

# S500



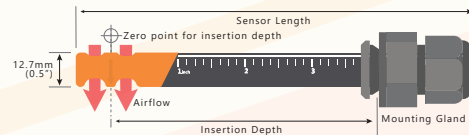
## Application

- Data Center
  - Server Exhaust
  - CRAC Airflow
  - Electronics Cabinets
- HVAC
  - Filter Monitoring
  - Damper Feedback
  - Air Handlers
  - Heat Exchangers
- Laboratory & Research
  - Clean Environments
- Industrial
  - Fan Monitoring
  - Enclosure Management
  - Process Control

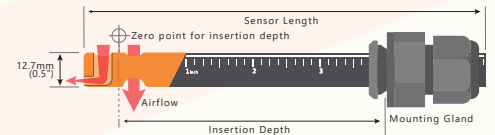
## Overview

The S500 series of air velocity and temperature switches are designed with conformal coated electronics and sealed enclosure, suitable for demanding applications, including those in corrosive or alkaline environments. With its robust, splash proof design and UV tolerant construction, the S500 series of switches are designed to handle a wide range of product and process control air flow applications where AC or DC supply voltages are encountered, as well as capable of handling extreme environments down to -10°C (14°F). Additionally, the S500 series is configured to order, with a variety of velocity ranges, mechanical lengths, and output communication styles available.

The S500 series are manufactured in directional and non-directional styles. Directional Switches only sense flow from one direction, and are immune to flow reversals. Non-directional Switches will sense flow from either direction in the duct or environment. Non-directional Switches are most popular, and enjoy a performance advantage over the directional variant.



Non-directional



Directional

## Mechanical Features

- Two available mounting styles: Standard clamp or special gland fitting used for mounting sensor assembly, without need for screws, or hands inside the duct.
- Available in directional (only senses flow from one direction) and non-directional (senses flow from either direction) styles.
- Optimized flow geometry with segregation of velocity and temperature elements for highest accuracy.
- Aerodynamic cross section to minimize flow disturbance.
- Robust, sealed probe assembly uses corrosion and UV resistant materials.
- Conformal coated sensing elements and electronics for environmental protection.
- Plenum-rated cabling suitable for HVAC, laboratory, and process control applications.
- RoHS compliant
- CE certified

## Electrical & Performance Features

- Up to 5% (non-directional) and 10% (directional) trip point accuracy, with repeatability within  $\pm 2\%$ .
- $\pm 1^\circ\text{C}$  temperature accuracy with repeatability within  $\pm 1^\circ\text{C}$ .
- Low operating temperature -10°C (14°F).
- Integrated temperature sensor for dual purpose airflow switching.
- User selectable trip point.
- Trip on Velocity and/or Temperature.
- High or low side trip point alarming.
- Best in class acceptance angle performance.
- Universal 24 VAC/MDC supply voltage.
- Simultaneous digital communication is available.
- <10 second start-up time

## Degree Controls, Inc.

is an ISO-9001 certified, world-class designer and manufacturer of airflow sensing, monitoring, and control solutions. With over 20 years of proven experience, we pride ourselves on delivering solutions which provide the value, differentiation, and service required by our customers, to meet the rapidly changing competitive landscape that they face.

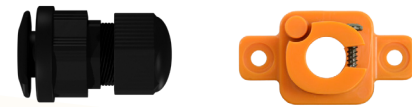
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# Specifications

Operating Temperature	-10°C to 60°C (14°F to 140°F)
Storage Temperature	-40°C to 105°C (-40°F - 220°F)
Relative Humidity	5-95%
Acceptance Angle	± 30°
Input Voltage Range	24 VAC/VDC
Current Consumption	< 20mA nominal (with Open Drain output) < 60mA nominal (with Relay output)
Alarm Delay	Configurable 5-256s (5s default)
Recovery Point	>0.25 m/s: 15% deviation from trip point 0.15 - 0.25 m/s: 25% deviation from trip point
Trip Point Accuracy	Non-directional: 5% +.05 m/s (10 fpm) from calibrated trip point Directional: 10% + .05 m/s (10 fpm) from calibrated trip point
Trip Point Range	Non-Directional: 0.15 - 20 m/s (30 - 4,000 fpm) Directional: 0.3 - 20 m/s (60 - 4,000 fpm)

Temperature Accuracy	± 1° (at > 0.5 m/s [100 fpm])
Warm Up Time	< 10 sec
Alarm Output - Relay	Solid State Relay - N.O. or N.C. Contacts Open Without Power 60V Peak (AC/DC); 0.8A Max
Alarm Output - Open Drain	MOSFET Transistor - N.O. or N.C. 40V Peak (DC); 110mA Max
Communications (Optional)	I <sup>2</sup> C (400 KHz) or 3.3 VDC UART
Cable Length	2 m (6 ft.)
Housing Construction	Polycarbonate (PC), UL94-V0 (head) UL94-HB (housing)
Plenum Rated Cable	22 AWG
Environmental Protection	IP65 electronics, including conformal coated sensing element
Standard Dimension	2 Selectable Lengths (See Below)



Gland Nut (left) or °C Clamp (right) fitment options available

## Temperature Compensation

The S-Series Switch is a thermal airflow switch; it is sensitive to changes in air density and measures velocity with reference to a set of standard conditions (21°C (70°F), 760mmHg (101.325kPa), and 0%RH). The S-Series Switch has been designed and calibrated to automatically compensate for temperature effects up to 60°C.

## Part Number Format

S500 - D - L - O - P - F

### D = Direction

- 1 = Non-Directional
- 2 = Directional

### L = Length

- 1 = 183mm [7.2"] max insertion depth = 140 mm [5.5"]
- 2 = 287mm [11.3"] max insertion depth = 245 mm [9.6"]

*For an additional charge, the S-Series Switches can be configured with digital communication, with either UART or I<sup>2</sup>C. Call DegreeC for ordering information.*

### O = Output

- 1 = Relay
- 2 = Open Drain

### P = Polarity

- 1 = Normally Open (N.O.)
- 2 = Normally Closed (N.C.)

### F = Fitting

- 1 = Gland Nut
- 2 = °C Clamp

## Further Ordering Information

After configuring your part number above, specify the trip point you require:

**Trip Point** – determines the point at which the switch will trigger and either open or close.

Additionally, Alarm Delay, Recovery Point, and Trip High/Low default settings may be configured:

**Alarm Delay** – defines the amount of time after the trip point has been passed before the alarm is triggered (default is 5 seconds, with a maximum of 256 seconds)

**Recovery Point** – the point at which the Switch moves out of its alarm state and reverts to normal state (see Specifications table above for more information).

**Alarm above or below trip point** – Examples below (trip point set to 100 fpm):

1. **Alarm Above Trip Point:** The Switch will alarm when the velocity is greater than 100 fpm and the alarm delay time has been exceeded. The alarm will clear when the velocity goes below the recovery point of 85 fpm.

2. **Alarm Below Trip Point (default and most common):** The Switch will alarm when the velocity is less than 100 fpm and the alarm delay time has been exceeded. The alarm will clear when the velocity goes above the recovery point of 115 fpm.



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