

Air Measurement
Instruments



Rugged. Reliable. Professional.





Alnor History

About Alnor Instruments™

HVAC contractors, facility personnel, building engineers, safety officers, and industrial hygienists around the world use and trust Alnor® brand handheld instruments. Alnor Instrument Co. (originally called Illinois Testing Laboratories) began operation in 1919 in Chicago, Illinois, as a repair and service center for precision instrumentation.

Over the years, the Alnor product line has grown by responding to the need for key new products and technologies. Introduced in the 1930s and still widely used today, the Alnor Velometer® Air Velocity Meters and the Velometer Jr.® Anemometers began the long series of popular products. More recently introduced products, such as the Balometer® Capture Hoods, are standards of performance in HVAC testing and balancing. And in less than two decades the AirGard® series of alarms and monitors have become an industry leader in both new and retrofit lab hood monitor installations.

In 1995, the Alnor Instrument Company was acquired by TSI Incorporated. Today the long tradition of providing reliable, durable, affordable Alnor® brand instrumentation continues at the manufacturing, engineering, sales, and service facilities of TSI Incorporated in Shoreview, Minnesota.

Service and Support

You can expect fast turnaround times for calibration and repair service for your Alnor Instruments. Our extensive network of world-class distributors is standing by to provide you with outstanding local support. Detailed product specifications, as well as service information, is available on the website at www.alnor.com.



New Products, New Look, Same Great Quality

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Alnor calibrated instruments are supplied with a FREE fully traceable certificate of calibration.

Balometer® Capture Hoods



Model EBT721
(shown with optional accessories)

EBT Balometer® Capture Hoods Model EBT721

The EBT721 is a multipurpose electronic air balancing instrument for reading air volume at diffusers, grilles, and registers. It is ideal for test and balance contractors, commissioning agents, facility managers, engineers, and construction contractors. This light weight ergonomically designed product saves time and money while helping to create a healthy and energy efficient environment.

The standard EBT721 kit includes 2 ft. x 2 ft. (610 mm x 610 mm) capture hood, base, manometer, pitot tube, static pressure tips, Norprene™ tubing, and LogDat1™ downloading software in a luggage style wheeled carrying case.

Features and Benefits

- Ergonomic design and ultra light weight for easy one person operation
- Detachable digital manometer for use in other applications
- Use with pitot, air flow, temperature, or relative humidity probes
- Data logging and LogDat1 downloading software included for easy report generation
- Pre-assembled hood frames save time on site
- Multiple hood sizes available
- Measurement range: 25–2,500 cfm (42–4,250 m³/h)



ABT Balometer® Capture Hoods

Models ABT701/ABT703/ABT711/ABT713

The new ABT Analog Balometer® Capture Hoods continue the long Alnor® brand tradition of providing accurate and dependable analog instrumentation to the ventilation testing and balancing community. By placing an Alnor® ABT Balometer® Capture Hood over a diffuser or grille, air volume measurements are obtained quickly and easily which maximizes productivity.

Fast meter response and easy-to-read indicator over a large scale make the ABT Balometer® Capture Hood an ideal choice for facility engineers, ventilation testing and balancing professionals, and commissioning.



Model ABT701

Features and Benefits

- Simple-to-read analog meter allows for quick measurements
- Easy-to-carry with one hand using sturdy middle handle
- Ergonomic design and ultra light weight for easy one person operation
- Multiple hood sizes available
- Measurement hold function
- Wheeled, luggage-style carrying case



LoFlow Balometer® Capture Hoods

Models 6200D, 6200F

The LoFlo Balometer® Capture Hood is the ideal way to measure very low volumetric flow. Confidently and accurately measure supply or return flows from 10–500 cfm (17–850 m³/h). This light weight instrument is great for residential or light commercial use.

Features and Benefits

- Models available with 2 ft. x 2 ft. (610 mm x 610 mm) hoods or 16 in. x 16 in. (406 mm x 406 mm) hoods
- Weighs only 6.5 lbs. (3 kg) with 2 ft. x 2 ft. (610 mm x 610 mm) hood attached
- Simulated analog display shows air trends and digital readings
- Uses 4 C-size alkaline batteries; minimum 10 hours continuous use
- For small diffusers, the base can be used without a hood



Model 6200D

Parameters and Features Chart

The chart below is a guide for selecting a Balometer® Capture Hood to best fit your measurement needs.

