

#20903 – 2/15/18

Overview

The Averaging Sensor is for duct mounting and temperature measurement of stratified air across the duct to give the average temperature along the length of the sensor. The flexible probe is made of aluminum and made in different lengths for a custom duct fit. Enclosure mounting styles come in plastic or metal for both NEMA 1 and NEMA 4 applications and are all plenum rated.

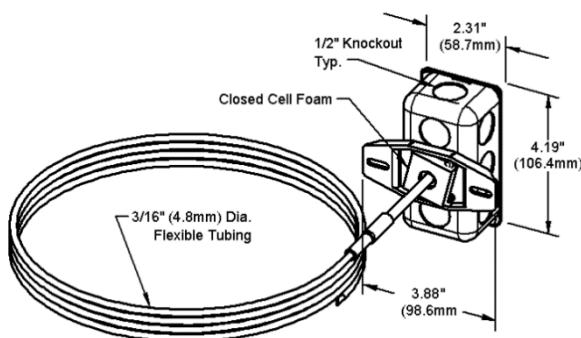


Figure 1: Duct Unit with J-Box (Standard)

Part #s NSB-10K-2-A-8 (8' probe)
NSB-10K-2-A-12 (12' probe)
NSB-10K-2-A-24 (24' probe)

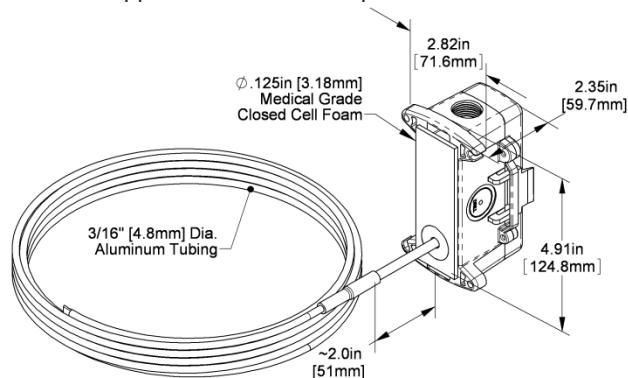


Figure 2: BB2 Enclosure Duct Unit

Part #s NSB-10K-2-A-8-BB2 (8' probe)
NSB-10K-2-A-12-BB2 (12' probe)
NSB-10K-2-A-24-BB2 (24' probe)

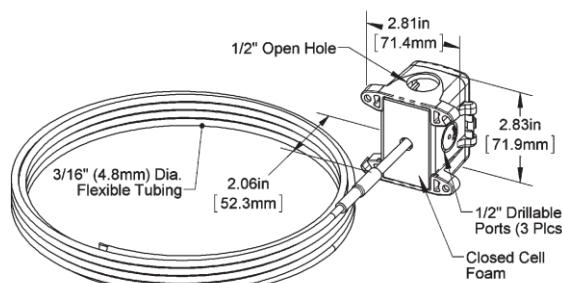


Figure 3: BB4 Enclosure Duct Unit

Part #s NSB-10K-2-A-8-BB4 (8' probe)
NSB-10K-2-A-12-BB4 (12' probe)
NSB-10K-2-A-24-BB4 (24' probe)

A Pierceable Knockout Plug (Part # NSB-PKP-100) is available for the open port in the BB4.

Specifications

Sensor	Passive	Enclosure Types	
Thermistor	4 sensors in < 24' probes 9 sensors in \geq 24' probes	J-Box	With eight 1/2" knockouts
Thermistor	Thermal resistor (NTC)	BB2 Box	With three 1/2" NPSM and three 1/2"
Temp. output	Resistance, 10k Type 2	drillouts BB4 Box	With three 1/2" drill-outs, one 1/2" open port
Accuracy	(std) $\pm 0.36^{\circ}\text{F}$, ($\pm 0.2^{\circ}\text{C}$)	Enclosure Ratings	NEMA 1
Stability	$< 0.036^{\circ}\text{F}/\text{Year}$, ($< 0.02^{\circ}\text{C}/\text{Year}$) Heat	J-Box	NEMA 4X, IP66
dissipation	2.7 mW/ $^{\circ}\text{C}$	BB2 Box	IP10 (IP44 with Knockout Plug installed)
Temp. drift	$< 0.02^{\circ}\text{C}$ per year	BB4 Box	
Probe range	-40° to 221°F (-40° to 105°C)	Enclosure Materials	Galvanized steel, UL94H-B
Lead Wire	22AWG stranded, Etched Teflon,	J-Box	Polycarbonate, UL94V-0, UV rated
	Plenum rated	BB2 Box	Polycarbonate and Nylon, UL94V-0
Probe	Flexible Aluminum tube, 0.19" OD	BB4 Box	
Probe Length	8', 12', 24' per order	Ambient (Enclosure)	0 to 100% RH, Non-condensing
Duct Gasket	1/4" Closed cell foam (impervious to mold)	J-Box	-40°F to 212°F, (-40° to 100°C)
Mounting	Extension tabs (ears), 3/16" holes	BB2, BB4	-40°F to 185°F, (-40° to 85°C)
		Agency	RoHS, CE

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Mounting

1. Place the sensor in the middle or top of the duct as shown in Figure 4 or Figure 5 so the flexible probe can enter the duct in a convenient place. Drill the probe and mounting holes as depicted for the enclosure being used.
2. Insert the probe by unrolling the sensor into the duct carefully to avoid kinking the sensor. Serpentine the duct with the sensor at least twice across the stratified air in the duct to achieve the best average temperature reading. At the sensor reversing points a turning bracket can be used to support the sensor and to avoid kinking the sensor.
3. Mount the enclosure to the duct using #8 screws through a minimum of two opposing mounting tabs provided.
4. Snug up the sensors so that the foam backing is depressed to prevent air leakage but do not overtighten or strip the screw threads.

