CAMBRIDGE ACCUSENSE

Solid State Air Velocity Switch

300 Series

Features

- *All solid-state technology*
- *No need for user calibration*
- *Ideal for monitoring low flows*
- *Performance is not affected by dirt and vibration*
- *Hysteresis-free*
- *Cost effective*
- *Processing electronics are not required*
- *Available in uni-directional or bi-directional versions*
- *Choice of standard or customized calibrations*

About the 300 Series

The Cambridge AccuSense Series 300 is a line of solid-state, highly reliable electronic switches, designed to monitor airflow in critical environments such as clean rooms, semiconductor fabrication facilities, and operating rooms as well as in traditional electronic enclosures to warn of cooling degradation. These compact, easy-to-install units detect loss of airflow below a pre-programmed set-point, and provide an effective, fast and distinct warning of airflow deterioration.

Designed to replace traditional "sail" or "vane" switches, the Series 300 switches offer unparalleled resistance to mechanical shock and vibration. The Series 300 sensor head may be either uni-directional* or bi-directional.

The uni-directional model discriminates between forward and reversed airflow, indicating a fault if the airflow direction reverses. The bidirectional model accepts airflows from either of two opposing directions.

The output of the Series 300 can be used to drive computer logic or it can activate alarms, relays, or other circuits. Normally-Open (N.O.) and Normally-Closed (N.C.) versions are available. The F900 Airflow Sensor is designed to measure the velocity and temperature of airflows in applications such as HVAC, industrial processes, automotive, air filtration systems, electronics enclosures, and critical containment areas such as biological safety cabinets, fume hoods, and clean rooms.
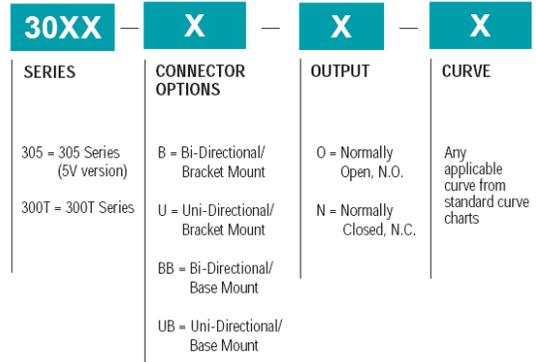
* Patented

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Specifications

	Minimum	Nominal	Maximum	
Supply Voltage (305)	4.5	5	5.5	V
Supply Voltage (300T)	11		25	V
Power Dissipation	.2	.6	.8	W
Input Current (305)	100		140	mA
Input Current (300T)	2		60	mA
Output Signal*	3		30	V
Output, High: Leakage Current			1	µA
Output, Low:			1	V
Output, Low: Max Sink Current			110	mA
Operating Temp	5		60	°C
Humidity, Non-Condensing	10		95	RH(%)
Response Time for Fault Signal			3 Sec Above 15°C	
			30 Sec Below 15°C	
Start-up Time from Power Up			3 Sec Above 15°C	
under Fault Condition			30 Sec Below 15°C	
Storage Temperature	-10		80	°C

*Open collector of an NPN Transistor; Emitter to return VDC; Pull up voltage.

Part Numbering Scheme

30XX – **X** – **X** – **X**

| SERIES	CONNECTOR OPTIONS	OUTPUT	CURVE
305 = 305 Series (5V version)	B = Bi-Directional/ Bracket Mount	O = Normally Open, N.O.	Any applicable curve from standard curve charts
300T = 300T Series	U = Uni-Directional/ Bracket Mount	N = Normally Closed, N.C.	
	BB = Bi-Directional/ Base Mount		
	UB = Uni-Directional/ Base Mount		

