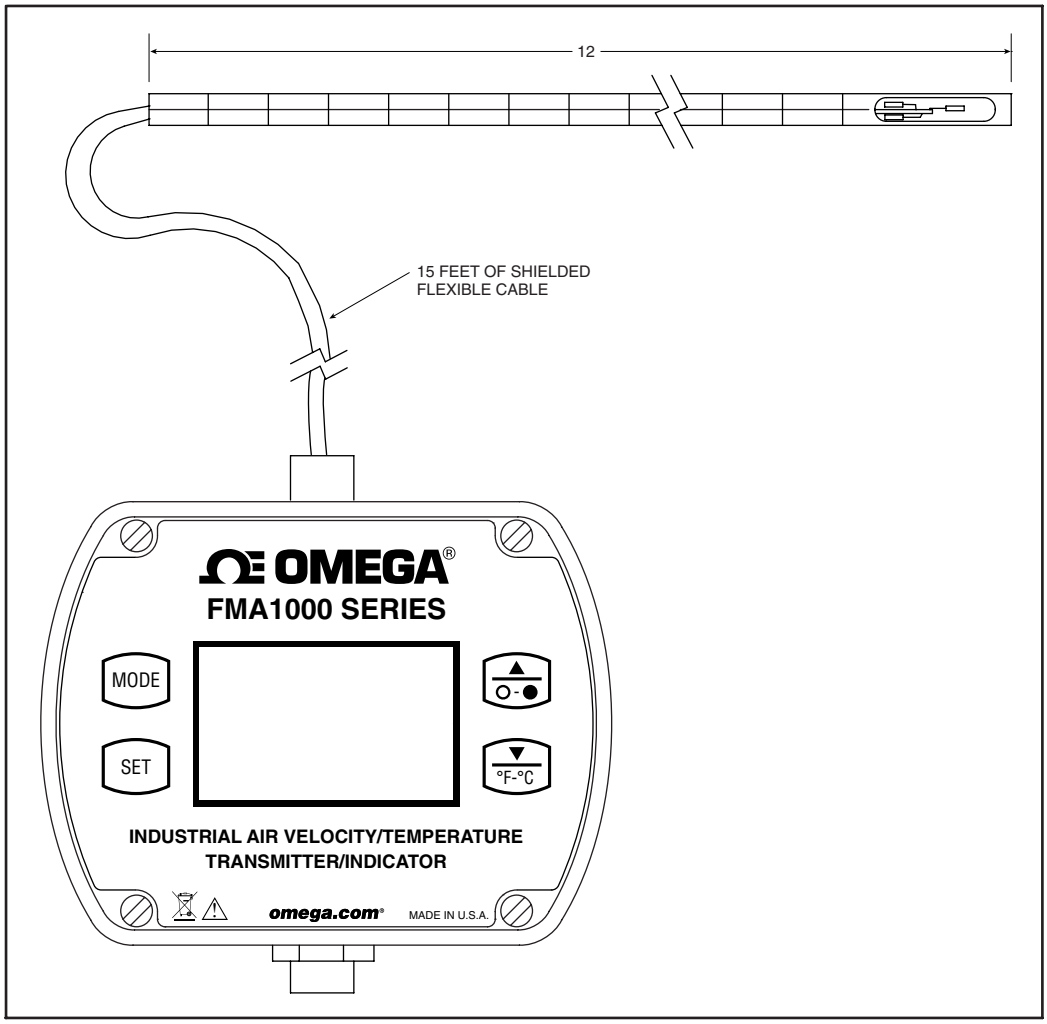


Figure 2. FMA1000 Transmitter with a Remote Sensor Probe

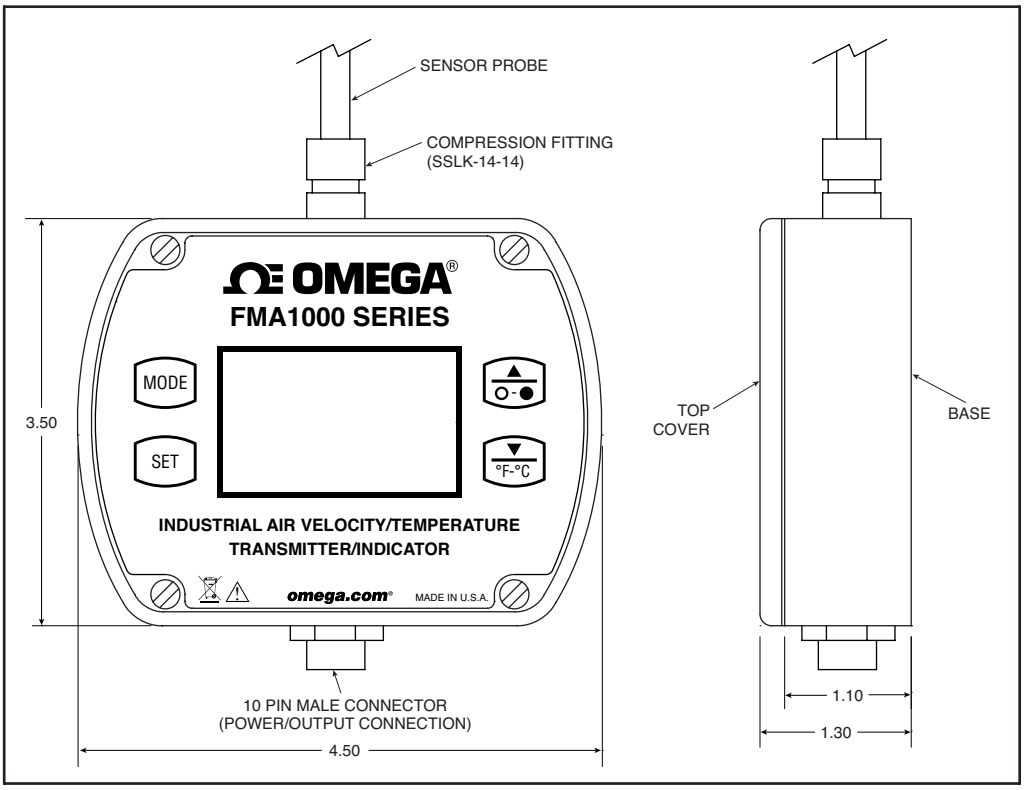


Figure 3. FMA1000 Transmitter General Dimensions

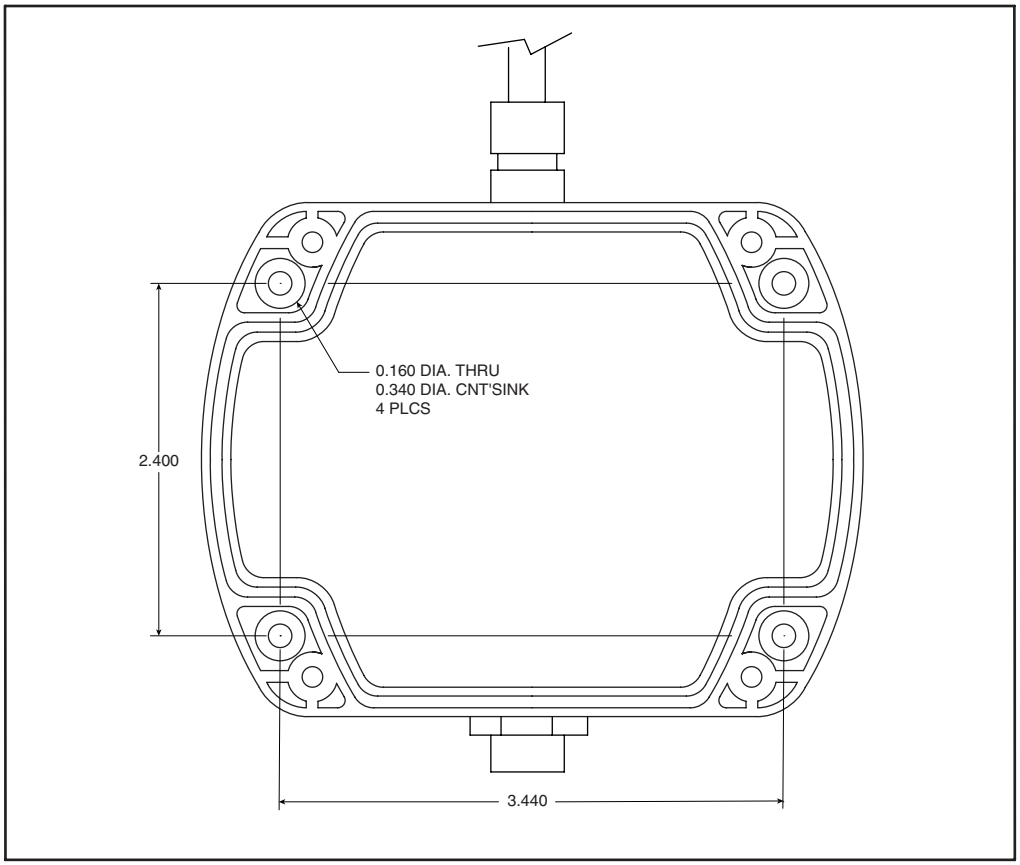


Figure 4. FMA1000 Transmitter Wall Mounting Holes

Section 4 - Main Operations

The FMA1000 transmitter has a built-in LCD backlit display and keypad. Using the display and the keypad, you can view the following parameters:

- The air velocity & air temperature in real time (Main Display)
- Maximum air velocity & temperature during the session
- Minimum air velocity & temperature during the session
- Volume air flow in Cubic feet per minute (CFM)

You can view and set the following parameters from the keypad:

- High Alarm set point for air velocity
- Low Alarm set point for air velocity
- Transmitter's response time – This is the response time of the analog output and the display reading in real time.
- Cross sectional area of the air flow duct
- Atmospheric pressure setting in millimeter of Mercury (mmHg).

