BI-DIRECTIONAL BLEED SENSORS

BDB3 Sensor

the Eliminator™ Product Data Sheet

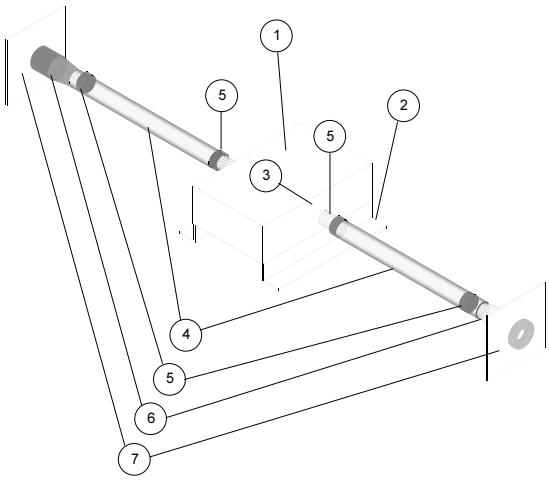
The Eliminator BDB3 sensor is a revolutionary bi-directional airflow meter that can measure differential airflow rates from still air to 2,000 ft./min. across a wide range of temperatures. By "bleeding" airflow across a damper or between spaces, the device can effectively be utilized to measure and control very low pressure differentials. Unlike static pressure sensors, the BDB3 sensor used thermal airflow sensing technology that excels at low air velocities. The bi-directional nature of the sensor assures that the airflow or pressure differential is in the proper direction.

Effective and Economical Measurement For:

- Relief air damper control.
- Indirect outside air intake flow control.
- Outside airflow direction indicator.
- Laboratory & Clean Room Pressurization Control.
- Building pressure control.

Features:

- Microprocessor based electronics with "watchdog" timer circuitry to assure continuous operation after power resets and brownouts .
- Low flow sensitivity, measures from 0 ft/min.
- Bi-directional output.
- Differential velocity or "pressure" output.
- Temperature compensated between -20º F and 160º F.
- 1:1 isolation transformer assures a "floating" output to host control interface



Specifications

PERFORMANCE			
	Sensor Accuracy		+-2% of Reading
	Output Resolution		0.4% of F.S.
OUTPUT SIGNAL			
	Velocity & Pressure	std.	linear 0-5 VDC
		opt.	linear 4-20mA
OUTPUT SCALING			
	Velocity	std.	-250 to +250 ft/min
			-500 to +500 ft/min
			-1000 to + 1000 ft./min.
			-1250 to +1250 ft/min
			-2000 to +2000 ft/min
		opt.	Custom when ordered
	Pressure	std.	-0.005 to +0.005 in.wg.
			-0.010 to +0.010 in.wg.
			-0.050 to +0.050 in.wg.
			-0.100 to +0.100 in.wg.
			-0.250 to +0.250 in.wg.
		opt.	Custom when ordered
POWER REQUIREMENT			
	AC Power Input		24 VAC @ < 7.3 VA
			+- 10%
OPERATING RANGES			
	Operating Temperature Range Electronics		30º to 160º F
	Operating Temperature Range Sensor		-20º to 160º F
	Operating Humidity Range		0 to 99% RH
CONSTRUCTION			
	Connections to Sensor ('in' & 'out')		3/4" I.D. Tubing, Barbed Fitting
	Tubing Material	std.	3/4" Reinforced Vinyl
		opt.	Consult Factory
	Connecting Tubing Length	std.	3 feet
		opt.	Consult Factory
	Terminal Tubing Connections	std.	PVC Barbed Fitting
		opt.	Consult Factory
	Number of Sensors		3
	Probe Enclosure		Aluminum 5052
	Number of Sensors		3
	Sensor Housing		PVC
	Sensor Type		Instrument Grade Thermistor

Note: pressure measurement with tubing lengths greater than 3 feet will result in actual differential pressures greater than that indicated by the sensor. Consult factory for engineering data on applications requiring extended tubing lengths.

Mechanical Construction

- **Enclosure and cover [1] :** Stamped, 0.04", 5052 alloy sheet, aluminum,non rated enclosure, access for two (2) 1/2" conduit connections
- **External Support Bracket [2] :** Extruded, 6063-T52 alloy, aluminum

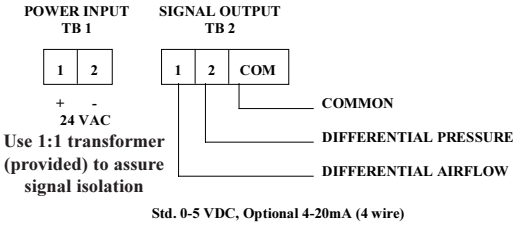
Sensor Construction [3]

- **Heated Velocity Sensors:** glass encapsulated, hermetically sealed, industrial thermistor probes.
- **Temperature Sensor:** glass encapsulated, hermetically sealed, industrial thermistor probe
- **Sensor Housing:** PVC
- **Sensor Assembly Compounds:** epoxy
- **Internal Wiring:**Kynar® coated copper

Connecting Tubing and Hardware

- **Tubing [4]:** Reinforced Vinyl Tubing, 3/4 inch. I.D.
- **Clamps [5]:** Stainless steel hose clamps
- **Terminal Tubing Connectors [6]:** PVC barbed fitting
- **Terminal Mounting Plates [7]:** Stamped, 0.04", 5052 alloy, aluminum sheet

