OWNER'S MANUAL

AXD 560
Micromanometer

ALNOR®
TSI Incorporated

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Knowing that inoperative or defective instruments are as detrimental to TSI as they are to our customers, our service policy is designed to give prompt attention to any problems. If any malfunction is discovered, please contact your nearest sales office or representative, or call Customer Service department at (800) 424-7427 (USA) and (1) 651-490-2811 (International).

Table of Contents

SECTION 1
General Description

The AXD 560 Micromanometer measures pressure and calculates velocity and volume. It stores up to 1000 samples and calculates statistics for the stored samples. All the stored data can be reviewed on the instrument display or downloaded to a computer spreadsheet using the supplied downloading software. A printout of readings is available when using the optional MicroPrinter Portable Printer.

The AXD 560 ships in a soft pouch that holds the meter, downloading software, batteries, a calibration sheet, and this owner's manual.

The AXD 562 kit ships in a soft-sided carrying case that holds the AXD 560 meter, the MicroPrinter Portable Printer, an 18-inch pitot probe, static pressure probes, duct plugs, downloading software, batteries, a calibration sheet, and this owner's manual.

SECTION 2
Safety

When using the AXD 560 to check pressure or velocity values, make certain that you can safely raise and hold the instrument while making measurements. Be especially careful when working on a ladder.

Observe all necessary precautions so that the unit does not become caught in moving machinery or touch any exposed electrical wiring.

Use this instrument only for measurements in air.

SECTION 3
Setting Up

Supplying Power to the AXD 560

The AXD 560 can be powered in one of two ways: four size AA batteries or the optional AC adapter.

Installing the Batteries

Insert four AA batteries as indicated by the diagram located on the inside of the battery compartment. The unit is shipped with alkaline batteries. The AXD 560 is designed to operate with either alkaline or NiCd rechargeable batteries. Carbon-zinc batteries are not recommended because of the danger of battery acid leakage. Typical battery life at 20°C is 40 hours for alkaline batteries, or 15 for NiCd batteries.

Using the Optional AC Adapter

The optional AC adapter allows you to power the AXD 560 from an AC outlet. When using the AC adapter, the batteries (if installed) will be bypassed. The AC adapter is **NOT** a battery charger.

Selecting the Display Units

The AXD 560 is capable of displaying the measured values in several different measurement units, as shown in the table below.

Table 3-1: Display Units

Pressure	Velocity	Volume
in. H_2O	ft/min	ft^3/min
mm Hg	m/s	m^3/h
Pa		l/s

If you wish to change the display units on your AXD 560, see "Section 8, DIP Switch Settings."

Setting the Real-Time Clock

The AXD comes with the real-time clock set to U.S. Central time. It is important to set the time and date correctly, or date and time stamping of the recorded data will be incorrect.

To change the clock, press and hold either arrow key while the time is being displayed during the power-up sequence. Release the keys when the AXD beeps

twice. You will then be able to either view and/or change the hours, minutes, year, month, and day of month in sequence. Use the arrow keys to change the setting. Press the ↵ key to accept your choice and advance to the next setting.

Changing the Baud Rate

The AXD 560 has a variable baud rate that is used when downloading or printing data from the instrument. By changing the baud rate to a higher rate, the data will be transferred faster. The baud rate must be equal to that of your computer or printer.

The instrument baud rate is displayed during the initial power-up sequence. To change the baud rate, press and hold either arrow key during the power-up sequence while the baud rate is displayed. Release the key when the AXD 560 beeps twice. Use the arrow keys to scroll through the available values of 1200, 2400, 4800, 9600 and 19200. Press ↵ to select the value that is displayed.

Connecting the Portable Printer

To connect the optional portable printer to the AXD 560, locate the printer interface cable (supplied with the printer) and connect the 9-pin end labeled “PRINTER” to the printer and the other end to the data port of the AXD 560. If the printer prints question marks (??????), asterisks (******), or random characters, reset it by turning it off and then on again.

