



DEGREE CONTROLS, INC.

Your Partner for Airflow Sensing & Controls

F450



Application

- Chemical Fume Hoods
- Compact Electronics
- Curing and Coating
- Filter Boxes
- Fume Cupboards
- HVAC
- Medical Equipment
- Pressurized Cabinets
- Specialized Air Handlers
- Spray Booths
- Vent Sensing and Pressurized Containers

and products where...

- A miniature sensor head is needed
- Sensitivity to EMI
- High vibrations occur
- A PCB-mounted sensor is needed

Overview

The F450 series is a versatile, high performance, air velocity and air temperature sensor where the sensor element is built remotely from the sensor electronics. In products where segregation of the sensing element and electronics is desirable, such as products involving high EMI sensitivity or extreme temperature, or those where the sensing area is too small for typical probe-style sensors, the F450 accepts 24VDC supply voltage and provides both voltage and digital communication outputs. The voltage output may be configured 0-5V or 0-10V, and can be augmented with simultaneous digital communication, either UART or I²C.

Choose from an array of remote sensor head styles, and with conformal coated electronics built in a UV-resistant, sealed electronics enclosure, the F450 is suitable for demanding applications, including those in corrosive or alkaline environments. The F450 is configured to your requirements, and is available with a variety of velocity ranges, sensor head styles, and output communication protocols to meet a diverse range of custom applications.

Mechanical Features

- Very compact electronics.
- Many optimized sensor head designs and mechanical constructions.
- Can be used with PC board-solderable sensor head.
- Robust, sealed probe assembly uses corrosion and UV resistant materials.
- Conformal coated sensing elements for environmental protection.
- 1m (3ft), shielded sensor element wire, and 2m (6ft) plenum rated, power and signal wire.
- 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.
- 24 VDC nominal voltage input.
- Custom lower voltage inputs are available.
- 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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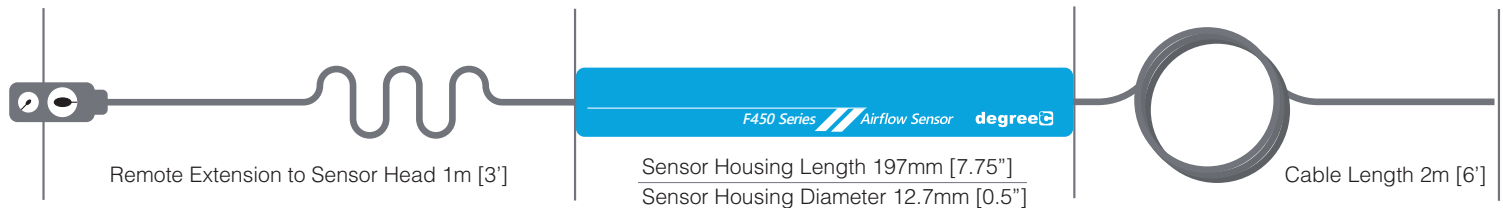
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Specifications

Velocity Range	0.15m/s to 20m/s (30 fpm to 4,000 fpm)
Operating Temperature	0°C to 60°C (32°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	19 - 29 VDC, 15mA nominal
Velocity & Temperature Output	0-5V or 0-10V output

Digital Output	UART or I ² C available for flow and temperature information
Alarm Output	Open drain, configurable trip point
Housing Construction	Polycarbonate (PC) Flammability UL94-HB
Plenum Rated Cable	22 AWG
Remote Head Cable	Shielded Teflon
Environmental Protection	IP65 electronics, including conformal coated sensing element



Available Sensor Heads

Plastic Head (PC), Low Profile Head (LP), Extra Small Blade Head (XS)
Wands (W-inches): W1.25, W3, W5, W7; Custom Sizes Available
Special Applications: Sidewall (Mounted), Inline, PCB Mount (RFS300)

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 F450 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 F450 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

F450 - H - V - O

H = Sensor Head

1 = PC Head
 2 = Low Profile Head
 3 = XS Blade Head
 4 = W1
 5 = W3 Stainless Steel Wand 3"
 6 = W5 Stainless Steel Wand 5"
 7 = W7 Stainless Steel Wand 7"
 8 = Sidewall
 9 = Inline
 10 = PCB RFS300

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

1 = 0 - 5 VDC air velocity output only
 2 = 0 - 5 VDC air temperature output only
 3 = 0 - 5 VDC air velocity and air temperature (dual outputs)
 4 = 0 - 10 VDC air velocity output only
 5 = 0 - 10 VDC air temperature output only
 6 = 0 - 10 VDC air velocity and air temperature (dual outputs)
 7 = UART communication output (addressing available)
 8 = I²C (3.3 VDC) communication output
 • Analog with UART/ I²C is available - call DegreeC



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