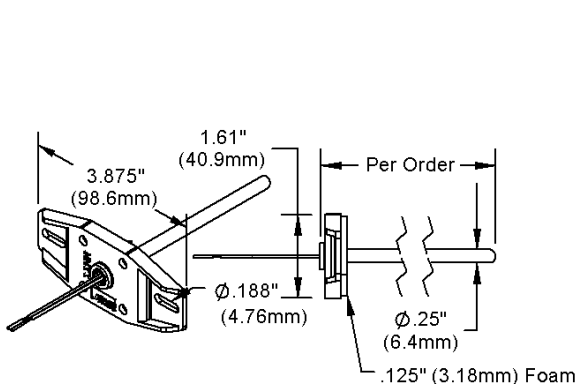


### Overview

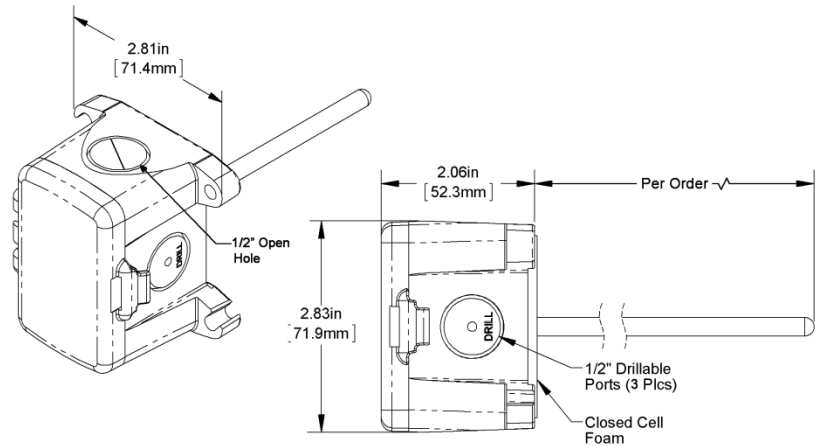
The Duct Temperature Sensor is a passive resistive sensor. It comes in a variety of probe lengths and optional mounting enclosures shown below. The sensors come with standard accuracy.



**Figure 1:** Duct Unit with no box

Part #s:

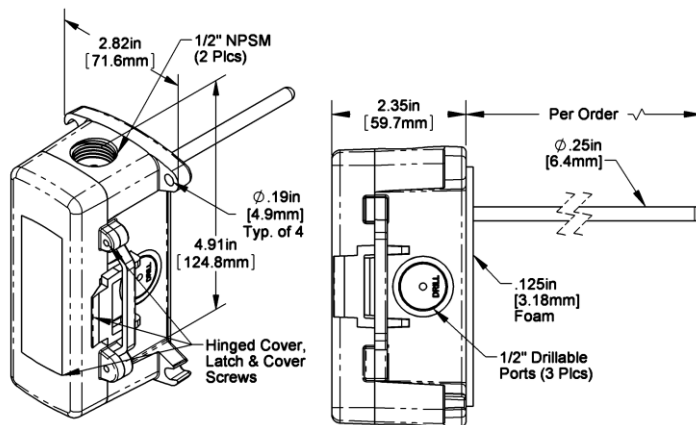
- NSB-10K-2-D-4-NB-5 (4" probe, 5' leads)
- NSB-10K-2-D-4-NB-10 (4" probe, 10' leads)
- NSB-10K-2-D-4-NB-15 (4" probe, 15' leads)
- NSB-10K-2-D-8-NB-10 (8" probe, 10' leads)
- NSB-10K-2-D-12-NB-10 (12" probe, 10' leads)
- NSB-10K-2-D-18-NB-10 (18" probe, 10' leads)



**Figure 2:** Duct Unit with BB4 Enclosure

Part #s:

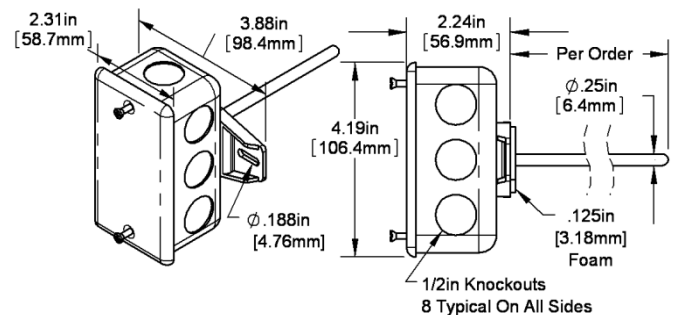
- NSB-10K-2-D-4-BB4 (4" probe)
  - NSB-10K-2-D-8-BB4 (8" probe)
  - NSB-10K-2-D-12-BB4 (12" probe)
  - NSB-10K-2-D-18-BB4 (18" probe)
- A Pierceable Knockout Plug (Part #NSB-PKP-100) is available for the open port in the BB4.