Connecting to a Computer

Use the computer interface cable provided with the AXD 560 to connect the instrument to a computer for downloading stored data or for remote polling. A 9-pin to 25-pin adapter may be required if your computer has a 25-pin serial port. For more information on how to download stored data see “Section 4, Downloading Data to a Computer.”

SECTION 4
Detailed Operation

Keypad Functions

When pressing the keys on the front panel, the AXD 560 will beep to confirm the function. If you press a key and the AXD 560 does not beep, the AXD 560 does not allow that function during the selected mode.

Common Terms

In this manual there are several terms that are used in different places. This is a brief explanation of the meanings of terms.

Sample

The measurement parameters stored each time the ↵ key is pressed or after each logging interval has passed. The maximum number of samples is 1000.

Test ID

A group of samples. A test ID can contain one sample or up to 1000 samples. The statistics (average, minimum, maximum and count) are

calculated for each test ID. The maximum number of test IDs is 500.

Time Constant

The time constant is an averaging period used to dampen the display. If you are experiencing fluctuating flows, a longer time constant will lessen those fluctuations on the display. The display will update every second, but the displayed reading will be the average over the last time constant period. For example, if the time constant is 10 seconds, the display will update every second, but the displayed reading will be the average over the last 10 seconds. This is also referred to as a "moving average." The time constant is adjusted using the TC key. See the TC section later in this chapter for more detail.

Logging Interval

The logging interval is a frequency at which the instrument will log readings. For example, if the logging interval is set to 30 minutes, readings will be

taken and recorded once every 30 minutes.

K Factor

The K factor is a constant that corrects for flow irregularities and is typically close to 1.00. This K factor is defined by you, usually by doing a duct traverse to find average velocity. Volume is then figured by multiplying velocity times area times the K factor.

Flow Factor

A constant supplied by the manufacturer of duct work, piping, or any other obstruction to airflow. These manufacturers specify a specific location for a pressure measurement and the flow factor corresponding with the location. Volume is figured by multiplying flow factor by the square root of the pressure.

ON/OFF Key

Press the ON/OFF key to turn the AXD 560 on and off. When the instrument is first turned on it goes through a preprogrammed power-up sequence that includes

an internal self-check (when all displayable items are shown). The AXD 560 displays percentage of battery life, percentage of ('LOG') memory available, baud rate, time (HH.MM), current test ID number, and then begins taking pressure readings.

***Note**: To skip start-up sequence, press ↵ any time after the internal self-check.*

Auto Shut Off

The AXD 560 is designed to automatically shut off after 10 minutes if no keys have been pressed. The only exception is when you are performing continuous data logging or printing; then you must shut off the instrument by pressing the ON/OFF key.

Arrow Keys ↑↓

The two arrow keys are used to scroll through values as needed for AXD 560 functions. Pressing either arrow key on the start-up sequence will allow you to change the baud rate or time.

↵ Key

When in measurement mode, ↵ is used to record sample readings and store them into memory.

Press the ↵ key to take a sample. "SAMPLE" will flash on the display every second for the duration of the countdown the length of the time constant value. "SAMPLE" and "COUNT" will then be displayed along with the number of readings in the current test ID. The AXD 560 will then display the value that was recorded and return to measurement mode.

The ↵ key is also used to accept a value or condition and, in the start-up mode, you can press and hold the ↵ key anytime after the internal self-check to skip the start-up sequence.

ΔP (Pressure) Key

Press the ΔP key to display pressure measurements (the AXD 560 will automatically start in pressure mode). The pressure will be displayed in inches H_2O,

mm Hg, or Pa depending on the setting of DIP switches #3 and #4 (see Section 8).

To measure pressure, tubing must be connected to the pressure ports on the top of the unit. Connect the other ends of the tubing to the measurement device or pressure source, with the more positive pressure connected to the port marked '+' and the more negative pressure connected to the port marked '-'.

Zeroing Pressure

If the zero reading of pressure has drifted, the pressure function can be easily re-zeroed. To reset the zero, first make sure that both pressure ports are exposed to ambient pressure.

Press and hold the ΔP key down for at least three seconds. The AXD 560 will beep and the display will show "0 in. H_2O" or whatever units have been selected. When the pressure key is released, the pressure will be re-zeroed.

