Ventilation Testing

Air Velocity Meter

Alnor® Model AVM410
AIRFLOW™ Model TA410

Operation and Service Manual

LIMITATION OF WARRANTY AND LIABILITY (effective July 2000)

Seller warrants the goods sold hereunder, under normal use and service as described in the operator's manual, shall be free from defects in workmanship and material for twenty-four (24) months, or the length of time specified in the operator's manual, from the date of shipment to the customer. This warranty period is inclusive of any statutory warranty. This limited warranty is subject to the following exclusions:

a. Hot-wire or hot-film sensors used with research anemometers, and certain other components when indicated in specifications, are warranted for 90 days from the date of shipment.
b. Parts repaired or replaced as a result of repair services are warranted to be free from defects in workmanship and material, under normal use, for 90 days from the date of shipment.
c. Seller does not provide any warranty on finished goods manufactured by others or on any fuses, batteries or other consumable materials. Only the original manufacturer's warranty applies.
d. Unless specifically authorized in a separate writing by Seller, Seller makes no warranty with respect to, and shall have no liability in connection with, goods which are incorporated into other products or equipment, or which are modified by any person other than Seller.

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Service Policy

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 +44 (0) 149 4 459200 (UK), (800) 874-2811 (USA), or (1) 651-490-2811 (International).

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Chapter 1

Unpacking and Parts Identification

Carefully unpack the instrument and accessories from the shipping container. Check the individual parts against the list of components below. If anything is missing or damaged, notify TSI immediately.

1. Carrying case
2. Instrument

Chapter 2

Setting-up

Supplying Power to the Alnor AVM410/AIRFLOW TA410

The Alnor AVM410/AIRFLOW TA410 is powered with four size AA batteries.

Installing the Batteries

Insert four AA batteries as indicated by the diagram located on the inside of the battery compartment. The Alnor AVM410/AIRFLOW TA410 is designed to operate with either alkaline or NiMH rechargeable batteries, although it will not recharge NiMH batteries. Battery life will be shorter if NiMH batteries are used. Carbon-zinc batteries are not recommended because of the danger of battery acid leakage.

Using the Telescoping Probe

The telescoping probe contains the velocity, temperature, and humidity sensors. When using the probe, make sure the sensor window is fully exposed and the orientation dimple is facing upstream.

***NOTE**: For temperature measurements, make sure that at least 3 inches (7.5 cm) of the probe is in the flow to allow the temperature sensor to be in the air stream.*

Extending the Probe

To extend the probe, hold the handle in one hand while pulling on the probe tip with the other hand. Do ***not*** hold the cable while extending the probe as this prevents the probe from extending.

Retracting the Probe

To retract the probe, hold the handle in one hand while gently pushing on the probe tip with the other hand. If you feel the probe antenna binding, pull gently on the probe cable until the smallest antenna section is retracted. Collapse the rest of the antenna by pressing the probe tip.

Chapter 3

Operation

Keypad Functions

ON/OFF Key	Press to turn the Alnor AVM410/AIRFLOW TA410 on and off. During the power up sequence the display will show the following: Model Number, Serial Number, Software Revision, and Last Date Calibrated.
ft/min / m/s Key	Pressing this key changes the display to read air velocity.
°C / °F Key	Pressing this key changes the display to read temperature.
Changing Units	To change units, first put the desired measurement (air velocity or temperature) on the display. Then press and hold the left, unlabelled key for five seconds. Finally, use the ▲▼ and ENTER key to select the units.

Chapter 4

Maintenance

The Alnor AVM410/AIRFLOW TA410 requires very little maintenance to keep it performing well.

Recalibration

To maintain a high degree of accuracy in your measurements, we recommend that you return your Alnor AVM410/AIRFLOW TA410 to TSI for annual recalibration. Please contact one of TSI's offices or your local distributor to make service arrangements and to receive a Return Material Authorization (RMA) number.

Cases

If the instrument case or storage case needs cleaning, wipe it off with a soft cloth and isopropyl alcohol or a mild detergent. Never immerse the Alnor AVM410/AIRFLOW TA410. If the enclosure of the Alnor AVM410/ AIRFLOW TA410 becomes broken, it must be replaced immediately to prevent access to hazardous voltage.

Storage

Remove the batteries when storing the unit for more than one month to prevent damage due to battery leakage.

Chapter 5

Troubleshooting

Table 5-1 lists the symptoms, possible causes, and recommended solutions for common problems encountered with the Alnor AVM410/AIRFLOW TA410. If your symptom is not listed, or if none of the solutions solves your problem, please contact TSI.

Table 5-1: Troubleshooting the Alnor AVM410/AIRFLOW TA410

Symptom	Possible Causes	Corrective Action
No Display	Unit not turned on	Switch unit on.
	Low or dead batteries	Replace batteries or plug in AC adapter.
	Dirty battery contacts	Clean the battery contacts.
Velocity reading fluctuates unstable	Fluctuating flow	Reposition probe in less-turbulent flow
Instrument Error message appears	Fault in instrument	Factory service required on instrument.

WARNING!
Remove the probe from excessive temperature immediately: excessive heat can damage the sensor. Operating temperature limits can be found in

Appendix A

Specifications

Specifications are subject to change without notice.

Velocity:

Range:	0 to 4000 ft/min (0 to 20 m/s)
Accuracy[1&2]:	±5% of reading or ±5 ft/min (±0.025 m/s), whichever is greater
Resolution:	1 ft/min (0.01 m/s)

Temperature:

Range:	0 to 200°F (-18 to 93°C)
Accuracy[3]:	±0.5°F (±0.3°C)
Resolution:	0.1°F (0.1°C)

Instrument Temperature Range:

Operating (Electronics):	40 to 113°F (5 to 45°C)
Operating (Probe):	0 to 200°F (-18 to 93°C)
Storage:	-4 to 140°F (-20 to 60°C)

Instrument Operating Conditions:

Altitude up to 4000 meters
Relative humidity up to 80% RH, non-condensing
Pollution degree 1 in accordance with IEC 664
Transient over voltage category II

External Meter Dimensions:

3.3 in. × 7.0 in. × 1.8 in. (8.4 cm × 17.8 cm × 4.4 cm)

Meter Weight:

Weight with batteries:	0.6 lbs (0.27 kg)

Power Requirements:

Four AA-size batteries (included)

1 Temperature compensated over an air temperature range of 40 to 150°F (5 to 65°C).

2 The accuracy statement of ±5.0% of reading or ±5 ft/min (±0.025 m/s), whichever is greater, begins at 30 ft/min through 4000 ft/min (0.15 m/s through 20 m/s).

3 Accuracy with instrument case at 77°F (25°C), add uncertainty of 0.05°F/°F (0.03°C/°C) for change in instrument temperature.