Changing Display Engineering units - You can change the air velocity Engineering unit display from Feet per minute (FPM) to meter per second (m/s), miles per hour (MPH), and kilometers per hour (Km/h) from the keypad (press the SET key). You can change the Temperature display from ºF to ºC or vise versa by pressing the °F-°C key.

Turn on Display Back light - You can turn the LCD backlight on or off by pressing the key.

High & Low Alarm set points - You can set and enable the high & low alarm set points for the air velocity as shown in the keypad flow chart. When in the alarm condition, the HAL or LAL icon will flash on the LCD, and the corresponding alarm voltage output will go high. The alarm voltage outputs can drive external mechanical relays.

Display Volume air flow - The unit calculates volume air flow by multiplying the air velocity by the cross sectional area of the pipe or the duct. The cross sectional area can be set in the display menu as shown in the keypad flow chart in square inches units. The volume air flow is shown in Cubic feet per minute.

Table 2 shows the Keypad Functional flow chart. Figure 5 shows the display functional flow chart.

Operation	Press MODE	Press SET	Press °F-°C	Press ○-●
Real Time	Go to Max Mode	FPM → m/s ↓ Km/h ← MPH ↑	°F → °C or vice versa	Turn on/off LCD Light
Display Max Vel. & Temp MAX icon	Go to Min Mode	_____	_____	Reset Max, Min, Avg Vel. & Temp
Display Min Vel. & Temp MIN icon	Go to Average Mode	_____	_____	Same
Display Vol. Flow CFM icon	Go to High Alarm Mode Velocity	_____	_____	_____
Display High Alarm Velocity set point	Go to Low Alarm Mode Velocity	Enable/Disable High Alarm, HAL icon when enabled	Increment high Alarm set point	Decrement high Alarm set point
Display Low Alarm Velocity set point	Go to Output Response Mode	Enable/Disable Low Alarm. LAL icon when enabled	Increment Low Alarm set point	Decrement Low Alarm set point
Display Output Response time	Go to Cross sec. area Mode	_____	Increment Response time	Decrement Response time
Display cross sectional area Sq in	Go to Atmos. Press. Mode	_____	Increment Cross sec. area	Decrement Cross sec. area
Display AtPr & mmHg icon	Go to Real Time Mode	_____	Increment Atmospheric Pressure Pressure	Decrement Atmospheric Pressure

Table 2 – Keypad Functional Flow Chart

NOTE:

The FMA1000 transmitter saves the following parameters in the non-volatile memory, so removing the power will not affect these settings:
High & Low alarm air velocity set points & status (On or Off)
Response time in msec
Cross sectional area in Square inches
Atmospheric Pressure in mmHg