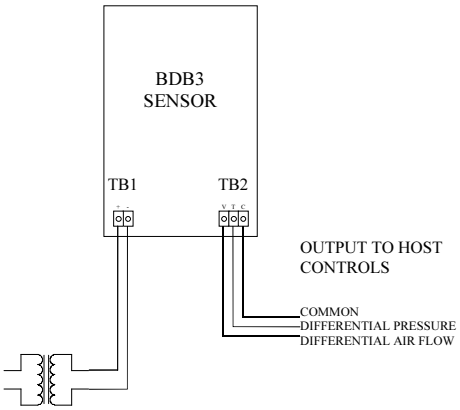
Wiring



TERMINAL CONNECTIONS

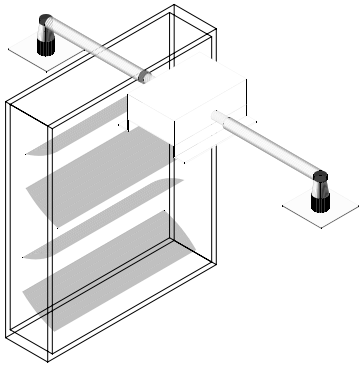
Model	VA
BDB3	7.3

POWER REQUIREMENTS

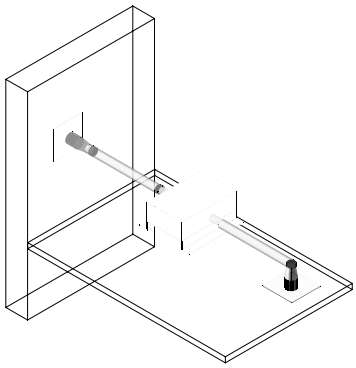


WIRING SCHEMATIC

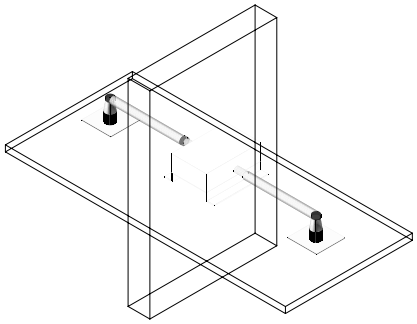
Installation



ACROSS DAMPERS



BETWEEN CEILINGS AND WALLS OF TWO SPACES



BETWEEN CEILINGS OF TWO SPACES

Suggested Engineers Guide Specification

Insert under the appropriate heading, based on the sensor application, in the Temperature Control Section of the Specification [optionally, BDB3 sensors can also appear in the AHU section of the specification]

A. Manufacturer
1. Base Bid: ***Ebtron*** Inc., Model BDB3
B. Differential AIrflow/Pressure Measurement: Thermal differential anemometer using instrument grade self heated thermistor sensors with thermistor temperature sensors. Flow measurement drift shall not exceed Manufacturers repeatability statement for the life of the equipment. Manufacturer shall provide test data for accuracy performance prior to bid date.
1. ***EBTRON*** Model BDB3 Differential Bleed Sensor
a) Construction
(1) Sensors : Two glass encapsulated self heated thermistor and one glass encapsulated thermistor temperature sensor.
(2) Sensor Housing: PVC
(3) Tubing: Reinforced 3/4 inch vinyl
(4) Terminal Tubing Connectors: PVC barbed fitting
(5) Terminal Mounting Plates: 5052 Aluminum sheet
b) Electronics
(1) Type: Microprocessor Based, totally solid state.
(2) Power Requirement: 24 VAC. Multiple BDB3 sensors wired from a single transformer must be wired in phase.
(3) Enclosure: Aluminum, indoor use only. [option, insert: NEMA 4, outdoor use][option for corrosive environments, insert: 304 Stainless Steel]
c) Performance
(1) Electronics temperature range: 30 to 160 F
(2) Sensor temperature range: -20 to 160 F
(3) Sensor velocity range: -2,000 to +2,000 ft./min. (-0.25 to +0.25 in.wg.)
(4) Flow station humidity range: 0 to 99% RH (non-condensing)
(5) Analog output signals: 0-5VDC [option 4-20mA, 4-wire]
(a) Sensor velocity accuracy: +-2% reading
(c) Type: linear
(d) Repeatability: +- 0.2% scale
(e) Resolution: 0.4% scale
d) Warranty
(1) 36 months from shipment, parts and factory labor as described in the Company's Standard Terms & Conditions of Sale

Ordering Information

BDB3-a-b-c d e

- **a-** Installation: 1=across damper, 2=between ceiling and wall, 3=between ceilings
- **b-** Input Power: 1=24 VAC, 2=110 VAC
- **c-** Output Signals: 1=0-5 VDC airflow & press, 3*=4-20 mA airflow & 0-5 VDC press.,4*=4-20mA air-flow & press.
- **d-** Airflow Signal Range, +-: 0=none, 1=250 FPM., 2=500 FPM., 3=1000 FPM., 4=1500 FPM., 5=2000 FPM
- **e-** Pressure Signal Range : +-: 0=none, 1=0.005 in.wg., 2=0.010 in.wg., 3=0.050 in.wg., 4=0.10 in.wg., 5=0.25 in.wg.
- * *Optional configuration, may require additional charges*

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