Model	LoFlow Balometer® Capture Hood		ABT Balometer® Capture Hoods				Electronic Balancing Tool
	6200D	6200F	ABT701	ABT703	ABT711	ABT713	EBT721
10–500 CFM (17–850 CMH)	•	•					
0–1,000 CFM			•	•			
0–2,000 CMH					•	•	
25–2,500 CFM (42–4250 CMH)							•
Temperature (°F or °C)							•
Velocity Matrix, temperature or RH% probe							0
With 2 ft. x 2 ft. hood	•		•		•		•
With 16 in. x 16 in. hoods		•		•		•	
Statistics (min, max, and avg)							•
Data log (recall, download to a PC)							•
K-factor input or field calibration	•	•					•
Automatic Density Correction							•
Backpressure Compensation							•

All instruments include a free NIST or EAL Certificate of Calibration.

• = Feature of Instrument 0 = Optional CFM = ft.³/min CMH = m³/hr

Accessories

LoFlo Balometer® Capture Hoods

- 634620120 16 in. x 16 in. (406 mm x 406 mm) - 8 in. tall (200 mm) hood and frame kit
- 634620085 16 in. x 16 in. (406 mm x 406 mm) - 18 in. tall (457 mm) hood and frame kit
- 634620110 2 ft. x 2 ft. (610 mm x 610 mm) hood and frame kit
- 634620130 26 ft. x 26 ft. (650 mm x 650 mm) hood and frame kit

ABT & EBT Balometer® Capture Hoods

- 801200 1 ft. X 4 ft. (305 mm x 1,220 mm) hood and frame kit
- 801201 2 ft. X 4 ft. (610 mm x 1,220 mm) hood and frame kit
- 801202 1 ft. X 5 ft. (305 mm x 1,525 mm) hood and frame kit
- 801203 3 ft. X 3 ft. (915 mm x 915 mm) hood and frame kit
- 801206 1 ft. X 4 ft. (305 mm x 1,220 mm) and 2 ft. X 4 ft. (610 mm x 1,220 mm) hood and frame kit
- 801207 1 ft. X 5 ft. (305 mm x 1,525 mm) and 3 ft. X 3 ft. (915 mm x 915 mm) hood and frame kit
- 801209 16 in. X 16 in. (406 mm x 406 mm) hood and frame kit
- 801210 5.25 in. X 48 in. (133 mm X 1,220 mm) hood and frame kit
- 801211 28 in. X 28 in. (710 mm X 710 mm) hood and frame kit
- 801212 28 in. X 50 in. (710 mm X 1,270 mm) hood and frame kit

EBT Balometer® Capture Hoods

- 801204 Biological Safety Cabinet Hood, 8 in. (200 mm) hood and frame kit
- 801205 Biological Safety Cabinet Hood, 10 in. (250 mm) hood and frame kit
- 800187 Air flow probe 18 in. (46 cm)
- 800188 Telescopic temperature probe
- 800189 Telescopic humidity and temperature probe
- 801090 Velocity Matrix, telescopic handle, two 8 ft. (2.4 cm) neoprene tubes



Velometer® Air Velocity Meters



Model AVM440

Thermal Anemometers Models AVM440, AVM430

The Models AVM440 and AVM430 are like having multiple meters for the price of one, yet simple to operate. Purchase instruments with either a straight or articulated probe—all in one compact package.

Features and Benefits

- High accuracy over a wide velocity range 0–6,000 ft/min (0–30 m/s)
- Simultaneously measures temperature and velocity
- Calculates volumetric flow and actual/standard velocity
- Data logging and LogDat2™ downloading software included
- Articulating probes are available
- Measures humidity (AVM440)

Thermal Anemometers Model AVM410

The AVM410 digital velocity meter is a solid choice for an Air Velocity Meter, without compromising accuracy and precision. It is perfect for troubleshooting HVAC systems and conducting commissioning work.