VEL (Velocity) Key

Press the VEL key to display velocity. The velocity will be displayed in ft/min or m/s depending on the setting of DIP switch #1 (see Section 8). The velocity is calculated based on Bernoulli's equation Velocity = 4005*√Pressure.

Zeroing Pressure in Velocity Mode

The pressure transducer can be zeroed while reading velocity. To reset the zero, first make sure that both pressure ports are exposed to ambient pressure. Press and hold the ΔP key for at least three seconds. The AXD 560 will beep and the display will show "0 in. H_2O" or whatever units have been selected. When the velocity key is released, the pressure will be re-zeroed.

VOL Key

Press the VOL key to display volume. The AXD 560 can calculate volume in one of two ways. Both methods are available for use any time you are in volume mode.

The first method to calculate volume is by multiplying velocity times the flow area times a K factor. This K factor is defined by you, and is usually close to 1.00.

The AXD 560 can also calculate volume with manufacturer-supplied flow factors. These flow factors are different from K factors in that they are defined by the manufacturer of the airflow product. The specific location where pressure measurements are to be taken is also defined by the manufacturer. In this case, volume equals the flow factor times the square root of the pressure.

Zeroing Pressure in Volume Mode

The pressure transducer can be zeroed while reading volume. To reset the zero, first make sure that both pressure ports are exposed to ambient pressure. Press and hold the ΔP key for at least three seconds. The AXD 560 will beep and the display will show "0 in. H_2O" or whatever units have been selected. When the volume key is released, the pressure will be re-zeroed.

Volume (Calculated Using Velocity, Duct Area and K Factor)

Volume can be calculated for a round, square or rectangular duct. You must first indicate the shape and size of the duct or other area through which you want to measure volume.

Entering Shape, Size, And K Factor

With the AXD 560 in volume mode, press and hold the ↑ or ↓ key until the meter beeps. Use the ↑ or ↓ key to toggle between circle, rectangle and pressure symbols. Press the ↵ key to accept a shape and move to selection of the size.

For a circular flow shape, the AXD 560 will ask for the diameter of the circular area. Use the ↑ or ↓ key to select the diameter of the circular area. Press the ↵ key to accept the size.

For a rectangular flow shape, the AXD 560 will ask for two dimensions. Use the ↑ or ↓ key to select the hori-

zontal dimension, then press the ↵ key. Use the ↑ or ↓ key to select the vertical dimension, then press the ↵ key.

Now the display will flash "K_f" and display a number. To select a stored K-factor, use the ↑↓ keys to scroll through the three existing K factors. To select a K-factor, press the ↵ key. Use the ↑ or ↓ keys to adjust the value of any factor, and then press the ↵ key to accept and to begin measuring volume.

Volume (Calculated Using Pressure and Flow Factor)

This volume is calculated by multiplying the square-root of the pressure reading by a manufacturer-supplied flow factor. This volume calculation method is applicable for diffusers that contain pressure taps designed for this purpose and for certain flow stations.

Note: *When using this option, make sure that the AXD 560 pressure units and the volume units provided by the diffuser manufacturer correspond. If they do not match, the calculated volume will be incorrect.*

Entering Flow Factor

With the AXD 560 in volume (VOL) mode, press and hold the ↑ or ↓ key until the meter beeps. Use the ↑ or ↓ key to scroll through circle, rectangle, and pressure symbols. Press the ↵ key to select the pressure symbol and move to the selection of the flow factor value. The flow factor will be stored in the three slots for the K factors. These are three different slots than the values used during the volume calculations based on duct size. Use the same procedure described above to modify and select the desired flow factor.

ACT/STD Key

Press to toggle between displaying actual and standard velocity or volume. Press and

hold to view, enter, or change ambient conditions. When the key is pressed and held, the pressure units will flash and the last barometric pressure entered will be displayed. Use the ↑or ↓ key to change the barometric pressure and press ↵ to accept it. Then the temperature units will flash and the last temperature entered will be displayed. Use the ↑ or ↓ key to change the temperature and press ↵ to accept it and return to measuring mode.