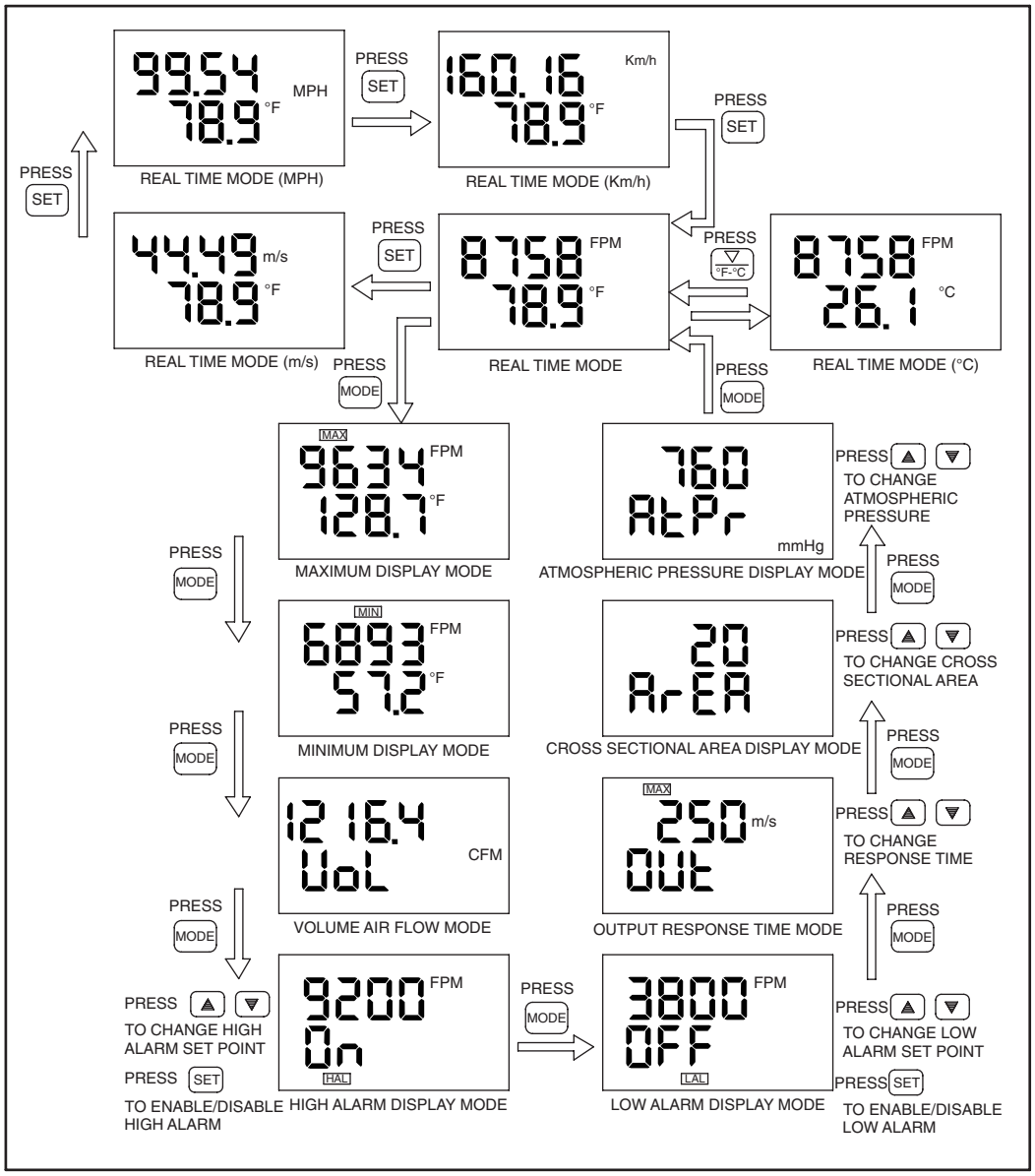


Figure 5. Functional Display Flow Chart

The FMA1000 series comes with a Windows based user application. This application can run on Windows XP, Vista, and 7. It allows you to perform the following functions:

- Monitor and display the air velocity and temperature in real time, including line graph of the two channels.
- Display the air velocity and temperature in different Engineering units
- Change the upper and lower values for the two channels from auto, to manual , or logarithmic scale.
- Change the chart time base from 1 minute to 10 minutes, and one hour.
- Save the air velocity and temperature data to a file.
- Print the air velocity and temperature graphs to a printer.

Operation

- Install the user application.
- Connect the USB cable provided between the transmitter's 10 pin connector and the PC.
- There is no need to power the transmitter separately. The USB port provides the necessary power to run the transmitter.
- When the transmitter is connected to the PC for the first time, the PC recognizes the unit and it looks for the USB drivers. The necessary drivers are on the same CD.

