# SSS-1000 Series
# Airflow Pickup Tubes

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## Description and Application

SSS-10xx models are designed to help sense differential pressure in the inlet section of VAV (Variable Air Volume) terminal units and fan terminal units. These airflow pickup tubes (also known as pitot tubes) are often used in conjunction with VAV controllers for individual **zone control in HVAC systems. They can also be used to help sense differential pressure at other locations in the main** or branch duct systems. The differential pressure read between the high "H" port and the low "L" port can be used to determine the airflow. Static pressure can also be measured using just one of the ports with the pickup tubes rotated 90°. (See *Sample Applications on page 4*.)

For using SSS-10xx pickup tubes with **CSC-3000** series, **CSP-4000/5000** series, **KMD-7000** series, and **BAC-8000/9000** series controllers, see the Connections section of the **SSS-1000 Series Installation Guide** for details and accessories.

SSS-111x models are designed for mounting on the supply fan bell of an AHU, RTU, or UV to help sense supply airflow for a **KMC Airflow Measurement System**. See the Airflow Measurement System documentation for details.

Models offer up to six pickup points and lengths of 80 to 252 millimeters (about 3 to 18 inches).

**NOTE: For maximum measurement accuracy, install the longest pickup tubes that will fit in the duct.**

## Models

**SSS-100x** (black) have 1/4″ connections for 3/8″ OD polyethylene tubing

| | |
|---|---|
| **SSS-1002** | One pickup point, 80 mm (about 3″) length tubes |
| **SSS-1003** | Two pickup points, 137 mm (about 5.5″) length tubes |
| **SSS-1004** | Three pickup points, 195 mm (about 8″) length tubes |
| **SSS-1005** | Four pickup points, 252 mm (about 10″) length tubes |

**SSS-101x** (gray flanges, black tubes) have 3/16″ fittings for 1/4″ OD polyethylene tubing

| | |
|---|---|
| **SSS-1012** | One pickup point, 80 mm (about 3″) length tubes |
| **SSS-1013** | Two pickup points, 137 mm (about 5.5″) length tubes |
| **SSS-1014** | Three pickup points, 195 mm (about 8″) length tubes |
| **SSS-1015** | Four pickup points, 252 mm (about 10″) length tubes |

**SSS-111x** (black) have right-angled mounting feet and 3/16″ fittings for 1/4″ OD tubing

Single mounting foot:

| | |
|---|---|
| **SSS-1112** | One pickup point, 80 mm (about 3″) length tubes |
| **SSS-1113** | Two pickup points, 137 mm (about 5.5″) length tubes |
| **SSS-1114** | Three pickup points, 195 mm (about 8″) length tubes |

Dual mounting feet:

| | |
|---|---|
| **SSS-1115** | Four pickup points, five sections*, 315 mm (about 13″) length |
| **SSS-1116** | Five pickup points, six sections*, 394 mm (about 15.5″) length |
| **SSS-1117** | Six pickup points, seven sections*, 457 mm (about 18″) length |

