

Overview

The Duct Temperature Sensor is a passive resistive sensor. It comes in a variety of probe lengths and optional mounting enclosures shown below. The sensors come with standard accuracy.

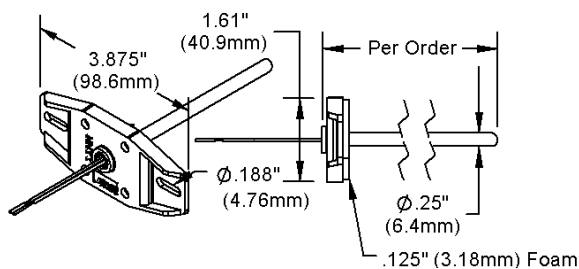


Figure 1: Duct Unit with no box
 Part #s NSB-10K-2-D-4-NB-5 (4" probe, 5' leads)
 NSB-10K-2-D-4-NB-10 (4" probe, 10' leads)
 NSB-10K-2-D-4-NB-15 (4" probe, 15' leads)
 NSB-10K-2-D-8-NB-10 (8" probe, 10' leads)

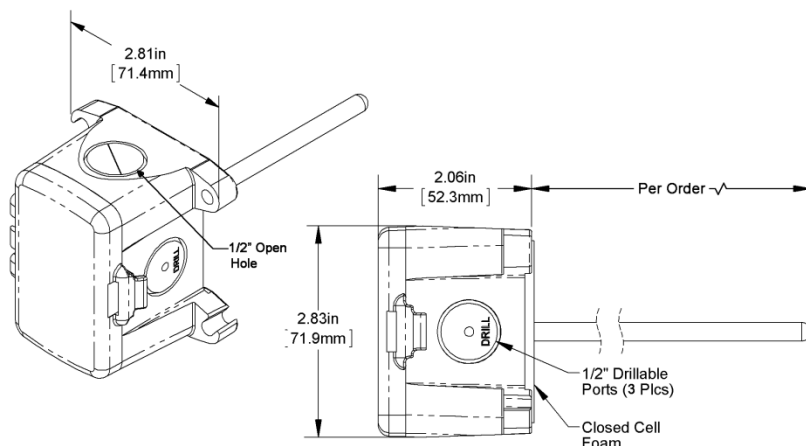


Figure 2: Duct Unit with BB4 Enclosure
 Part #s NSB-10K-2-D-4-BB4 (4" probe)
 NSB-10K-2-D-8-BB4 (8" probe)
 A Pierceable Knockout Plug (Part # NSB-PKP-100) is available for the open port in the BB4.

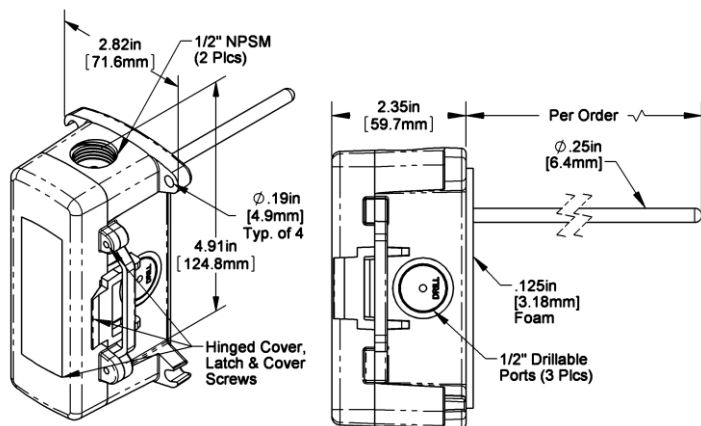


Figure 3: Duct Unit with BB2 Enclosure
 Part #s NSB-10K-2-D-4-BB2 (4" probe)
 NSB-10K-2-D-8-BB2 (8" probe)
 NSB-10K-2-D-12-BB2 (12" probe)

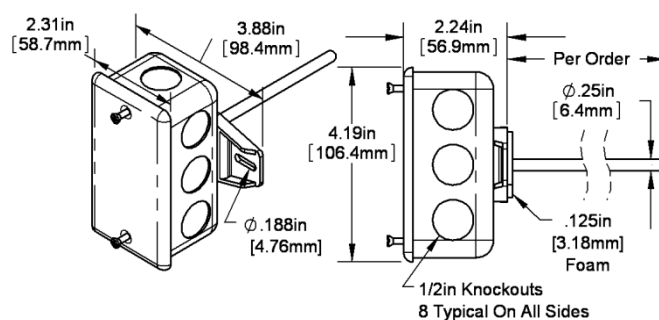


Figure 4: Duct Unit with standard J-Box
 Part #s NSB-10K-2-D-4 (4" probe)
 NSB-10K-2-D-8 (8" probe)
 NSB-10K-2-D-12 (12" probe)

Specifications subject to change without notice.

