

Overview and Identification

The Rigid Averaging Unit 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 rigid Stainless Steel Probe is made in different lengths for a custom duct fit. The units is available in multiple thermistor or RTD types as shown in the specifications. Enclosure mounting styles come in plastic or metal for both NEMA 1 and NEMA 4 applications and are all plenum rated.

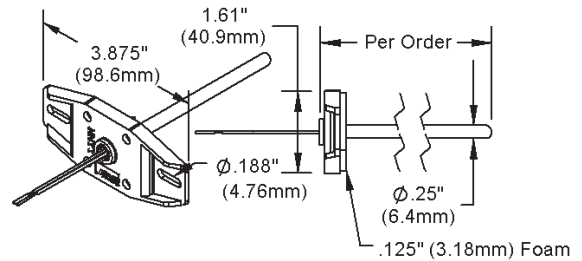


Fig 1: Unit with No Box (NB)

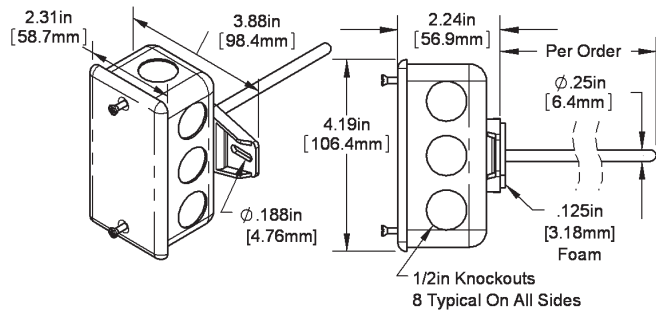


Fig 2: Unit with J-Box (Standard)