Features and Benefits

- Range is 0–4,000 ft/min. (0–20 m/s)
- Large, easy to read display
- Press button to hold reading



Model AVM410

Model 9880

The 9880 is an UL-listed intrinsically safe Air Velocity Meter. Technicians will find them ideal instruments for velocity measurements in lab hoods, spray booths, ventilation systems or IAQ checks. The 9880 has a 3 inch retractable, 180 degree rotating probe.

- Model 9880D range: 0–2,000 ft/min.
- Model 9880E range: 0–10 m/s



Model 9880D

Velometer® Rotating Vanes

Model RVA801

Model RVA801 is a light weight, robust, and simple to use Rotating Vane Anemometer that provides accurate and reliable readings every time. Ideal for HVAC commissioning at grilles, ducts, and diffusers; the RVA801 displays readings in metric or imperial mode from 50–6,000 ft/min. (0.25–30 m/s) and 32–140° (0–60°C).

Features and Benefits

- Reversible 4 in. (100 mm) head allows readings at supply and extract grilles
- Calculates volumetric flow rate
- Compatible with Aircone Flow Hoods
- No density correction factors required
- Automatic averaging of air velocity



Model RVA801

Velometer® Rotating Vanes

Model RVA501

Model RVA501 is a handheld digital Rotating Vane Anemometer used for air velocity and volumetric flow measurements.

Features and Benefits

- Measures velocity and temperature
- Compatible with Aircone Flow Hoods
- Log, store, and recall data
- Download data to a PC using LogDat2 downloading software
- Optional telescopic probe available
- Measurement range: 50–6,000 ft/min. (0.25–30 m/s) and 32–140° (0–60°C).



Model RVA501

Aircone Flow Hoods

Model 801750

Aircone Flow Hoods are a fast and accurate method of maximizing the usefulness of your 4 in. (100 mm) rotating vane anemometers. For a modest investment, you can double the capability of your rotating vane, turning it into an air volume flow balancing tool.

Features and Benefits

- Kit includes rectangular 11 in. x 9 in. (285 mm x 235 mm) and circular 7 in. (180 mm) cones available
- Measures volumetric flow at grilles, diffusers and registers
- Excellent choice for small bathroom exhausts
- Works with RVA801 and RVA501



Velometer® Jr. Anemometers

Model 8100

Contractors, balancers, plant engineers, and industrial hygienists have preferred Alnor Velometer instruments for decades. Ideal for measuring general face velocities.



Model 8100-8

Features and Benefits

- 8100 available in multiple ranges
- Measures accurately in any position
- Compact, palm size meter
- Light weight
- Dual scales
- Inherently intrinsically safe

Models

8100-8; 0–200 and 0–800 ft/min.

8100A-16; 0–400 and 0–1,600 ft/min.

8100B-25; 0–500 and 0–2,500 ft/min.

Air & Water Pressure



Model AXD620

Micromanometers

Model AXD620

The AXD620 is a rugged, compact, comprehensive Micromanometer that measures pressure, and calculates velocity and volumetric flow rate. It can be used with Pitot tubes to measure velocity and then calculate flow rates with user-input duct size and shape. Premium features make it ideal for HVAC, environmental safeguards, commissioning, process control and system balancing.

Micromanometers

Model AXD610

The AXD610 is an easy to use, handheld digital Micromanometer for fast, accurate and reliable pressure measurements. It can also calculate velocity.



Model AXD610

Features and Benefits AXD620 and AXD610

- Measures differential and static pressure from -15 to +15 in. H₂O (-3,735 to +3,735 Pa)
- Calculates and displays velocity when using a Pitot tube

Added Features AXD620

- Calculates volumetric flow rate in duct from velocity and user-input duct size and shape
- Records data points of duct traverse using sampling function
- Data logs with time and date stamp
- Includes LogDat2 downloading software
- Programmable K factors

Micromanometer

Model EBT720

The EBT720 is one of the most advanced, versatile, and easy-to-use Micromanometers on the market today. Auto-zeroing allows you to make measurements throughout the day. Velocity matrix accessory is useful in measuring downflows in clean rooms and other specialized spaces.

