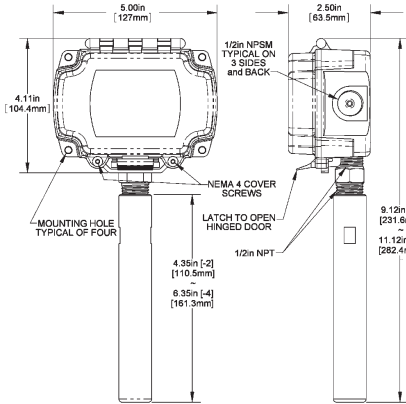


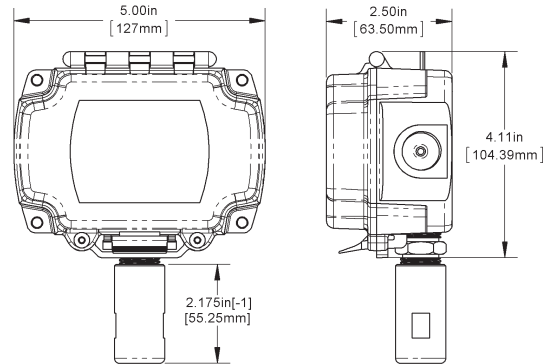
## Overview

The BA/# -TB is for wall or hanging bracket mounting and temperature sensing in walk-in freezers or refrigerators. The buffers are made in different lengths and are made to be filled with food grade glycol to slow down the temperature response to more closely mimic the contents of the freezer or refrigerator. The BA/#-TB is available in multiple thermistor's or RTD's as shown in the specifications. The mounting enclosure styles come in NEMA 4 plastic or hanging bracket with the buffers available in stainless steel or aluminum to fit any application.

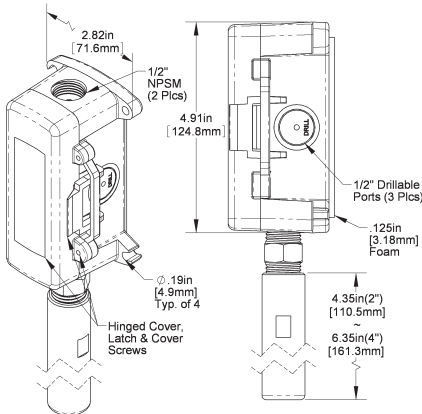
## Identification



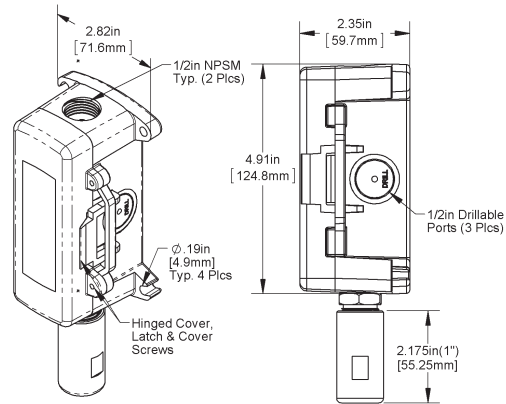
**Fig 1:** 2" & 4" Thermobuffer in a BAPI-Box (BB) Enclosure



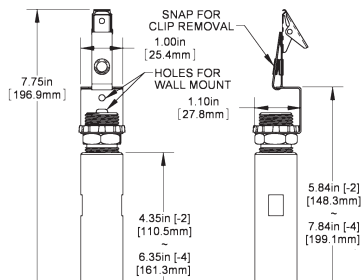
**Fig 2:** 1" Thermobuffer in a BAPI-Box (BB) Enclosure with Plastic Threaded Fitting



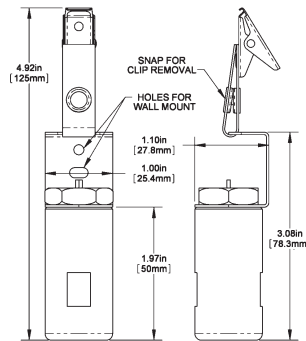
**Fig 3:** 2" & 4" Thermobuffer in a BAPI-Box 2 (BB2) Enclosure



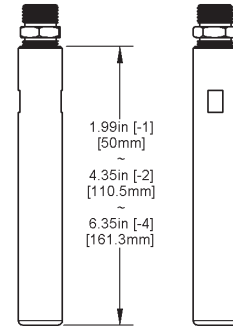
**Fig 4:** 1" Thermobuffer in a BAPI-Box 2 (BB2) Enclosure with Plastic Threaded Fitting



**Fig 5:** 2" & 4" Hanging Bracket Thermobuffer



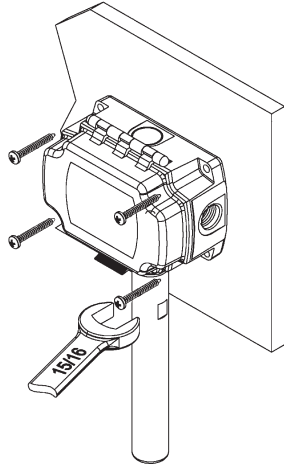
**Fig 6:** 1" Hanging Bracket Thermobuffer



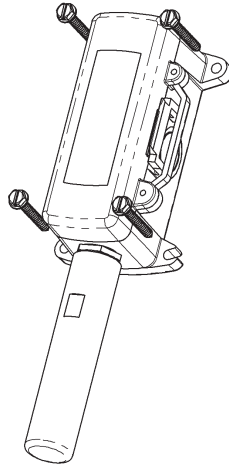
**Fig 7:** No Box (NB) Thermobuffer

Specifications subject to change without notice.