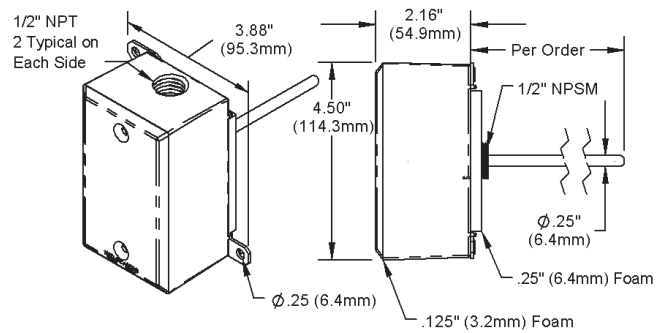


Fig 3: Unit with Weatherproof (WP) Enclosure

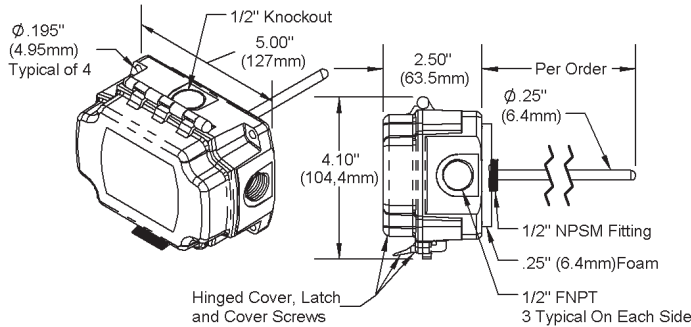


Fig 4: Unit with BAPI-Box (BB) Enclosure

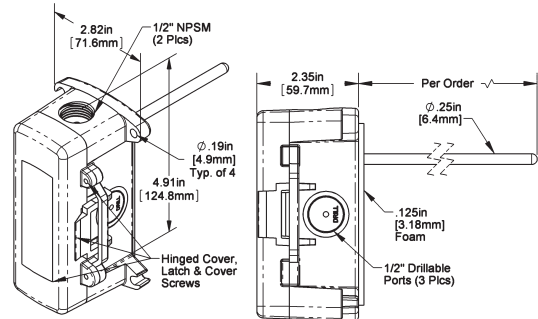


Fig 5: Unit with BAPI-Box 2 (BB2) Enclosure

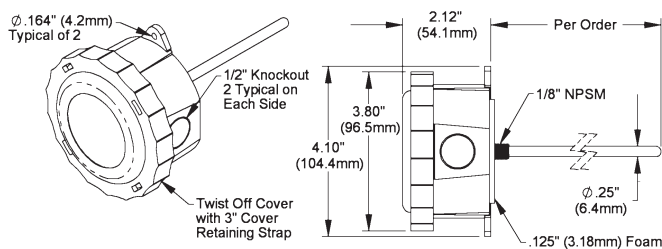


Fig 6: Unit with Weather Tight (EU) Enclosure

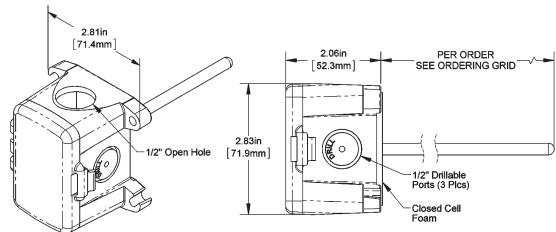


Fig 7: Unit with BAPI-Box 4 (BB4) Enclosure

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

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 below for the enclosure being used. Insert the probe into the duct.
3. Mount the enclosure to the duct using BAPI recommended #8 screws through a minimum of two opposing mounting tabs provided. Weatherproof (WP) enclosures will require assembly of the mounting tabs on opposite corners. 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.

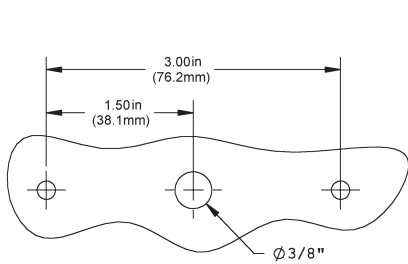


Fig 8: Junction Box or No Box (NB) Mounting Holes

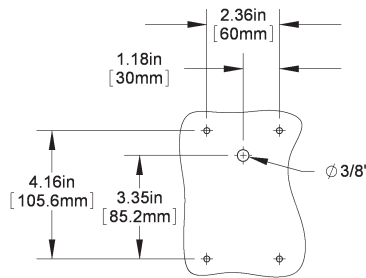
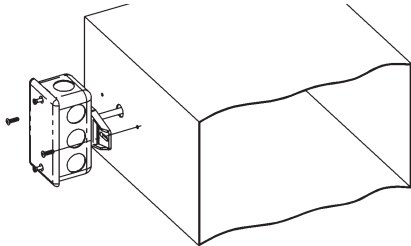


Fig 9: BAPI-Box 2 (BB2) Enclosure Mounting Holes

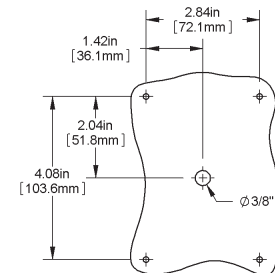
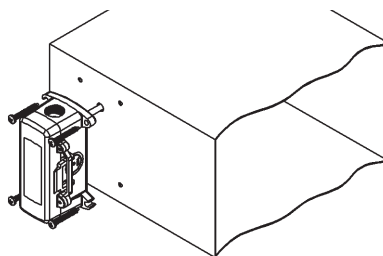


Fig 10: BAPI-Box (BB) Enclosure Mounting Holes, Rotate 90° for Horizontal Mounting

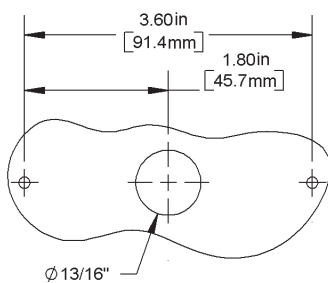
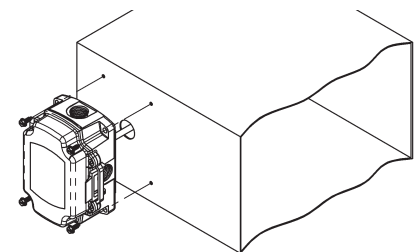