Features and Benefits

- Accurately measures pressure, velocity (Pitot), and flow
- Large, easy to read display
- Data logging and LogDat1 downloading software included
- Measures differential and static pressure from -15 to +15 in. H₂O (-3,735 to +3,735 Pa)
- Resolution 0.00001 in. H₂O (0.001 Pa)



Optional Accessories for EBT720

- 16 point velocity matrix with telescoping handle
- Air flow probe
- Temperature probe
- Temperature/humidity probe



Hydronic Manometers

Models HM670, HM680

The HM670 and HM680 are used to balance hydronic heating and cooling systems and to check pump performance. Both models can measure and display differential, high side, and low side pressures simultaneously without the need to change hose connections or instrument valve settings.



Features and Benefits HM670 and HM680

- Large backlit display for use in low light areas
- Operates on four alkaline or NiMH rechargeable batteries
- Reads in. H₂O, ft. H₂O, psi, in. Hg, mm H₂O, kPa, mm Hg, or bar
- Measures from 0–300 psi (0–2,068 kPa)

Added Features HM680

- Performs on-board universal flow and btu/hr calculations
- Displays volumetric flow when a Cv (Kv) factor is programmed
- Allows up to 100 Cv (Kv) factors to be entered
- Calculates brake power, heat flow, Cv (Kv) factors, and impeller sizing
- Stores up to 1,000 data points for recall or downloading via USB interface



Indoor Air Quality



Model CF920

Indoor Air Quality Meters Models CF930, CF920

The CF920 Indoor Air Quality Meter quickly and accurately measures carbon dioxide, temperature, and humidity levels in real time with a single probe. It data logs readings with time and date stamp for easy downloading to a PC. It is the ideal instrument for checking ventilation rates, air changes, investigating indoor air quality, and performing thermal comfort studies. The model CF930 adds CO (0–500ppm).

Features and Benefits

- Long-lasting NDIR sensor to monitor CO₂ from (0–5,000ppm)
- Manual or continuous data logging
- Includes LogDat2 downloading software and interface cable to download to a PC
- Calculates % outside air from CO₂ or temperature
- Displays humidity as % RH, dew point or wet bulb

Indoor Air Quality Meters Model CF910 CO₂ Meter

The CF910 CO₂ Meter is an excellent handheld diagnostic instrument for measuring and monitoring carbon dioxide levels. HVAC professionals use it for conducting IAQ surveys, checking air changes, and evaluating ventilation systems in schools, offices, factories and hospitals.



Model CF910

Features and Benefits

- Statistics function for average, maximum, and minimum values
- Large display
- Real-time CO₂ readings in parts per million (PPM) from (0–5,000ppm)
- Integrated NDIR sensor

Thermohygrometers

Model TH720

The TH720 Thermohygrometer is an excellent diagnostic instrument for conducting thermal comfort studies, IAQ evaluations, monitoring manufacturing processes, checking storage facilities, and verifying heating and cooling system performance.



Model TH720

Features and Benefits

- Measures temperature, % RH and dew point in real time
- Calculates % outside air
- Calculates wet bulb temperature
- Data logs readings with time and date stamp
- Download to a PC using LogDat2 downloading software



Thermohygrometers

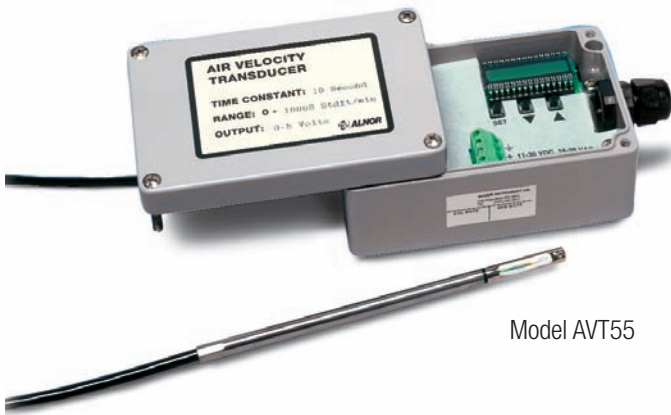
Model TH710

The TH710 Thermohygrometer is a base model that displays average temperature and humidity. It is ideal for use in plant maintenance and inspection of air conditioning systems.