The ranges that can be entered are: pressure of 15 to 40 in. Hg (381 to 1016 mm Hg), 29.92 in Hg (760 mm Hg) is default; temperature of -80 to 800°F (-62 to 426°C), 70°F (21.1°C) is default.

"STANDARD" will be shown on the display in velocity or volume mode when standard is chosen. When actual is being used, no symbol is shown on the display.

TC (Time Constant) Key

The TC key is used to set the time constant logging intervals. Press to display current

time constant. Use the ↑ or ↓ key to scroll through the time constant choices, which are 1 s, 2 s, 5 s, 10 s, 15 s, and 20 s, then press ↵ to accept the choice.

TIME LOG key

This option will allow continuous data storage (data logging) of data over time, e.g., if looking for trends. All readings are stored in test IDs. You may store up to 1000 samples in 500 IDs.

To set up the data logging feature press the TIME LOG key. Use the ↑↓ arrow keys to select "On". Press the ↵ key to accept your choice. "LOG" will light up on the display and the logging interval is shown. Use the ↑↓ arrow keys to scroll through the log interval choices. The choices are: 1, 2, 5, 10, 20, 30 seconds, and 1, 2, 5, 10, 30, and 60 minutes. "MIN" will indicate on the display when the value is in minutes. Press the ↵ key to accept your choice.

Next, choose the number of samples. The choices are "CONT" or 1 to 1000. Use the ↑↓ arrow keys to scroll through the

choices, and press ↵ to accept your choice. The instrument will then return to measuring mode. If "CONT" is chosen, the instrument will sample continuously until it is either stopped manually, runs out of memory, or the batteries run out. If a number between 1 and 1000 is chosen, the instrument will take that number of samples then stop storing readings.

To start the logging process, press the ↵ key. "LOG" will flash briefly indicating samples will be recorded. Test ID and the ID number will flash on the display indicating where the data will be stored. The current value will be then displayed. "SAMPLE" will flash on the display whenever a sample is taken. This is done at the end of every sample period. The value stored will also be displayed when the sample light is indicated.

The log mode remains programmed until you turn this feature "OFF". This was done so you can use continuous datalogging in various locations without resetting the TIME LOG. When in continuous logging

mode, pressing ↵ starts the TIME LOG operation. To stop manually, press ↵.

NEXT TEST Key

Press NEXT TEST to advance to the next test ID. If the current test ID does not have anything stored, the AXD 560 will not advance to the next test ID.

The AXD 560 will automatically increment the test ID number under the following conditions:

- turning off the AXD 560 (if there is stored data)
- taking a sample with a different duct size or shape than the last stored sample
- taking a continuous data logging sample
- taking discrete samples after taking a continuous data logging sample

DEL Key

To clear the **last sample**, press and hold the DEL key and the display will begin a countdown from 3 to 0. Release the key at

any time during the countdown ***before zero*** is displayed. The display will flash "SAMPLE CLr."

To clear **all memory**, keep holding key during the countdown. Release the key ***when 0*** is displayed. The display will flash 'CLr.'

Note: *Only the last sample recorded (one sample total) can be cleared without clearing the entire memory. You cannot go back to a previous test ID and clear a single reading. Also, you cannot add data to a previous test ID.*

RECALL Key

The RECALL key can be used to review stored data on the instrument display, or to download it to a printer or computer.

To review data on the display, press the RECALL key to show the current test ID number on the display. Use the ↑↓ keys to select the desired test ID, and press ↵ to accept the choice. Use ↑↓ keys to view

average, count, minimum, maximum, and then sample numbers and values. The samples will be displayed in the order that they were taken.

Press ↵ at any time to return to measuring mode.

Printing Data to Portable Printer or PC

Printer should be set with bit length 8, one stop bit, and no parity. To print all data in memory, press and hold the RECALL key to start a countdown from 3 to 0. When 0 is on the display, release the key. If the key is released at any other time, nothing will be printed.

To print only a selected test ID, press the RECALL key to show the test ID number on the small display. Using the ↑↓ keys, select the desired test ID that you would like to print. Then press and hold the RECALL key until the display counts down to zero. The selected test ID will then print, including the statistics for all measurement parameters stored as well as

the data points for only the parameter displayed on the large digits.