NOTES

- Be sure to use caulk or Teflon tape for your conduit entries to maintain the appropriate NEMA or IP rating for your application.
- Conduit entry for outdoor or wet applications should be from the bottom of the enclosure.

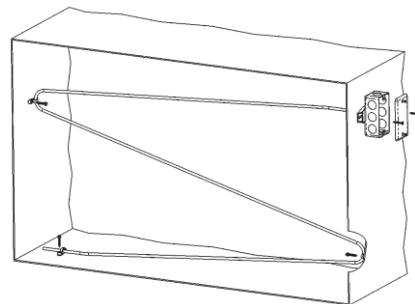


Figure 4: Flexible Sensor Horizontal Mount (Best for Vertical Stratification)

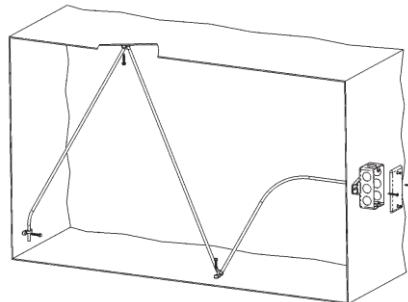


Figure 5: Flexible Sensor Vertical Mount (Best for Horizontal Stratification)

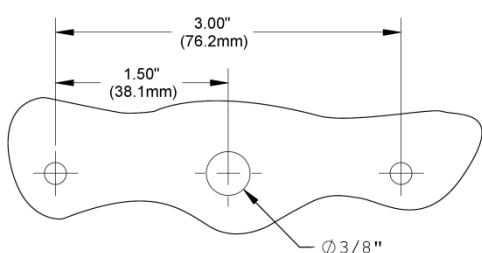


Figure 6: Junction Box Mounting Holes and installation

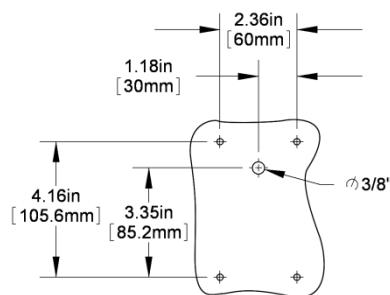


Figure 7: BB2 Enclosure Mounting Holes and installation.

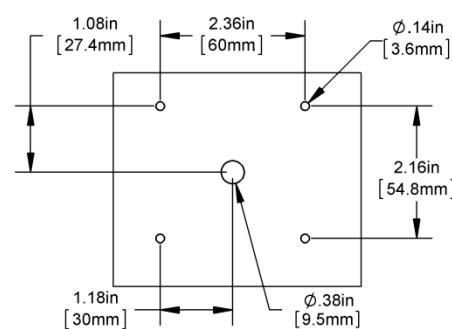
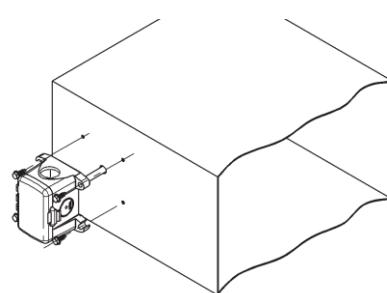
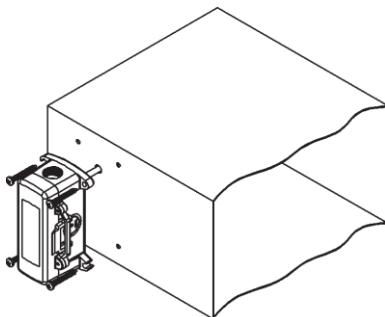
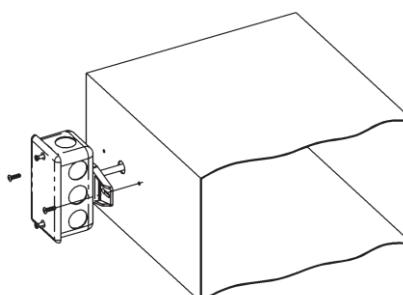


Figure 8: BB4 Enclosure Mounting Holes and Installation



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Wiring and Termination

Carrier recommends using twisted pair of at least 22AWG for all wire connections. Larger gauge wire may be required for long runs. All wiring must comply with the National Electric Code (NEC) and local codes. Do NOT run this device's wiring in the same conduit as high or low voltage AC power wiring. Tests show that inaccurate signal levels are possible when AC power wiring is present in the same conduit as the sensor wires.

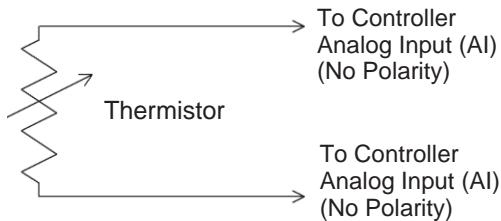


Figure 9: 2 Wire Lead Wire Termination for Thermistor

Diagnostics

Problems:

Controller reports higher or lower than actual temperature.

Possible Solutions:

- Confirm the input is set up correctly in the front end software
- Check wiring for proper termination and continuity. (shorted or open)
- Disconnect wires and measure sensor resistance and verify the "Sensor" output is correct.

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