***NOTE**: The extra section connects the tubes to the second mounting foot.

## Specifications

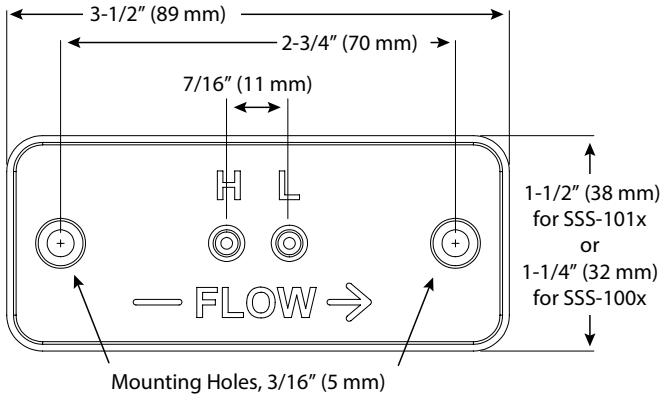
### General

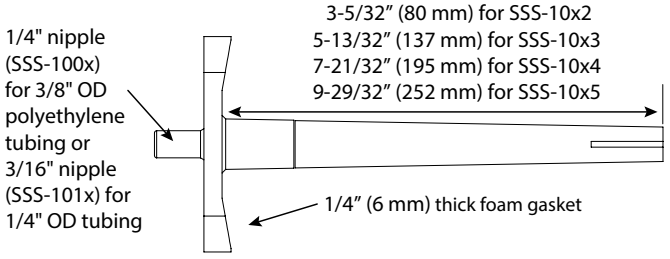
| | |
|---|---|
| **Material** | ABS/polycarbonate (UL94-5V) |
| **Mounting Connection** | |
| SSS-100x | Integral flange with gasket, 1/4" (6.4 mm) fitting for **3/8**" (9.5 mm) OD polyethylene tubing |
| SSS-101x | Integral flange with gasket, 3/16" (4.89-9 mm) fitting for **1/4**" (6.4 mm) OD polyethylene tubing |
| SSS-111x | Integral right-angled mount(s) 3/16″ (4.8 mm) fitting for **1/4″** (6.4 mm) OD polyethylene tubing |
| **Weight** | 1 oz. (28 grams) |
| **Temperature Limits** | |
| Operating | 40 to 120° F (4 to 49° C) |
| Shipping | –40 to 140° F (–40 to 60° C) |
| **Approvals** | RoHS compliant |

## Dimensions and Details

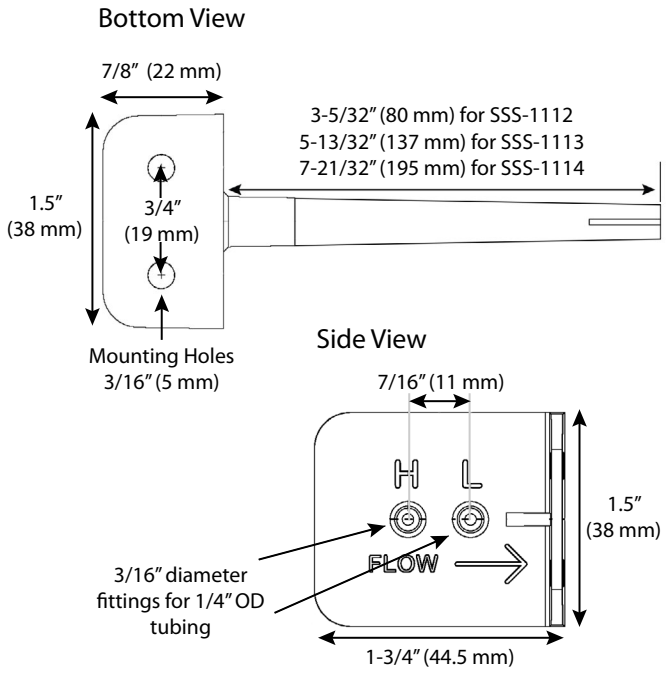
All dimension are in inches (mm)

### SSS-100x and SSS-101x Models

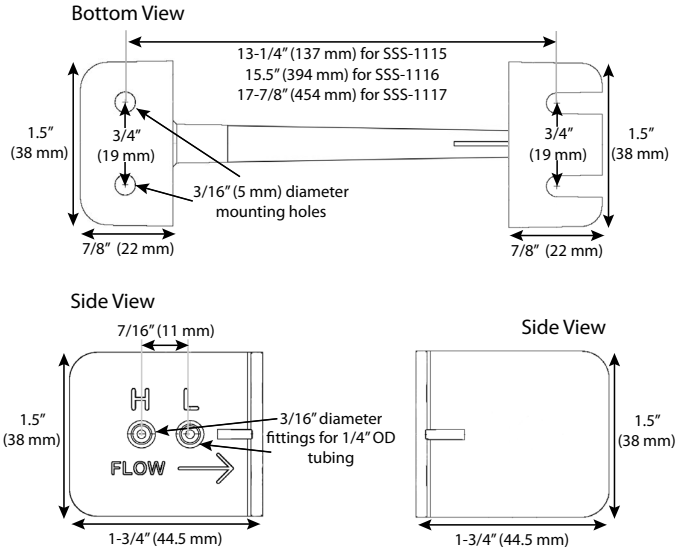



### SSS-1112/1113/1114 Models




### SSS-1115/1116/1117 Models



## "Cubic Feet Per Minute" K Factors

For VAV controllers needing $K_{CFM}$ for setup:

For rectangular ducts, $K_{CFM} = K_{FPM} \times (W'' \times H''/144)$ (with duct cross-section measurements in inches).

For round ducts, $K_{CFM} = K_{FPM} \times (\pi r^2/144)$ (with duct cross-section measurements in inches).