If the printer (or PC) is connected to the instrument while taking readings, each time the ↵ key is pressed, the reading(s) will be printed to the portable printer. Also, each time a parameter is changed (type of flow rate, time constant, etc.), the new setting will also be printed.

Downloading Data to a Computer

COMPUDAT™ is a Windows-based program designed to download the data stored in the memory of the Model AXD 560 to a computer. This data includes the test ID, measurement, unit of measure, correction factors, actual/ standard parameter, flow area, and time constant. This data is date and time stamped. In addition, the statistics for each test ID are provided. The file containing the downloaded data is sorted and tab delimited to allow it to be imported into a spreadsheet for further data manipulation.

Once you open the program, it is self-directing and provides all the necessary instructions for downloading data.

Caution
The data port of the AXD 560 is **not** intended for connection to a public telecommunications network. Connect the data port only to another RS232 port.

Data Acquisition (Polling)

The AXD 560 is designed to allow you to perform polling through the use of a computer. To do this, your computer must be connected and in terminal mode. The baud rate for the computer and the AXD 560 must be set to the same value. For details on viewing or changing the baud rate, see *Changing the Baud Rate* in Section 3. You must then send an upper case 'V' to the instrument.

You must write your own routine (program) to obtain information at specific intervals from the AXD 560. The meter will only send information when the ↵ key

is pressed or after the computer has sent a "V" command to the AXD 560.

SECTION 5
Maintenance

The AXD 560 requires very little maintenance to keep it performing well.

Cases

If the instrument case or storage case needs cleaning, wipe it off with a soft cloth. Never submerge the AXD 560 in any liquid.

Storage

When storing the AXD 560 for more than a month, removing the batteries is recommended to prevent possible damage due to battery leakage.

SECTION 6
Service and Calibration

Please return your Product Registration Card immediately. This allows us to send service reminders, special offers, and important information about your product.

Before sending your instrument for calibration or repair, you should call Customer Service. The service department will provide you with the cost of service or calibration, Return Material Authorization (RMA) number, and shipping instructions.

Please have the following information available when you call:

- Owner's name, address, and phone number
- Billing address, if different and applicable
- Instrument name and model
- Serial number
- Date of purchase
- Where purchased

TSI recommends that you keep a "calibration log" and keep all records of service on your instrument.

Factory Calibration

To maintain a high degree of accuracy in your measurements, TSI recommends that you return your instrument to the factory for annual calibration. For a nominal fee, we will calibrate the unit and return it to you with a NIST (US National Institute of Standards and Technology) traceable certificate. This "annual checkup" assures you of consistently accurate readings; it is especially important in applications where strict calibration records must be maintained.

Send the instrument to TSI prepaid. Securely package your instrument in a strong container surrounded by at least 2 inches (5 cm) of suitable shock-absorbing material. Include a purchase order that clearly shows the instrument model number and serial number, a contact name, phone, fax number, and RMA number. Mark the outside of your shipping

container with the RMA number. This will expedite processing of your instrument when we receive it.

Field Calibration

The AXD 560 can be calibrated in the field with a pressure reference at least as accurate as the AXD. When DIP switch #6 is switched to ON the instrument will operate off the field calibration values. Switching it to OFF will reset it to the factory values. The procedure for field calibration is as follows:

1. Prepare the equipment to calibrate the AXD. Connect a squeeze bulb to a piece of tubing, put a T-shaped fitting at the end of the tubing, and connect two more pieces of tubing to the fitting. These pieces of tubing will be connected to the AXD and the other measurement device.
2. With the power OFF, remove the batteries and push DIP switch #6 to ON. To return to factory calibration at any time, turn DIP switch #6 off while the AXD is off. Reinstall the batteries

and the battery cover. Turn the AXD on.

3. Press the VEL and TC keys simultaneously, releasing them when the AXD beeps. 'CAL' should light up on the display for 2 seconds, followed by a zero flashing on the display.

4. Leave both pressure ports open to ambient air. Make sure that there is no significant air flow past the pressure ports.