Fig 11: Weather Tight (EU or EUO) Enclosure Mounting Holes

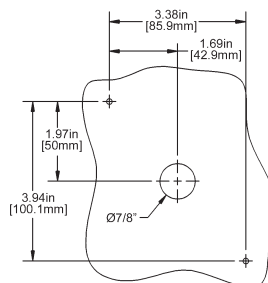
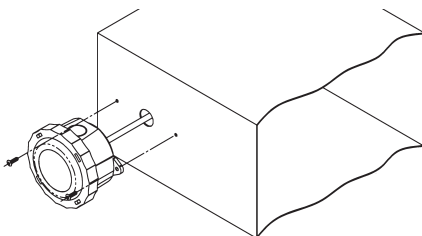


Fig 12: Weatherproof (WP) Enclosure Mounting Holes

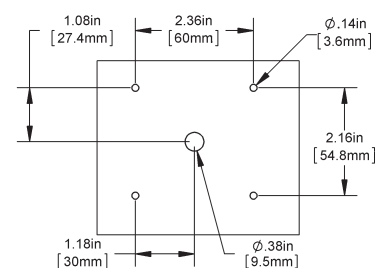
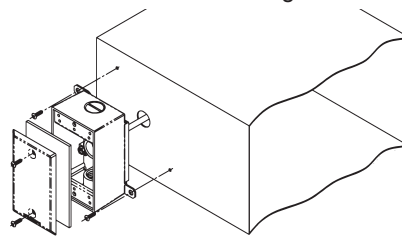
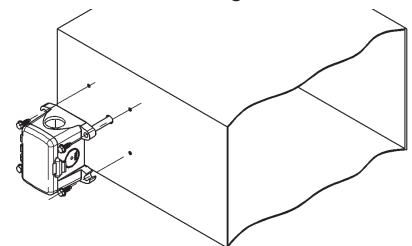


Fig 13: BAPI-Box 4 (BB4) Enclosure Mounting Holes



Specifications subject to change without notice.

Wiring & Termination

BAPI recommends using twisted pair of at least 22AWG and sealant filled connectors 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.

BAPI's tests show that inaccurate signal levels are possible when AC power wiring is present in the same conduit as the sensor wires.