NOTE: To conveniently determine the radius of an installed round duct, measure the circumference with a string and tape measure and calculate radius = circumference/2π. The $K_{CFM}$ values for the most common (diameter) sizes of round ducts are listed below. (Diameter = 2r.)

| For Controllers Needing $K_{CFM}$ for Setup | | | | |
|---|---|---|---|---|
| Round Duct Size (Diameter) | $K_{CFM}$ Factor (CFM) | | | |
| | SSS-10x2 | SSS-10x3 | SSS-10x4 | SSS-10x5 |
| 4 | 301 | NA | NA | NA |
| 5 | 470 | NA | NA | NA |
| 6 | 677 | 648 | NA | NA |
| 7 | 922 | 882 | NA | NA |
| 8 | 1204 | 1152 | 1117 | NA |
| 9 | 1524 | 1458 | 1414 | NA |
| 10 | 1882 | 1800 | 1745 | 1745 |
| 12 | 2710 | 2592 | 2513 | 2513 |
| 14 | 3688 | 3528 | 3421 | 3421 |
| 16 | 4817 | 4608 | 4468 | 4468 |
| 18 | 6097 | 5832 | 5655 | 5655 |
| 22 | 9107 | 8711 | 8447 | 8447 |
| 24 | 10838 | 10367 | 10053 | 10053 |

## "Feet Per Minute" K Factors

For VAV controllers needing $K_{FPM}$ for setup:

| "Feet Per Minute" K Factors | |
|---|---|
| Pickup Tube Model | $K_{FPM}$ |
| SSS-10x2 | 3450 |
| SSS-10x3 | 3300 |
| SSS-10x4 | 3200 |
| SSS-10x5 | 3200 |

**Chart showing higher velocities:**

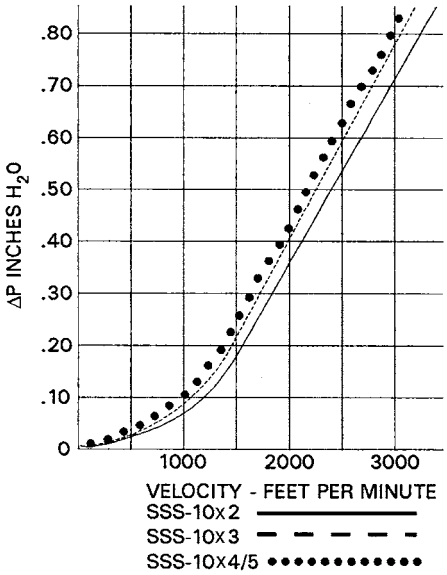
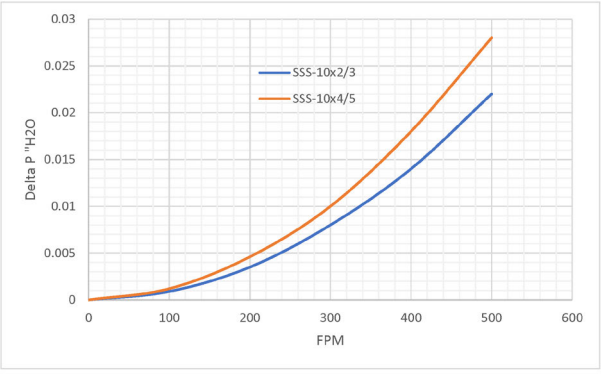