5. When ready to take the zero reading, press and hold the ↵ key to start a countdown on the display. Release the ↵ key when '0' shows on the display. If the key is released at any other time, the calibration point is not saved and this step must be repeated. If the calibration point was saved successfully, '-3' will show on the display.

6. Connect one end of the tubing to the '-' port of the AXD and the other end to the '-' port of the pressure reference device. Squeeze the bulb to apply a pressure of 3 inches H_2O (750 Pa) to

the '-' port of the AXD and the other pressure reference device. Testing at the factory indicates that a pressure between 2 and 4 inches H_2O (500 and 1000 Pa) is acceptable, but 3 inches H_2O (750 Pa) will give the best accuracy.

7. When ready to take the -3 reading, press and hold the ↵ key to start a countdown on the display. Release the ↵ key when '0' shows on the display. If the key is released at any other time, the calibration point is not saved and the step must be repeated. If the calibration point was saved successfully, '-3.00' will show on the display.

8. Press the up and down arrows to change the display to read the same as the pressure reference device. Press the ↵ key to accept the value on the display. If the calibration point was successful, '7' will show on the display.

9. Connect one end of the tubing to the '+' port of the AXD and the other end

to the '+' port of the pressure reference device. Squeeze the bulb to apply a pressure of 7 inches H_2O (1750 Pa) to the '+' port of the AXD and the pressure reference device. Testing at the factory indicates that a pressure between 6 and 8 inches H_2O (1500 and 2000 Pa) is acceptable, but 7 inches H_2O (1750 Pa) will give the best accuracy.

10. When ready to take the +7 reading, press and hold the ↵ key to start a countdown on the display. Release the ↵ key when '0' shows on the display. If the key is released at any other time, the calibration point is not saved and the step must be repeated. If the calibration point was saved successfully, '7.00' will show on the display.

11. Press the up and down arrows to change the display to read the same as the pressure reference device. Press the ↵ key to accept the value on the display. If the calibration point was successful, '14' will show on the display.

12. Squeeze the bulb to apply a pressure of 14 inches H_2O (3500 Pa) to the '+' port of the AXD and the pressure reference device. Testing at the factory indicates that a pressure between 13 and 15 inches H_2O (3250 and 3750 Pa) is acceptable, but 14 inches H_2O (3500 Pa) will give the best accuracy.

13. When ready to take the +14 reading, press and hold the ↵ key to start a countdown on the display. Release the ↵ key when '0' shows on the display. If the key is released at any other time, the calibration point is not saved and the step must be repeated. If the calibration point was saved successfully, '14.00' will show on the display.

14. Press the up and down arrows to change the display to read the same as the pressure reference device. Press the ↵ key to accept the value on the display. 'CAL' will light up on the display to indicate that the field calibration was finished successfully.

15. Turn off the AXD and then turn it back on to initialize the new calibration data.

SECTION 7
Troubleshooting

Table 7-1 lists the symptoms, possible causes, and recommended solutions for common problems encountered with the AXD 560. If your symptom is not listed, or if none of the corrective actions solve your problem, please contact TSI.

Table 7-1: Troubleshooting the AXD 560

Symptom	Possible Causes	Corrective Action
No display	Unit not switched on	Switch on the unit.
	Low or dead batteries	Replace the batteries or plug in the AC adapter.
Display reads "CAL"	The AXD 560 has detected an internal fault	Return to factory for service.
	User calibration DIP switch #6 turned on.	Set DIP switch #6 to off. See Section 8.

Symptom	Possible Causes	Corrective Action
Display reads "LO"	Low battery charge	Replace or recharge batteries.
	Wrong AC adapter	Replace with the correct AC adapter.
	Low AC line voltage	Correct the AC line voltage or use batteries.
	Dirty battery contacts	Clean the battery contacts.
Display says "OVER"	The pressure or velocity is too high	Use an alternate measurement method.

WARNING!
The pressure sensor is protected from damage up to 7 psi (48 kPa or 360 mm Hg). At higher pressures it can burst!

