degreeC™

DEGREE CONTROLS,INC.

*Your Partner for Airflow Sensing & Controls*

# F500


## Application

- Specialized Process Controls
  - HVAC
  - VAV/Ventilation Controls
  - Laminar Flow Hoods
  - Clean Benches
  - HEPA & Filter Boxes
- Laboratory & Medical
  - Cleanroom Automation
- Building Management
  - Low Temperature Applications
  - Long Distance Signaling Applications

## Overview

The F500 series is a universal air velocity and air temperature sensor designed for building and process management applications where AC or DC supply voltages are encountered. Available analog outputs include voltage and long distance mA signals, that can be augmented with simultaneous digital communication. With a versatile and rugged construction using conformal coated electronics and sealed, tubular, UV tolerant housing, the F500 is capable of handling extreme environments down to -10°C (14°F). The F500 series is configured to order, with a variety of velocity ranges, mechanical lengths, and output communication styles.

## Mechanical Features

- Innovative "outside the duct" installation: Single hole for mounting sensor assembly, without need for screws, or hands inside the duct.
- Low operating temperature -10°C (14°F).
- 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.
- Printed insertion depth markers and flow direction arrow.
- Conformal coated sensing elements for environmental protection.
- 2m [6 ft] plenum-rated cabling suitable for HVAC, laboratory and process control applications.
- RoHS compliant
- CE certified

## Electrical & Performance Features

- Industry-leading air velocity performance, with repeatability within 1%.
- 1°C air temperature accuracy.
- Best in class acceptance angle performance.
- Universal 24VAC/VDC supply voltage.
- Configurable voltage output for velocity AND temperature.
- Simultaneous digital communication is available.
- May be configured as an airflow switch with open drain output.
- Multi-sensor addressing capability.
- Configurable velocity averaging for smoothing sensor response.
- <10 second start-up time and 400ms response 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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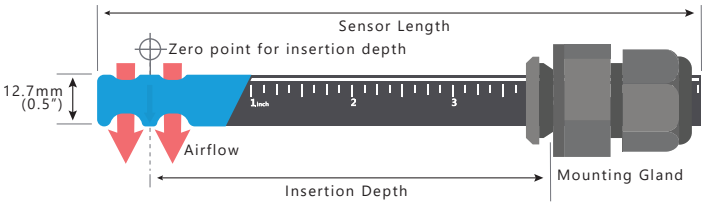
NOVA INSTRUMENTS

# Specifications

| | |
|---|---|
| Velocity Range | 0.15m/s to 20m/s (30 fpm to 4,000 fpm) |
| Operating Temperature | -10°C to 60°C (14°F to 140°F) |
| Storage Temperature | -40°C to 105°C (-40°F to 221°F) |
| Response Time | 400ms |
| Relative Humidity (non-condensing) | 5-95% |
| Supply Power Requirements | 24 VAC/VDC, 75mA nominal |

| | |
|---|---|
| Velocity & Temperature Output | 0-5V, 0-10V, or 4-20mA output |
| Digital Output | UART or I²C available for flow and temperature information |
| Alarm Output | Open drain, configurable trip point |
| Housing Construction | Polycarbonate (PC), UL94-V0 (head) UL94-HB (housing) |
| Plenum Rated Cable | 22 AWG |
| Environmental Protection | IP65 electronics, including conformal coated sensing element |




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

## Mechanical Sizes & Installation

Two sensor lengths available, to accommodate insertion depths of 30mm [1.25"] to 245mm [9.6"]. See graphic above for insertion "zero point" datum.

## Air Velocity Performance

**Repeatability ±1% of reading (under identical conditions)**

### Air Velocity Range

0.15 to 1.0 m/s (30 to 200 fpm)
0.5 to 10 m/s (100 to 2,000 fpm)
1.0 to 20 m/s (200 to 4,000 fpm)
*within compensation range

### Air Velocity Accuracy*

± (1% of reading + 0.05 m/s [10 fpm])
± (4% of reading + 0.10 m/s [20 fpm])
± (5% of reading + 0.15 m/s [30 fpm])

### Resolution: 0.1°C

## Temperature Compensation Range

**Temperature Compensation Range:** The F500 is a thermal airflow sensor; it is sensitive to changes in air density and indicates velocity with reference to a set of standard conditions (21°C (70°F), 760mmHg (101.325kPa), and 0%RH). The F500 has been designed so that when used over the stated temperature compensation range, the sensor indicates very close to actual air velocity and minimal compensation is only required to account for changes in barometric pressure or altitude.

## Part Number Format

F500 - L - V - O - C - F

**L = Sensor Length**
1 = 183mm [7.2"] max insertion depth = 140 mm [5.5"]
2 = 287mm [11.3"] max insertion depth = 245 mm [9.6"]

**V = Velocity Profile**
A = 0.15 to 1.0 m/s [30 to 200 fpm]
B = 0.5 to 10.0 m/s [100 to 2,000 fpm]
C = 1.0 to 20.0 m/s [200 to 4,000 fpm]

**O = Output Configuration, Analog**
0 = No analog
1 = 0 – 5 VDC air velocity output only
2 = 0 – 5 VDC air velocity & air temperature (dual outputs)
3 = 0 – 10 VDC air velocity output only
4 = 0 – 10 VDC air velocity & air temperature (dual outputs)
7 = 4-20 mA air velocity only
8 = 4-20 mA air velocity & air temperature (dual outputs)

**C = Communication**
0 = No digital communication
1 = UART communication output (addressing available)
2 = I2C (3.3 VDC) communication output

**F = Fitting**
1 = Gland Nut
2 = °C Clamp

Covered under US patent 6,829,930