Normally Closed: Closed if airflow > trip point

Normally Open: Open if airflow > trip point

Customized Wire Links and Terminations
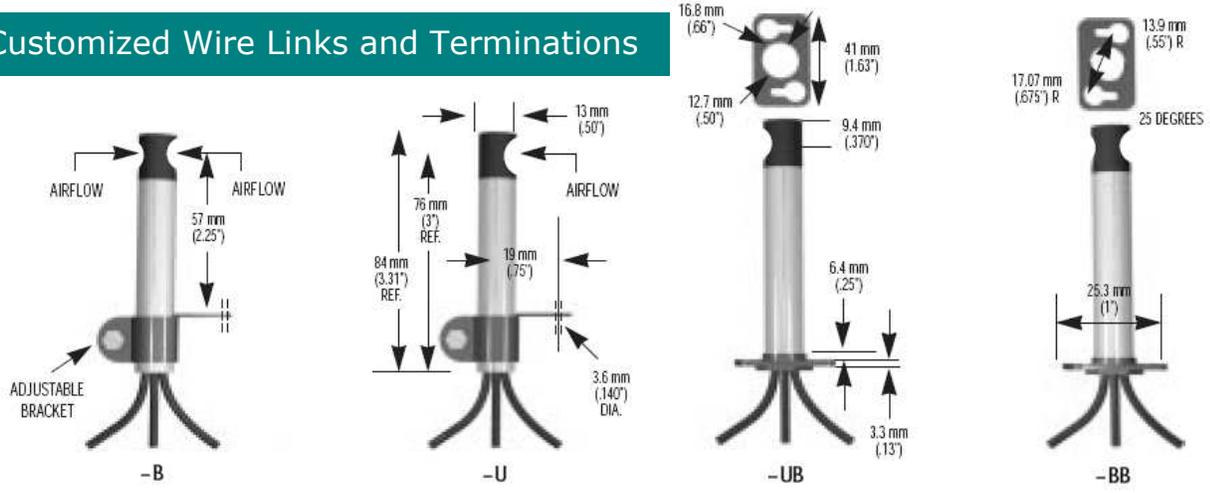
Electrical Arrangements
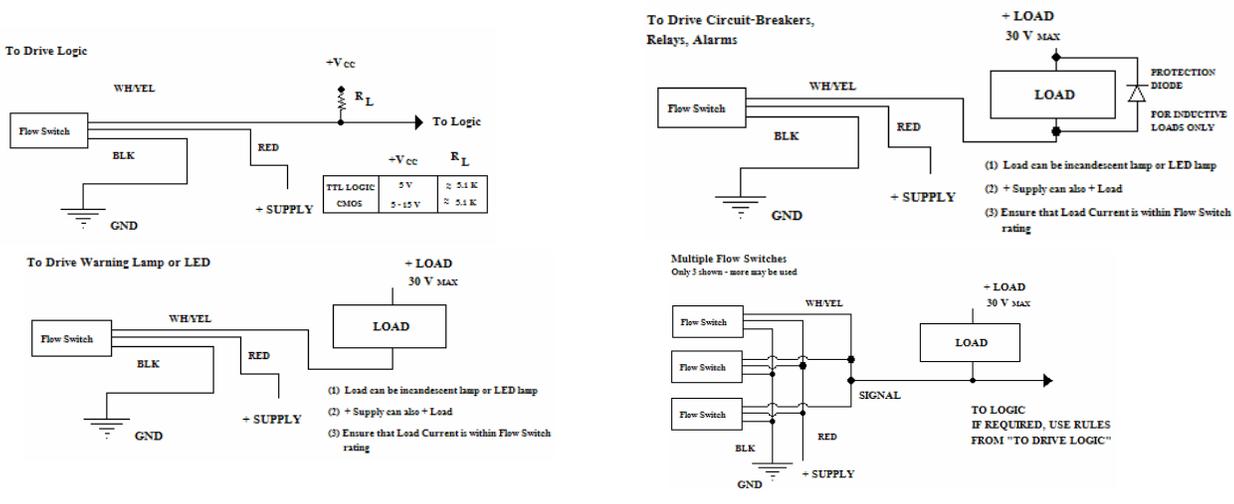
Calibration Curves