SECTION 8
DIP Switch Settings

To access the DIP switches, remove the batteries from the battery compartment. On the inside of the battery compartment, there is a window with eight DIP switches. Table 8-1 shows the functions for each switch.

Caution
Make certain that power is turned off before changing DIP switch settings.

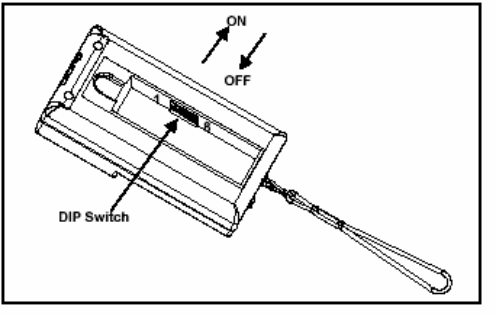

Figure 8-1: DIP Switch Location

Table 8-1: DIP Switch Settings

Switch	Function	OFF	ON
1	Imperial or metric	ft/min & ft^3/min	m/s
2	Volume*	l/s	m^3/h
3	Pressure	in. H_2O	Pa and mm Hg
4	Pressure*	Pa	mm Hg
5	Temp	ºF	ºC
6	Cal	Factory Calibration	User Calibration
7	Data Format	Commas; MM.DD.YY	Decimals; DD.MM.YY
8	Not assigned	leave in OFF position	

The ON position is away from the batteries and OFF is towards the batteries.

* To select volume to display l/s or m^3/hr, DIP switch #1 must be in the ON position.

** To select pressure to display Pa or mm Hg, DIP switch #3 must be in the ON position.

Specifications

Specifications are subject to change without notice.

PRESSURE

Range:	-5 to +15 in. H_2O (-1245 to 3735 Pa, -9.3 to 28 mmHg)
Accuracy:	±1% of reading ± 0.005 in. H_2O (±1 % of reading ±1 Pa, ±1 % of reading ± .009 mmHg)
Resolution:	0.0005 in. H_2O (1 Pa, .001 mm Hg)

VELOCITY

Range[1]:	250 to 15,500 ft/min (1.27 to 78.7 m/s)
Accuracy[2]:	±1.5% of reading at 2,000 ft/min (±1.5% of reading at 10.16 m/s)

VOLUME

Displayed Range[3]:	to 9,999,000 CFM (9,999,000 l/s, 9,999,000 m^3/hr)
K factor Range:	0.01 to 999.9

UNITS

Pressure:	in. H_2O, Pa, mm Hg
Velocity:	ft/min, m/s
Volume:	ft^3/min, l/s, m^3/h

INSTRUMENT TEMPERATURE RANGE

Operating range:	32 to 158°F (0 to 70°C)
Storage range:	-40 to 185°F (-40 to 85°C)

LOGGING CAPABILITY

Test IDs:	Up to 500 test IDs
Samples:	Up to 1000 samples

Intervals:	1 sec, 2 sec, 5 sec, 10 sec, 20 sec, 30 sec, 1 min, 2 min, 5 min, 10 min, 30 min, 60 min.

TIME CONSTANT

Values:	1, 5, 10, 15, or 20 seconds

POWER REQUIREMENTS

Batteries:	Four AA-size alkaline or NiCd rechargeable
AC adapter:	7 VDC nominal, 300 mA
Approx. battery life:	40 hours (alkaline), 15 hours (NiCd)

PHYSICAL

External dimensions:	3.5 in x 6.6 in x 1.6 in (89 mm x 168 mm x 41 mm)
Weight:	0.72 lb (0.33 kg)
Display:	4-digit LCD, 0.6 in (15 mm) digit height

PRINTER INTERFACE

Type:	Serial
Baud rate:	1200, 2400, 4800, 9600, and 19200

1 Pressure velocity measurements are not recommended below 1,000 ft/min (5.0 m/s) and are best suited to velocities over 2,000 ft/min (10.0 m/s).
2 Accuracy is a function of converting pressure to velocity. Conversion accuracy improves when actual pressure values increase.
3 Actual range is a function of maximum velocity, pressure, duct size, K factor, temperature and barometric pressure.

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