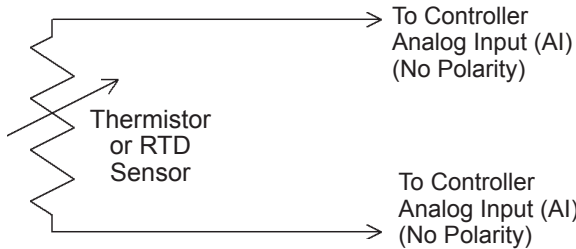


Fig. 14: 2 Wire Lead Wire Termination for Thermistor or RTD

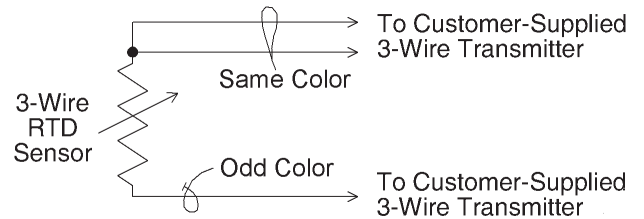


Fig. 15: 3 Wire Lead Wire Termination for RTD

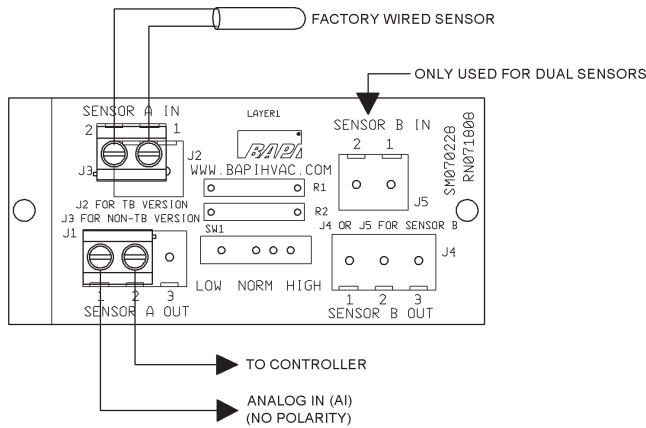


Fig. 16: Terminal Strip (-TS) Option for 2 Wire Sensors Termination

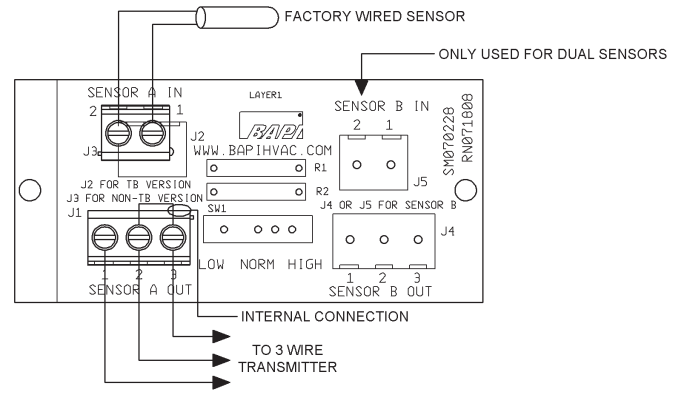


Fig. 17: Terminal Strip (-TS) Option for 3 Wire Sensors Termination

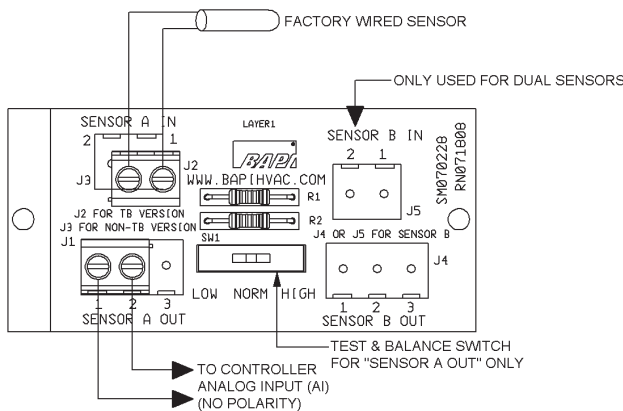


Fig. 18: Test & Balance (-TB) Option for 2 Wire Sensors Termination

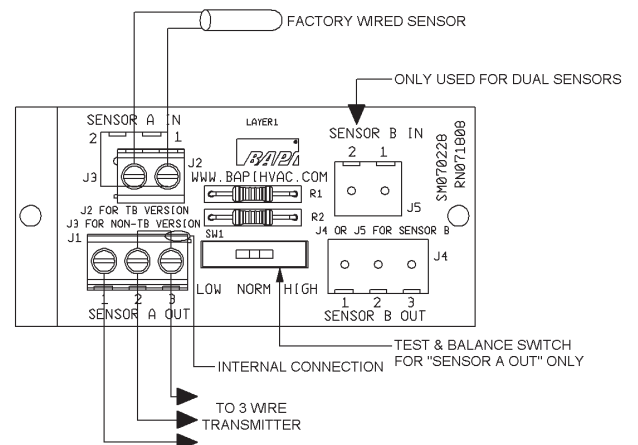


Fig. 19: Test & Balance (-TB) Option for 3 Wire Sensors Termination



Diagnosics

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 & continuity. (shorted or open)
- Disconnect wires and measure sensor resistance and verify the "Sensor" output is correct.

