

Overview

The Outside Air Temperature Sensor is a thermistor sensor for outside air mounting. The probe is made to protect the sensor from rain, sleet, snow or bird droppings. The enclosure is NEMA 4 and UV rated.

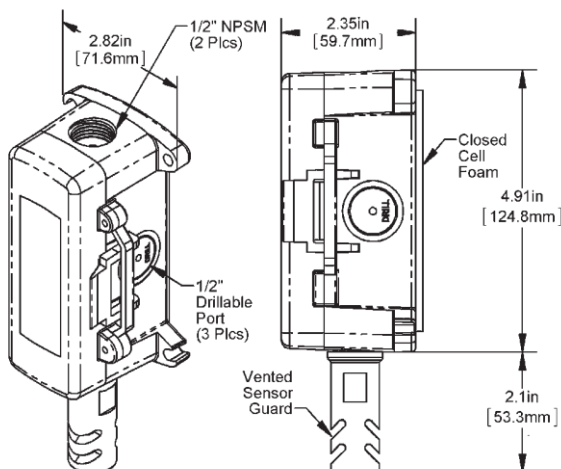


Figure 1: Outside Air Sensor in a BB2 Enclosure
Part # NSB-10K-2-O-BB2

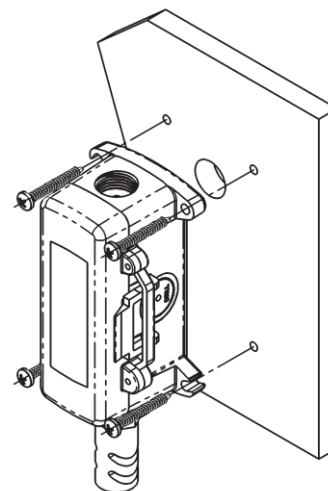


Figure 2: Enclosure Installation

Specifications

Sensor	Passive, NTC, 2 wire	Mounting	Extension tabs (ears), 3/16" holes
Thermistor	Thermal resistor	Wall Gasket	Closed cell foam (impervious to mold)
Temp. Output	Resistance, 10k Type 2	Enclosure Type	BB2 Box
Accuracy (Std)	$\pm 0.36^{\circ}\text{F}$, ($\pm 0.2^{\circ}\text{C}$)		With three 1/2" NPSM & three 1/2" drill-outs
Stability	$< 0.036^{\circ}\text{F}/\text{Year}$, ($< 0.02^{\circ}\text{C}/\text{Year}$)	Enclosure ratings	NEMA 4, IP66
Heat dissipation	2.7 mW/ $^{\circ}\text{C}$	Enclosure materials	Polycarbonate, UL94V-0, UV rated
Temp. Drift	$< 0.02^{\circ}\text{C}$ per year	Ambient (Enclosure)	0 to 100% RH, Non-condensing
Probe range	-40° to 221°F (-40° to 105°C)		-40°F to 185°F , (-40° to 85°C)
Lead wire	22AWG stranded	Agency RoHS, CE	
Wire Insulation	Etched Teflon, Plenum rated		
Probe	Vented polycarbonate shield, 1/2" OD		
Probe Length	1.2" w/ 1/2" NPT threads		

Mounting

Sensor location is critical to good performance. The sensor must be mounted in the shade away from building windows, doors or vents. It should never be in direct sunlight or you will have higher than expected temperature readings by as much as +30%. The ideal shaded location in the Northern hemisphere is on the North side of the building. In the Southern hemisphere, the South side of the building is ideal.

The sensor shield and probe should always point down and be mounted between four feet above the ground/roof and one foot minimum below the eave. (**NOTE** Four feet keeps the sensor above the ground or roof top radiation and one foot under the eave prevents measurement of trapped heat from under the eave.)

Drill the mounting holes and mount as shown in the Figure 2. Snug up the mounting screws to ensure that the foam backing compresses to about 50% of its thickness to make a gasket type seal against the wall surface.

Route the wires into the box and terminate with sealant filled connectors to prevent water from attacking the connection, thereby preventing costly callbacks. Best practice is to caulk the wiring hole after the wiring is installed. Close the cover of the enclosure and secure with provided cover screws.

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.

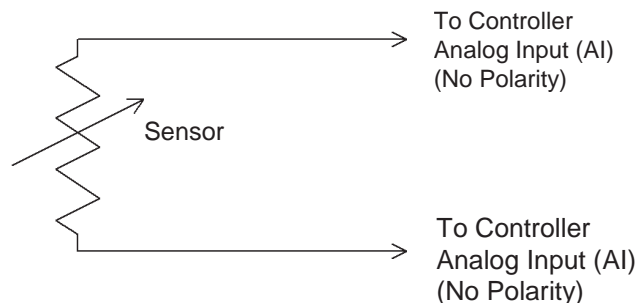


Figure 3: 2 Wire Lead Wire Termination for Thermistor

Diagnostics

Possible Problem:

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.