The Series 300 switch measures the airflow cooling capacity by sensing an air sample. Cooling capacity is a function of air velocity, temperature, density, and specific heat. At higher ambient temperature, the device calls for a larger volume of cooling air. The relationship of air temperature and airflow velocity is defined by the calibration curve of the switch. If the velocity and temperature of a given installation do not come up to the preset threshold, the device will trip abruptly from No-Fault to Fault, or vice versa, along a clear-cut single line without hysteresis. At the fault/no-fault line, the Series 300 trips an open collector output transistor. The output of the transistor may be used to drive logic, LED, relays, and other alarm or shut-off devices.
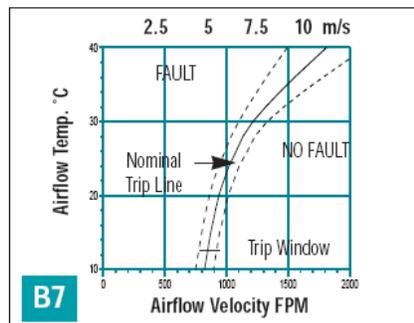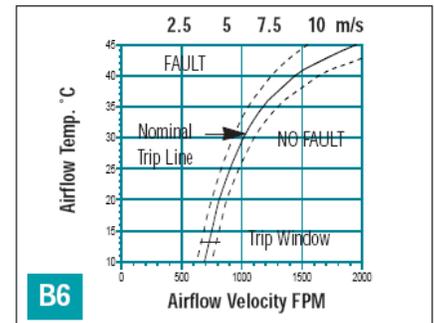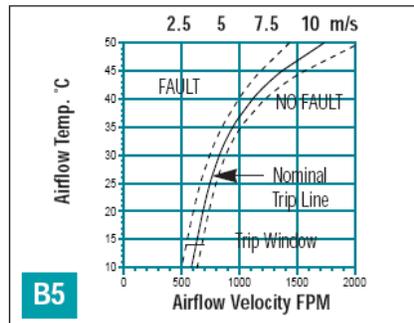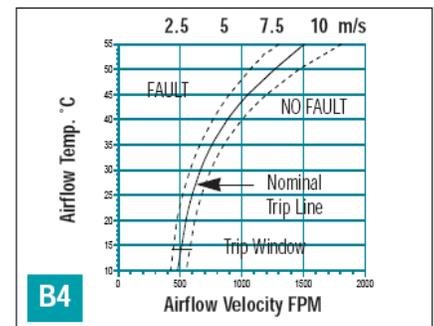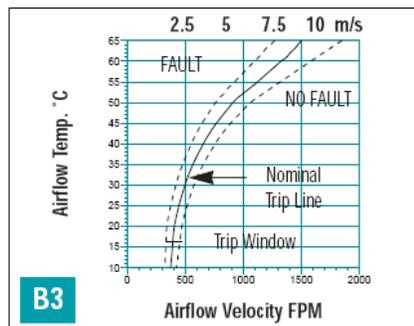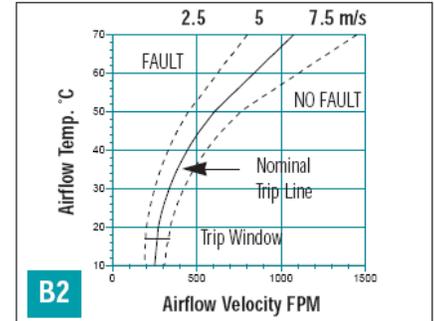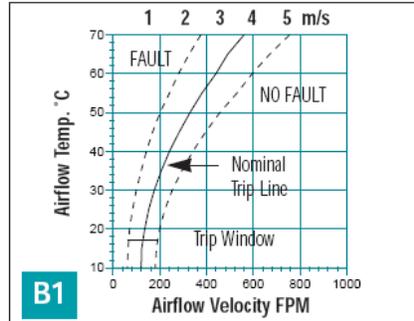
The dotted lines in the calibration curve figures indicate the device-to-device tolerance limits (trip windows) from the calibrated curve.

Because the air is thinner at higher altitudes, the Series 300 will automatically compensate by calling for higher air velocities to achieve the same cooling effect. (See Correction for Altitude Chart.)

Custom curves are available.

The D Series is a new set of calibrations designed specifically for low airflow monitoring below 200 fpm (1 m/s). The temperature range for the D Series is 17 - 25 °C. Accuracy is ±10 fpm.

Curve	Trip Point
D1	50 fpm (.25 m/s)
D2	60 fpm (.3 m/s)
D3	80 fpm (.4 m/s)
D4	100 fpm (.5 m/s)
D5	120 fpm (.6 m/s)
D6	150 fpm (.75 m/s)
D7	180 fpm (.9 m/s)
D8	200 fpm (1 m/s)

B1

B2

B3

B4

B5

B6

B7

Correction for Altitude

Trip Velocity = nominal velocity at sea level x C at operating altitude