The "Found new hardware wizard" program will open. Select Install the software automatically option (Recommended) and follow the menus.
If Windows can not find the driver, then select "Install from the specific location" option and select the program CD where the drivers are located.

You are now ready to run the application. When the application is run, it establishes communication with the FMA1000 transmitter, and a "Go" button will show up on the Main window. Clicking the "Go" button will start the data logging session.

If the application can not establish communication, it will show an error message box, and the "Find" button will flash. Please check for the following:

- The transmitter is connected to a USB port of the PC
- Go to Settings menu and check the COM port number. Make sure you are using the right COM port on your PC. You can check the connected COM port by opening the Device Manager (From the system properties) and review all the COM ports.
- Click the "Find" button, and the program should be able to establish communication. The "Find" button will change to "Go".
- Click the "Go" button, and the program will start to log data in real time. The display update is every 250 msec.

Figure 6 shows the Main window after logging some data. The main window shows the following:

- Display of line graph and digital values of air velocity and temperature in real time.

- Display high & low alarm lines and values for velocity
- Display response time in msec, volume air flow in CFM, cross sectional area in square inches, and the atmospheric pressure in mmHg.
- High & low alarm LED indicators for the velocity channel. The LED indicator will turn red when in alarm condition.
- Communication LED indicator. This is a flashing Green LED indicator to show good communication. If there is no communication, this LED will not flash.

