

F450 Remote Head



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
- There is sensitivity to EMI
- High vibrations occur

Degree Controls, Inc.

is an ISO-9001 certified, world-class designer and manufacturer of airflow sensing, monitoring, and control solutions. With over 25 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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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. F450 remote head sensors are ideal for use in products where segregation of the sensing element and sensor 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.

High-performance F450 remote head sensors use dual-sensing elements to measure air velocity and temperature simultaneously, and will sense flow from either direction. Designed with conformal coated electronics and sealed enclosure, F450 remote head sensors are suitable for demanding applications. The F450 transducer accepts a 24VDC supply voltage and provides both analog and digital communication outputs. The voltage output may be set up as 0-5V or 0-10V, and can be augmented with simultaneous digital communication, either UART or I²C.

The F450 is configured to your requirements, and is available with a variety of sensor head styles, velocity ranges, 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.
- 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

Please see our **Application Specific** sensors for additional sensor head styles including:

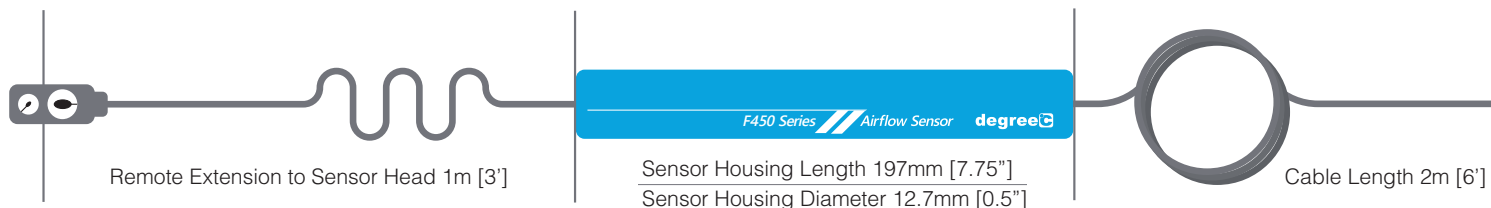
- **Sidewall** sensors which are well suited for applications where clean, ambient air can be drawn in, rather than contaminated exhaust air.
- **Inline** sensors designed to retrofit legacy products.
- **Board mount** sensors which consist of a sensor body for sensor electronics, and remote, pcb mount sensor head for measuring airflow within electronics systems and enclosures.

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.

Specifications

Velocity Range	0.15m/s to 20m/s (30 fpm to 4,000 fpm)	Digital Output	UART or I ² C available for flow and temperature information
Operating Temperature	0°C to 60°C (32°F to 140°F)	Alarm Output	Open drain, configurable trip point
Storage Temperature	-40°C to 105°C (-40°F to 221°F)	Housing Construction	Polycarbonate (PC) Flammability UL94-HB
Response Time	400ms	Plenum Rated Cable	22 AWG
Relative Humidity (non-condensing)	5-95%	Remote Head Cable	Shielded Teflon
Supply Power Requirements	19 - 29 VDC, 15mA nominal	Environmental Protection	IP65 electronics, including conformal coated sensing element
Velocity & Temperature Output	0-5V or 0-10V output		



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

See our Application Specific sensors for additional styles such as Sidewall, Inline, and PCB Mount.

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 - C

H = Sensor Head

1 = PC Head
2 = Low Profile Head
3 = XS Blade Head
4 = W1 Wand 1.25"
5 = W3 Stainless Steel Wand 3"
6 = W5 Stainless Steel Wand 5"
7 = W7 Stainless Steel Wand 7"

O = Output Configuration, Analog

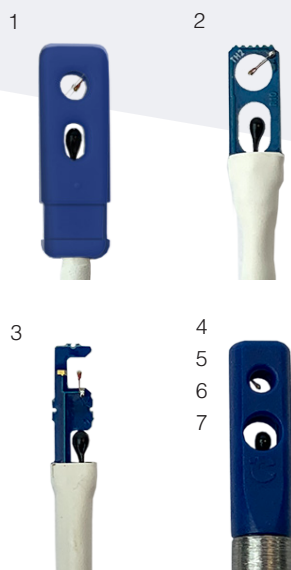
0 = No analog
1 = 0 - 5 VDC air velocity output only
3 = 0 - 5 VDC air velocity and air temperature (dual outputs)
4 = 0 - 10 VDC air velocity output only
6 = 0 - 10 VDC air velocity and air temperature (dual outputs)

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]

C = Communication

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



Please see our F350/F550 Remote Head sensors for alternative supply voltages.

F350 supply input: 4.5 - 15 VDC

F550 supply input: 24 VAC/DC



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