Features and Benefits

- Reliably measures temperature and humidity
- Calculates wet bulb temperature
- Simple operation

Installed Instruments



Model AVT55

Air Velocity Transducers Models AVT55, AVT65, AVT75

The AVT55, AVT65, and AVT75 Air Velocity Transducers are ideal for both temporary and permanent installations for air velocity measurements in research and development labs, manufacturing processes, and other applications. The full scale range, signal output (voltage or current), and time constant are user-selectable and can be easily changed to meet the needs of your application.

Features and Benefits

- The AVT55 is a general purpose transducer with a protected tip and rugged ceramic sensor. Range: 25–10,000 ft/min. (0.125–50 m/s)
- The AVT65 has a windowless sensor for measurements in confined spaces. Range: 25–10,000 ft/min. (0.125–50 m/s)
- The AVT75 features an omni-directional sensor which makes it accurate at very low velocities 10–500 ft/min. (0.05–2.5 m/s) and for use when flow direction is unknown

AirGard® Lab Hood Monitors Models 335, 200, 405, 315, 350

Alnor AirGard Lab Hood Monitors provide an indication of safe levels of airflow in laboratory fume hoods and meet the requirements of ANSI Z9.5-2003, NFPA 45-2004, SEFA 1.2-2002, and NSF 49-2002. The models 200/405 feature an audible and visual alarm with relay output in an easy-to-calibrate unit ideal for retrofitting existing hoods. The model 335 features a color analog LCD display to indicate face velocity; it may also be configured to display face velocity digitally.



Model 335

Features and Benefits

- AirGard 335 gives you continuous viewing of face velocity
- AirGard 200/405 is designed for easy retrofit to existing hoods
- AirGard 315/350 gives you velocity readings taken by remote probe inserted in air flow stream

Parameters and Features Chart

The chart below is a guide for selecting an instrument to best fit your measurement needs.

Model	Velometer® Velocity Meter			Velometer® Rotating Vane		Air Velocity Transducers			Micromanometer			CompuFlow IAQ Meters			TH-Calc Thermohygrometers	
	AVM410	AVM430	AVM440	RVA801	RVA501	AVT55	AVT65	AVT75	EBT20	AXD610	AXD620	CF910	CF920	CF930	TH710	TH720
Air Velocity	T	T	T	V	V	T	T	T	P	P	P					
Temperature Reading	•	•	•	•	•				O				•	•	•	•
Flow Rate		T	T	V	V				P, Δ		P, Δ					
Differential Pressure									•	•	•					
Humidity %RH, Dew Point, Wet Bulb)			•						O				•	•	H, WB	•
% Outside Air													•	•		•
CO ₂												•	•	•		
CO														•		
Density Correction		•	•						•		•		•	•		
K-factor									•		•					
Data Logging/Downloading		•	•		•				•		•		•	•		•
Review Data		•	•		•				•		•		•	•		•
Statistic		•	•		•				•		•	•	•	•		•
Variable Time Constant		•	•		•	•	•	•			•		•	•		•
Field Calibration Adjustment		•	•		•	•	•	•	•		•	•	•	•		•
Back-lit Display		•	•		•				•		•		•	•		•

All instruments include a free NIST or EAL Certificate of Calibration.

- = Feature of Instrument
- T = Thermal Anemometer
- P = Pitot Tube Reading
- Δ = Calculated from Differential Pressure
- V = Rotating Vane Anemometer
- WB = Wet Bulb
- H = Humidity
- O = Optional

TSI Incorporated serves a global market by investigating, identifying and solving measurement problems. As an industry leader in the design and production of precision instruments, TSI partners with research institutions and customers around the world to set the standard for measurements relating to aerosol science, air flow, indoor air quality, fluid dynamics and biohazard detection. With headquarters based in the U.S. and field offices throughout Europe and Asia, TSI has established a worldwide presence in the markets we serve. Every day, our dedicated employees turn research into reality.

Contact Alnor for a free HVAC Handbook: A Practical Guide to Performance Measurements in Mechanical Heating, Ventilating and Air Conditioning Systems

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