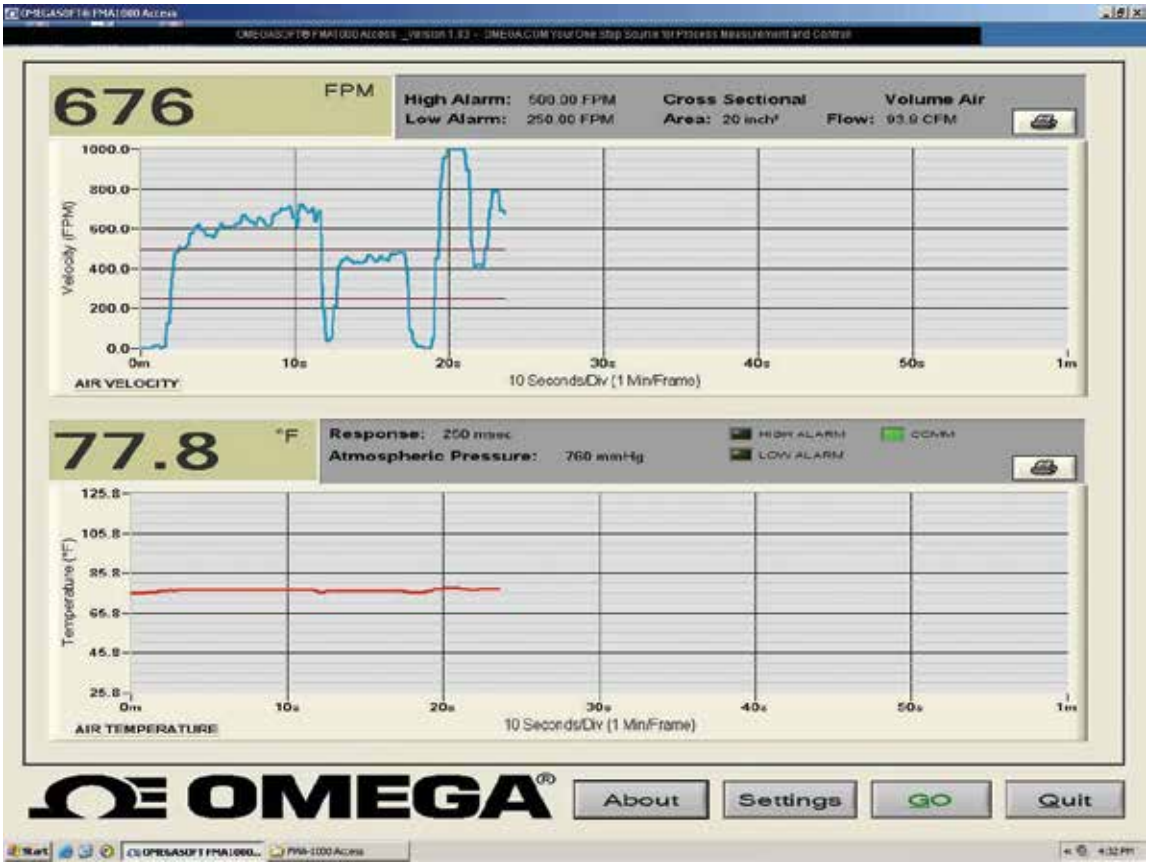
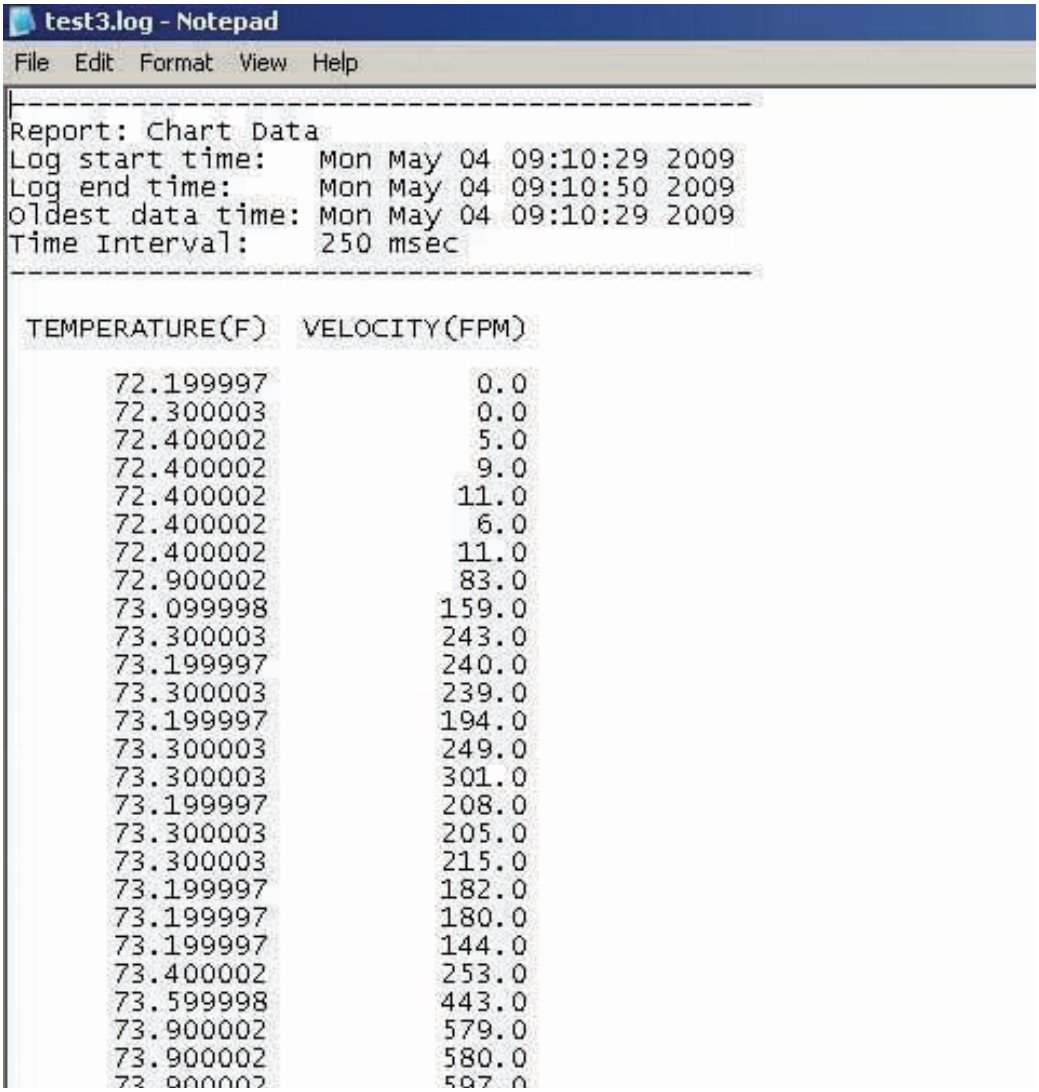


Figure 6. Main Window

You can save the logged data into a data file. This file can be imported into Excel spread sheet for further analysis. Figure 8 shows a typical data file. You can save up to 144,000 sets of velocity and temperature data.