Specifications

Sensor	Passive, NTC, 2 wire	Enclosure Types	
Thermistor	Thermal resistor	No Box (NB)	Intended for open wiring
Temp. Output	Resistance, 10k Type 2	J-Box (JB)	With eight ½” knock-outs
Accuracy (Std)	±0.36°F, (±0.2°C)	BB2 box	With three ½” NPSM and three ½” drill-outs
Stability	< 0.036°F/Year, (<0.02°C/Year)	BB4 box	With three ½” drill-outs, one ½” open port
Heat dissipation	2.7 mW/°C	Enclosure Ratings	
Temp. Drift	<0.02°C per year	No Box (NB)	No rating
Probe range	-40° to 221°F (-40° to 105°C)	J-Box (JB)	NEMA 1
Sensitivity	Approximate @ 32°F (0°C)	BB2 box	NEMA 4, IP66, UV Rated
Thermistor	Non-linear	BB4 box	IP10 (IP44 with Knockout Plug in open port)
Lead wire	22AWG stranded	Enclosure Material	
Wire Insulation	Etched Teflon, Plenum rated	No Box (NB)	Nylon 66, UL94H-B
Probe	304 Stainless steel, 0.25” OD	J-Box (JB)	Galvanized steel, UL94H-B
Probe Length	4’, 8’ or per order	BB2 box	Polycarbonate, UL94V-0, UV rated
Mounting	Extension tabs (ears), 3/16” holes	BB4 box	Polycarbonate and Nylon, UL94V-0
Duct Gasket	1/4” Closed cell foam (impervious to mold)	Ambient (Enclosure)	0 to 100% RH, Non-condensing
		No Box (NB)	-40 to 212°F (-40 to 100°C)
		J-Box (JB)	-40 to 212°F (-40 to 100°C)
		BB2, BB4	-40 to 185°F (-40 to 85°C)
		Agency	RoHS
			PT= DIN43760, IEC Pub 751-1983, JIS C1604-1989

#20787 – 2/15/18

Mounting

1. Place the sensor in the middle of the duct away from temperature stratified air, coils or humidifiers to achieve the best temperature reading.
2. Drill the probe hole as depicted on this page for the enclosure being used. Insert the probe into the duct.
3. Mount the enclosure to the duct using #8 screws through a minimum of two opposing mounting tabs. A 1/8 inch pilot screw hole in the duct makes mounting easier through the mounting tabs. Use the enclosure tabs to mark the pilot hole locations.
4. Snug up the sensors so that the foam backing is depressed to prevent air leakage but do not over-tighten or strip the screw threads.

NOTES

- Do not drill into the water tight enclosures which will violate the NEMA and/or IP rating.
- 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.

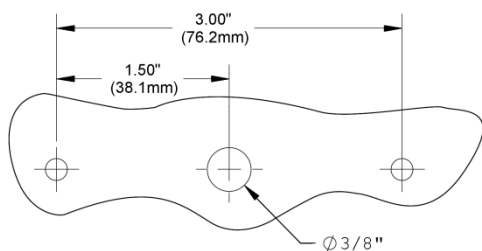


Figure 5: Junction Box or No Box Mounting Holes

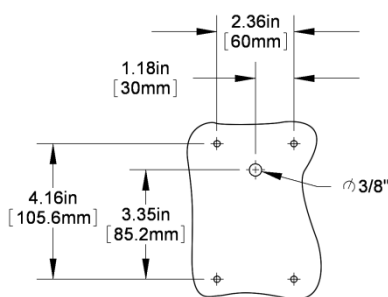


Figure 6: BB2 Enclosure Mounting Holes

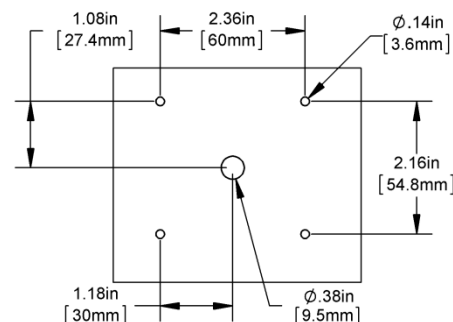
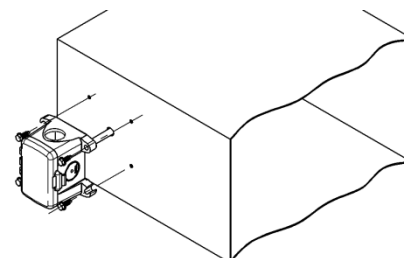
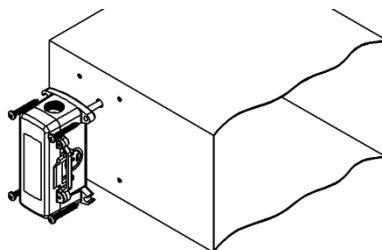
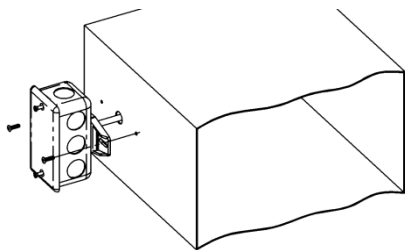


Figure 7: BB4 Enclosure Mounting Holes



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#20787 – 2/15/18

Wiring and Termination

Carrier recommends using twisted pair of at least 22 AWG 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.

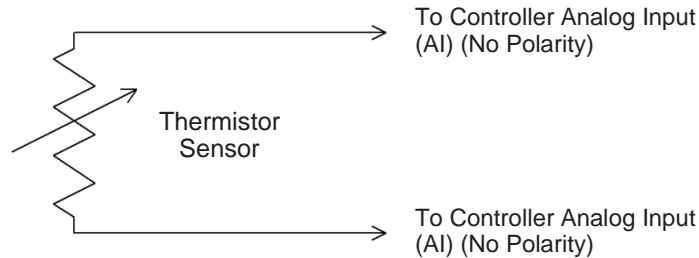


Figure 8: 2 Wire Lead Wire Termination for Thermistor

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.