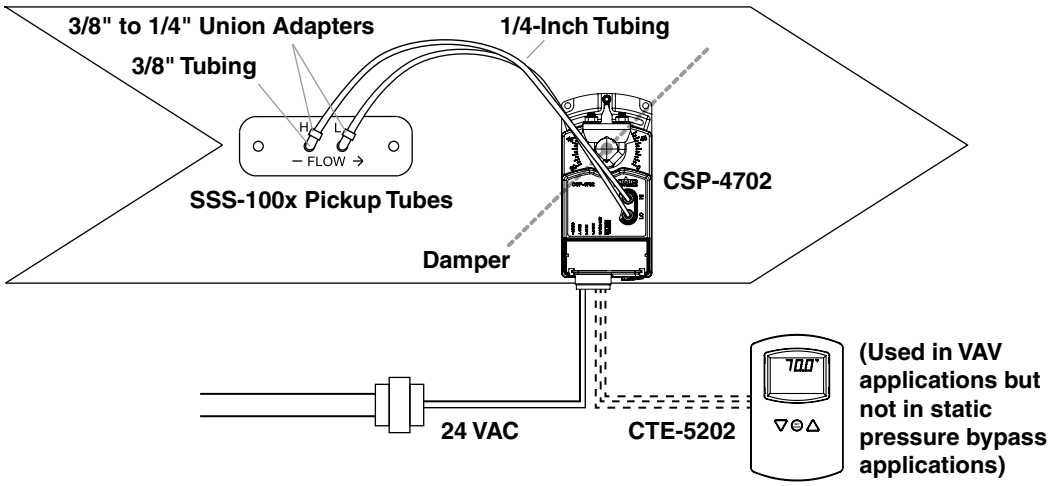

**Chart focused on lower velocities:**




| Formulas | | | |
|---|---|---|---|
| For Flow | | For Volume | |
| $\Delta P = (FPM/K_{FPM})^2$ | $FPM = K_{FPM} \times SQRT(\Delta P)$ | $\Delta P = \left(\frac{CFM}{K_{FPM} \times Area}\right)^2$ | $CFM = K_{FPM} \times SQRT(\Delta P) \times Area$ |
| Feet Per Minute in a VAV box equals the (relevant model's) K factor times the square root of the differential pressure (in "wc"). | | Cubic Feet per Minute in a VAV box equals the relevant pickup tube model's K factor times the square root of the differential pressure (in "wc") times the cross-section area (in square feet). | |
| NOTE: These formulas are for VAV controllers with built-in "differential pressure" sensors. The CSP-5000, KMD-7000, and BAC-7000 measure velocity FPM directly—see their respective installation guides and application guides for more information. | | | |
| NOTE: CFM (cubic feet per minute) = FPM (feet per minute) times the duct cross-section area (in square feet). | | | |

## Sample Applications

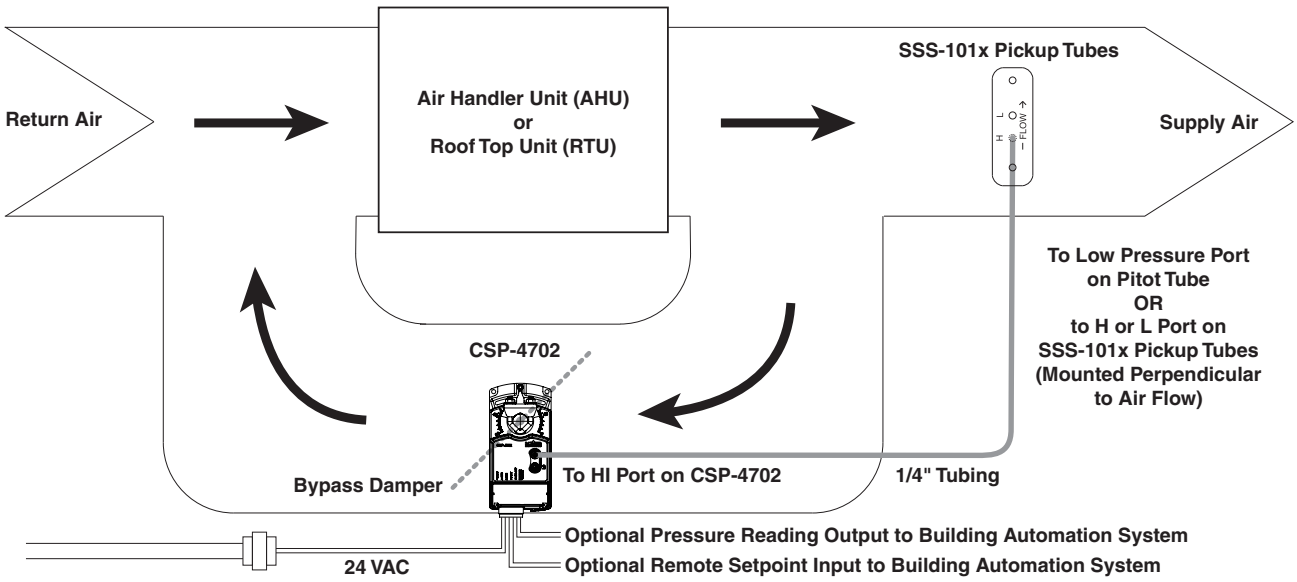
### Differential Pressure Pickup Tubes for Pressure Independent VAV




For more information, see the **CTE-5202 Applications Guide**.

**NOTE:** Adapters and 3/8" tubing not needed for SSS-101x pickup tubes.

### Static Pressure Pickup Tubes for Static Pressure Bypass Control




For more information, see the **CSP-4702 Static Pressure (Bypass) Control Application Guide**.

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