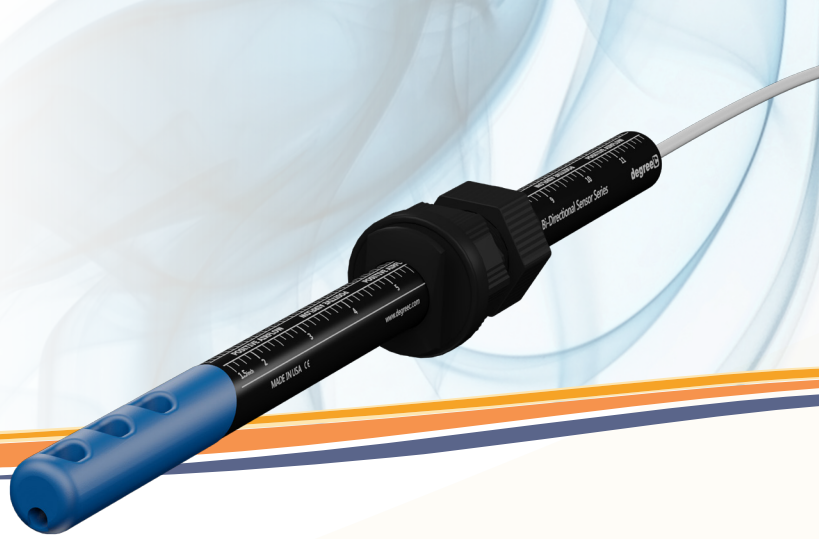
degreeC™

DEGREE CONTROLS,INC.

*Your Partner for Airflow Sensing & Controls*

# B300



## Applications

- Process Control
  - Curing & Coating Applications
  - Clean Manufacturing
- HVAC
  - Duct Flow Reversal
- Laboratory & Research
  - Critical Environment Sensing
- R&D
  - Prototype Testing

and more...

## Overview

*Bi-Directional Head*

The B300 is a low voltage, bi-directional air velocity and air temperature sensor with both analog and digital communications outputs. The bi-directional sensor outputs both the velocity of the air, as well as airflow direction, in real-time. In addition, the B300 provides the air temperature of the flow being measured. Designed with conformal coated electronics and sealed enclosure, the B300 is rugged and versatile. The B300 is suitable for combustion, curing, process control, cleanroom, and other demanding applications where air velocity, temperature, and flow direction are needed. The analog output may be configured to voltage or mA styles, and can be augmented with simultaneous digital communication, either UART or I²C. The B300 series is configured to order, with a variety of velocity ranges, mechanical lengths, and output communication styles available with industry leading lead-times.

## Mechanical Features

- Innovative “outside the duct” installation: Single hole for mounting sensor assembly, without need for screws, or hands inside the duct.
- 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 (2m [6ft]) suitable for HVAC, laboratory, and process control applications.
- RoHS compliant.
- CE certified

## Electrical & Performance Features

- 1% repeatability.
- ±1°C temperature accuracy.
- Best in class acceptance angle performance.
- Accepts wide 4.5 – 15 supply voltage.
- mA and voltage analog outputs available.
- Digital UART & I²C communication outputs available.
- May be configured as an airflow switch with open drain output.
- Multi-sensor addressing capability.
- Configurable velocity averaging for smoother 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 | -20m/s to 20m/s (-4,000 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 | 4.5 - 15 VDC, <100mA nominal @ 12V |
| Velocity & Temperature Output | 0-5V or 0-10V, 0-20mA or 4-20mA output |
| Digital Output | UART or I²C available for flow and temperature info. |
| Alarm Output | Open drain, configurable trip point |
| Housing Construction | Polycarbonate (PC), UL94-V0 (head) UL94-HB (housing) |
| Plenum Rated Cable | 22 AWG |
| Enivornmental Protection | IP65 electronics, including conformal coated sensing element |

*Magnitude of velocity is updated every 400ms; However, in order to maintain response stability, the sensor will wait for 12 successive 400ms updates (about 5 seconds) that indicate a change of direction, before directional change is indicated to the user.

## Air Velocity Performance

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

| Range | Accuracy* | Deadband** |
|---|---|---|
| -1.0 to 1.0 m/s (-200 to 200 fpm) | ± (1% of reading + 0.05 m/s [10 fpm]) | -0.15 to 0.15 m/s (-30 to 30 fpm) |
| -10 to 10 m/s (-2,000 to 2,000 fpm) | ± (4% of reading + 0.10 m/s [20 fpm]) | -0.5 to 0.5 m/s (-100 to 100 fpm) |
| -20 to 20 m/s (-4,000 to 4,000 fpm) | ± (5% of reading + 0.15 m/s [30 fpm]) | -1.0 to 1.0 m/s (-200 to 200 fpm) |

*within compensation range

**range of velocities where the direction and velocity are not discernible by the sensor

### Resolution: 0.1°C

## Temperature Compensation Range

**Temperature Compensation Range:** The B300 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 B300 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

B300 - L - V - O - F

**L = Sensor Length**

1 = 203mm [8.0"] max insertion depth = 160mm [6.3"]
2 = 305mm [12.0"] max insertion depth = 263mm [10.4"]

**V = Velocity Profile**

A = -1.0 to 1.0 m/s (-200 to 200 fpm)
B = -10 to 10 m/s (-2,000 to 2,000 fpm)
C = -20 to 20 m/s (-4,000 to 4,000 fpm)

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

**O = Output Configuration**

1 = 0 – 5 VDC air velocity output only
2 = 0 – 5 VDC air velocity and air temperature (dual outputs)
3 = 0 – 10 VDC air velocity output only
4 = 0 – 10 VDC air velocity and air temperature (dual outputs)
5 = 0 - 20 mA air velocity only
6 = 0 - 20 mA air velocity and air temperature (dual outputs)
7 = 4-20 mA air velocity only
8 = 4-20 mA air velocity and air temperature (dual outputs)
9 = UART communication only
- Analog with UART/ I²C is available - call DegreeC

**F = Fitting**

1 = Gland Nut
2 = °C Clamp