Specifications

Sensor	4 sensors per probe
Passive Thermistor	2 wire
Passive RTD,	2 or 3 wire
Thermistor	Thermal resistor (NTC)
Temp. Output	Resistance per order
Accuracy (Sstd)	±0.36°F, (±0.2°C)
Accuracy (Hi)	±0.18°F, (±0.1°C), [XP] option
Stability	< 0.036°F/Year, (<0.02°C/Year)
Heat dissipation	2.7 mW/°C
Temp. Drift	<0.02°C per year
Probe range	-40° to 221°F (-40° to 105°C)
RTD	Resistance Temp Device (PTC)
Platinum (Pt)	100Ω and 1KΩ @0°C, 385 curve,
Platinum (Pt)	1KΩ @0°C, 375 curve
Pt Accuracy (Std)	0.12% @Ref, or ±0.55°F, (±0.3°C)
Pt Accuracy (Hi)	0.06% @Ref, or ±0.277°F, (±0.15°C), [A]option
Pt Stability	±0.25°F, (±0.14°C)
Pt Self Heating	0.4 °C/mW @0°C
Pt Probe range	-40° to 221°F, (-40 to 105°C)
Nickel (Ni)	1000Ω @70°F, JCI curve
Ni Probe range	-40° to 221°F (-40 to 105°C)
Sensitivity	Approximate
Thermistor	Non-linear
	Go to bapihvac.com "Sensor Specs"
RTD (Pt)	3.85Ω/°C for 1KΩ RTD
	0.385Ω/°C for 100Ω RTD
Nickel (Ni)	2.95Ω/°F for the JCI RTD
Lead Wire	22awg stranded
Insulation	Etched Teflon, Plenum rated
Probe	Rigid Stainless Steel, 0.25" OD
Probe Length	12", 2', 4' per order
Duct gasket	1/8" foam (impervious to mold)
	176°F Max
Mounting	Extension tabs (ears), 3/16" holes

Enclosure Types

J-Box	-JB, w/ eight ½" knockouts
No Box	-NB, intended for open wiring
Weatherproof	-WP, w/ two ½" FNPT entries, (Bell box)
BAPI-Box	-BB, w/ four ½" NPSM & one ½" drill-out
BAPI-Box 2	-BB2, w/ three ½" NPSM & three ½" drill-outs
BAPI-Box 4:	-BB4, with three ½" drill-outs & one ½" open port
Weather Tight	-EU, -EUO, w/ two ½" knockouts

Enclosure Ratings

J-Box	-JB, NEMA 1
No Box	-NB, No rating
Weatherproof	-WP, NEMA 3R, IP14
BAPI-Box	-BB, NEMA 4X, IP66
BAPI-Box 2	-BB2, NEMA 4X, IP66
BAPI-Box 4:	-BB4, IP10
	(IP44 with Knockout Plug in open port)
Weather Tight	-EU, IP44
Weather Tight	-EUO, NEMA 4X, IP66, UV rated

Enclosure Materials

J-Box	-JB, Galvanized steel, UL94H-B
No Box	-NB, Nylon 66, UL94H-B
Weather Proof	-WP, Cast Aluminum, UV rated
BAPI-Box	-BB, Polycarbonate, UL94V-0, UV rated
BAPI-Box 2	-BB2, Polycarbonate, UL94V-0, UV rated
BAPI-Box 4:	-BB4, Polycarbonate & Nylon, UL94V-0
Weather Tight	-EU, ABS Plastic, UL94V-0
Weather Tight	-EUO, ABS Plastic, UL94V-0, UV rated

Ambient (Encl.) 0 to 100% RH, Non-condensing

All BAPI-Boxes	-BB, BB2, BB4, -40 to 185°F, (-40 to 85°C)
Weather Tight	-EUO, EU, -40 to 185°F, (-40 to 85°C)
J-Box & No Box	-JB, NB, -40 to 212°F, (-40 to 100°C)
Weatherproof	-WP, -40°F to 212°F, (-40° to 100°C)

Agency

RoHS, *CE
 PT= DIN43760, IEC Pub 751-1983,
 JIS C1604-1989

*Passive Thermistors 20KΩ and smaller are CE compliant