



▼ The Revolutionary Tri-Averaging Flow Sensor

The **Carnes Tri-Averaging Flow Sensor** represents the birth of the next generation of inlet flow sensors. Center averaging flow sensors have revolutionized the VAV industry by increasing the accuracy of inlet sensors. Carnes has taken this technology to the next level with its **Patented** (Patent 7,597,009) Tri-Averaging Flow Sensor.

After thousands of engineering and laboratory hours, Carnes has developed a sensor that not only averages once in the center but **averages three times** throughout the entire sensor. The result is a highly accurate sensor.

Accuracy

The Tri-Averaging Flow Sensor has an accuracy of $\pm 3\%$ in the .25-1.00" wg. range while maintaining an accuracy of $\pm 5\%$ in the entire operating range regardless of duct conditions.

Controller Output

Many controllers on the market today require at least 0.03" wg. to function properly. The revolutionary Tri-Averaging Flow Sensor will provide this signal at approximately 450 FPM. In addition, the amplification factor that is produced ranges up to 3.2.

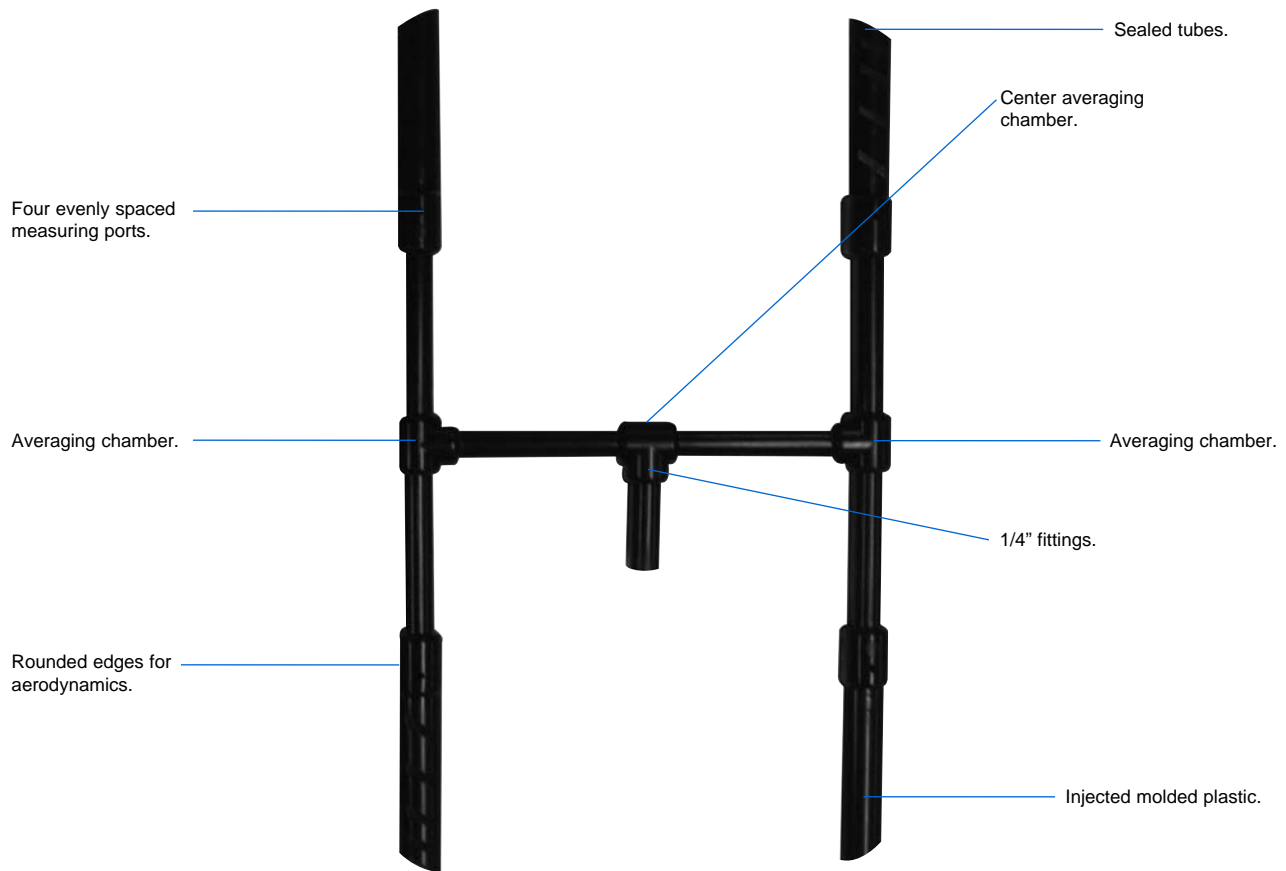
Stand Alone Measuring Station

The all new Tri-Averaging Flow Sensor is available in a stand alone version to use as a measuring station (Model AFSA).

Suggested Specifications

Differential pressure sensor shall be "H" shaped multi-point center averaging type with a minimum of three averaging chambers. Sensors with one single averaging chamber shall not be acceptable. Single axis sensors shall not be acceptable. A sensor that delivers the differential signal from only one end of the sensor shall not be acceptable. A minimum of four total pressure sensing points shall be available. The sensor shall have an output factor of at least 2.0 times the equivalent velocity pressure signal obtained from a typical pitot tube. The sensor shall develop a differential pressure signal of 0.03" wg. at a velocity of ≤ 450 FPM. A calibration chart shall be provided on each unit.

TRI-AVERAGING FLOW SENSOR



CALIBRATION DATA (Refer to Controls Section for Calibration Curves)

Duct Size	5	6	7	8	10	12	14	16	18	26
C_V	305	449	667	952	1420	2184	2900	4033	5264	6963
K	3.2	3.0	2.7	2.5	2.5	2.3	2.3	2.4	2.0	2.0

$$C_V = \text{CFM} @ 1" \Delta P$$

- Patented design (Patent 7,597,009)
- $\pm 3\%$ in suggested operating range.
- Tri-Averaging capabilities.
- Amplification factor ranges up to 3.2.
- Injected molded plastic.
- 1/4" fittings.
- Flow (CFM) = $C_V \times \sqrt{\Delta P}$
- ΔP (inches W.G.) = $K \times \left(\frac{\text{FPM}}{4005}\right)^2$
- $\text{FPM} = \frac{\text{CFM}}{\text{area (sq. ft.)}}$