**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)
- NSB-10K-2-D-18-BB2 (18" 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)
- NSB-10K-2-D-18 (18" probe)
- NSB-50K-D-4-C (4" probe)



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### Specifications

<b>Sensor</b>	Passive, NTC, 2 wire	<b>Enclosure Types</b>	
<b>Thermistor</b>	Thermal resistor	No Box (NB)	Intended for open wiring
Temp. Output (Std)	Resistance Accuracy	J-Box (JB)	With eight ½" knock-outs
Stability	±0.36°F, (±0.2°C)	BB2 box	With three ½" NPSM and three ½" drill-outs
Heat dissipation	< 0.036°F/Year, (<0.02°C/Year)	BB4 box	With three ½" drill-outs, one ½" open port
Temp. Drift	2.7 mW/°C	<b>Enclosure Ratings</b>	
Probe range	<0.02°C per year	No Box (NB)	No rating
<b>Sensitivity</b>	-40° to 221°F (-40° to 105°C)	J-Box (JB)	NEMA 1
Thermistor	Approximate @ 32°F (0°C)	BB2 box	NEMA 4, IP66, UV Rated
<b>Lead wire</b>	Non-linear	BB4 box	IP10
<b>Wire Insulation</b>	22AWG stranded		(IP44 with Knockout Plug in open port)
<b>Probe</b>	Etched Teflon, Plenum rated	<b>Enclosure Material</b>	
<b>Probe Length</b>	304 Stainless steel, 0.25" OD	No Box (NB)	Nylon 66, UL94H-B
<b>Mounting</b>	4", 8", 12", or 18" or per order	J-Box (JB)	Galvanized steel, UL94H-B
<b>Duct Gasket</b>	Extension tabs (ears), 3/16" holes	BB2 box	Polycarbonate, UL94V-0, UV rated
	1/4" Closed cell foam (impervious to mold)	BB4 box	Polycarbonate and Nylon, UL94V-0
		<b>Ambient (Enclosure)</b>	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)
		<b>Agency</b>	RoHS
			PT= DIN43760, IEC Pub 751-1983, JIS C1604-1989

Specifications subject to change without notice.

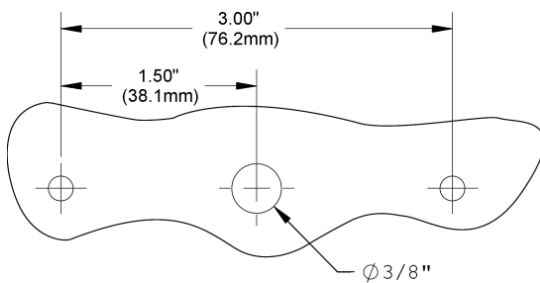
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### Mounting

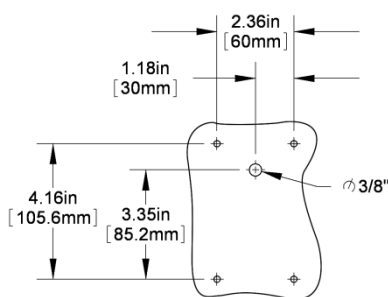
1. Place the sensor in the middle of the duct away from temperature stratified air, coils or humidifiers to achieve the best temperature reading.
2. Drill the probe hole as depicted on this page for the enclosure being used. Insert the probe into the duct.
3. Mount the enclosure to the duct using #8 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

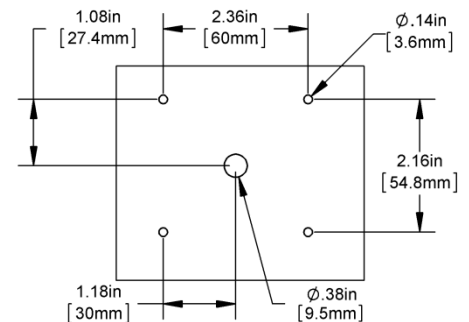
- Do not drill into the watertight enclosures which will violate the NEMA and/or IP rating.
- Use caulk or Teflon tape for your conduit entries to maintain the appropriate NEMA or IP rating for your application.
- Conduit entry for outdoor or wet applications should be from the bottom of the enclosure.



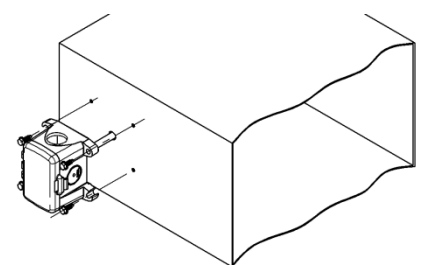
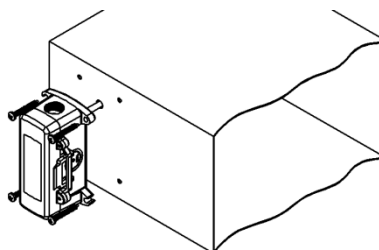
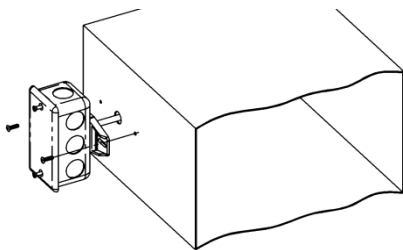
**Figure 5:** Junction Box or No Box Mounting Holes



**Figure 6:** BB2 Enclosure Mounting Holes



**Figure 7:** BB4 Enclosure Mounting Holes

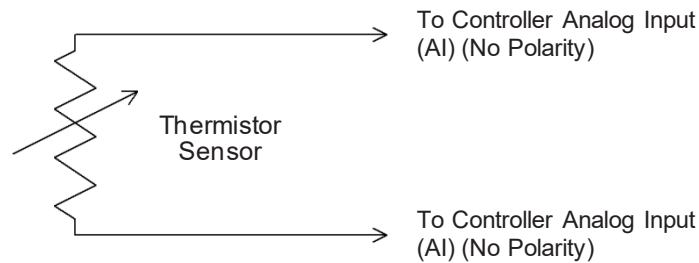


Specifications subject to change without notice.

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## Wiring and Termination

Carrier® recommends using twisted pair of at least 22 AWG for runs under 100 feet, and sealant filled connectors for all wire connections. Runs from 100 to 500 feet should use shielded 22 AWG. 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 setup correctly in the controller to which the sensor is attached
- Check wiring for proper termination and continuity. (shorted or open)
- Disconnect wires and measure sensor resistance and verify the "Sensor" output is correct.
- Add or subtract an offset for the sensor in the controller