test3.log - Notepad

File Edit Format View Help

```
----------------------------------------
Report: Chart Data
Log start time:   Mon May 04 09:10:29 2009
Log end time:     Mon May 04 09:10:50 2009
Oldest data time: Mon May 04 09:10:29 2009
Time Interval:    250 msec
----------------------------------------

 TEMPERATURE(F)  VELOCITY(FPM)

      72.199997            0.0
      72.300003            0.0
      72.400002            5.0
      72.400002            9.0
      72.400002           11.0
      72.400002            6.0
      72.400002           11.0
      72.900002           83.0
      73.099998          159.0
      73.300003          243.0
      73.199997          240.0
      73.300003          239.0
      73.199997          194.0
      73.300003          249.0
      73.300003          301.0
      73.199997          208.0
      73.300003          205.0
      73.300003          215.0
      73.199997          182.0
      73.199997          180.0
      73.199997          144.0
      73.400002          253.0
      73.599998          443.0
      73.900002          579.0
      73.900002          580.0
      73.900002          597.0
```

Figure 7. Typical Data File

Figure 8 shows the Settings menu. You can set the following parameters:

- COM port number on your PC.
- Turn the audible indicator on/off.
- Engineering units for air velocity and temperature
- Select chart time base from 1 minute per frame (screen), 10 minutes, or one hour.
- Select manual, auto, or logarithmic scale of the air velocity or temperature. This function allows the user to set the Y scale for the air velocity and temperature to any value within its range.
- Select Save to file, History viewer, and Maximize start up.

When the "Save to File" is selected (Default), the program asks if you would like to save the data to a file when you stop the data logging. Figure 7 shows a typical data file saved.

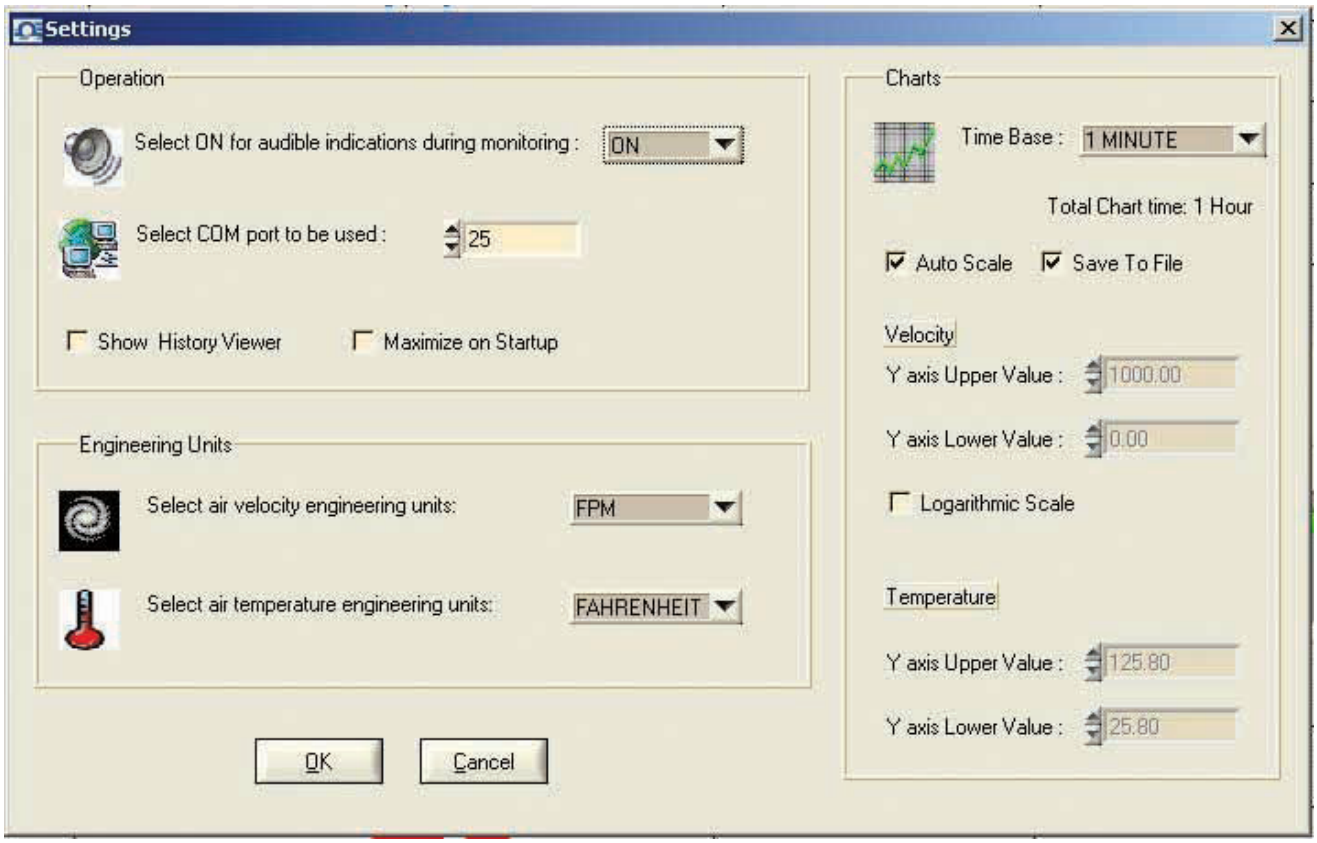


Figure 8. Settings Menu

Maintenance

Except for intermittent removal of the sensor from the line for cleaning, there is no routine maintenance for the FMA1000. If the sensor probe becomes coated with dust, blow the dust away with clean air. If the sensor probe is coated with sticky material, clean it with water or alcohol (Ethanol) using an artist's brush.

Calibration

Each FMA1000 is individually calibrated in a NIST traceable wind tunnel. For calibration certification or calibrating to a new air flow range, the unit must be returned back to the factory.

Section 6 - Specifications

Range	
Air Velocity:	0-500, 0-1000, 0-2000, 0-5000, 0-10,000, 0-12000 FPM
Air Temperature:	-40 to 93ºC (-40 to 199ºF) -40 to 171°C (-40 to 340°F) for high temperature model
Accuracy	
Air Velocity:	1.5% Full scale
Air Temperature:	0.5% Full scale
Display Resolution	
Air Velocity:	1 FPM, 0.01 m/s, 0.01 MPH, 0.01 Km/h
Air Temperature:	0.1 Degree
Sensor Probe	
Standard:	6.3 OD x 305 mm (¼ OD x 12") – 304 Stainless Steel
-S (Short Probe):	6.3 OD x 95 mm (¼ OD x 3.75") – 304 Stainless Steel
Velocity/Temperature Sensor:	One 100 ohms RTD, Two 1000 ohms RTD
Response Time (0 to 90% Final value Display & Analog output):	250 msec default (Programmable from 250 msec to 2 seconds)
Calculated Air Velocity Values:	Maximum & Minimum, 250 msec response time
Calculated Temperature Values:	Maximum & Minimum, 250 msec response time
Calculated Volume Air Flow:	Displays in cubic feet per minute (CFM)
Cross Sectional Area:	20 Sq-Inches default Programmable from 1 to 400 Sq-Inches via keypad
High Alarm Set Point, Velocity:	Maximum range default – Programmable via keypad
Low Alarm Set Point, Velocity:	Minimum Range default – Programmable via keypad
High & Low Alarm Indication:	HAL or LAL icon flashes on the display
Alarm Deadband:	25 FPM
Alarm Outputs:	Two voltage outputs @ 100 mA drive Analog Output – Velocity
-MA:	4-20 mA @ 400 ohms Max load
-V1:	0-5 Vdc @ 1000 ohms Min load
-V2:	0-10 Vdc @ 2000 ohms Min load
Analog Output – Temperature:	0-5 Vdc @ 1000 ohms Min load
Power:	15-24 Vdc @ 150 mA

Operating Ambient Temperature	
Sensor Probe:	-40 to 93ºC (-40 to 199ºF) -40 to 171°C (-40 to 340°F) for high temperature model
Transmitter:	0 to 50ºC (32 to 122ºF)
Operating Relative Humidity:	0 to 95% RH without condensation
Transmitter Case:	ABS Plastic - IP65, NEMA 4X rated
PC Interface:	USB, 115200 baud rate, 8 bit data, No parity, 1 stop bit
General Dimensions:	88.9 H x 114.3 W x 33.0 mm D (3.5 x 4.5 x 1.3")
Weight:	0.75 lbs

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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