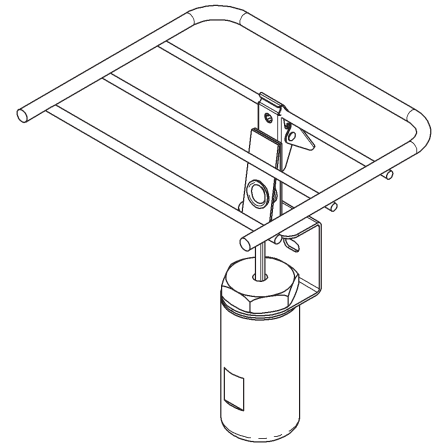
## Assembly & Installation



**Fig 8:** 2" & 4" Thermobuffer in a BAPI-Box (BB) Enclosure Installation

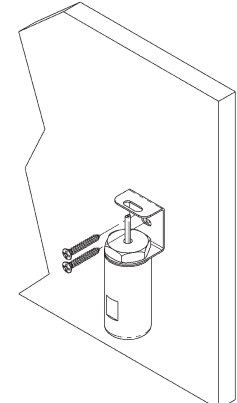


**Fig 9:** 2" & 4" Thermobuffer in a BAPI-Box 2 (BB2) Enclosure Installation



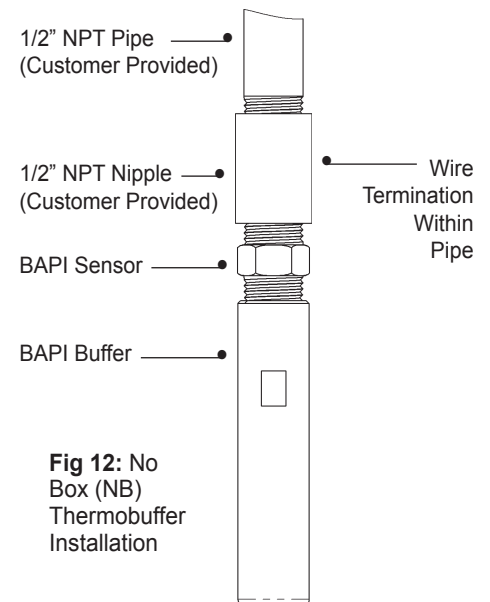
**Fig 10:** 1" Hanging Bracket Rack Installation

1. Fill the buffer with the appropriate amount of customer provided glycol to the amount as dictated by table 1.
2. Wrap the probe threads with Teflon tape with at least 4 wraps so a water tight seal is established.
3. Insert the probe into the buffer and screw in for a secure water tight fit.
4. Towel off excess fluid which may leak out during assembly and check for leaking. If the assembly leaks, a 15/16ths wrench may be used to snug up the probe to the buffer. More tape may also be needed. The use of food safe silicon may also be used.
5. Select a location on a wall or hanging from a wire rack near the contents you wish to monitor.
6. Mount the Thermo Buffer with the buffer facing down (Probe on top). Any other orientation is not recommended due to leaking concerns.
7. We recommend BAPI Box surface mounting be positioned over the refrigerator wire way hole using the rear BAPI Box knock out. Pull the wiring into the unit and terminate using sealant filled connectors. Best practice is to caulk the wiring hole after the wiring is installed. Secure with mounting screws and ensure that the foam backing compresses to about 50% of its thickness to make a gasket type seal against the surface.



**Fig 11:** 1" Hanging Bracket Wall Installation (Customer Provided Screws)

<b>Table 1:</b>	
<b>Buffer Size</b>	<b>Recommended Fluid Fill</b>
1" Buffer	0.17 Fluid oz (5mL)
2" Buffer	0.67 Fluid oz (20mL)
4" Buffer	1.00 Fluid oz (30mL)

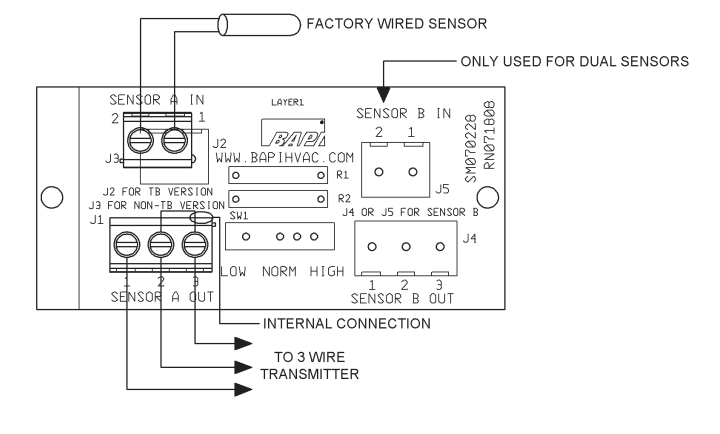
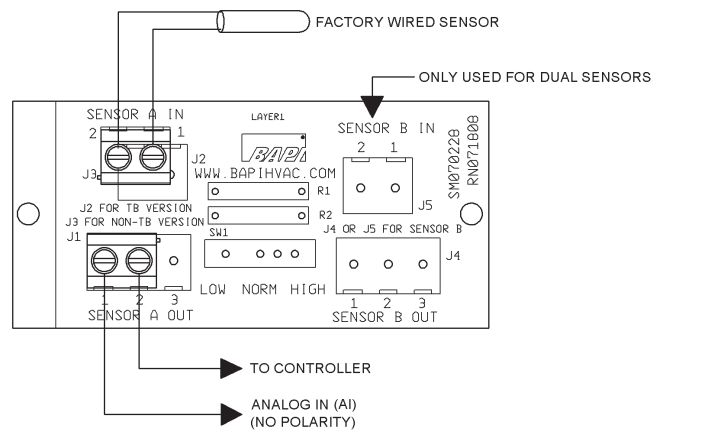
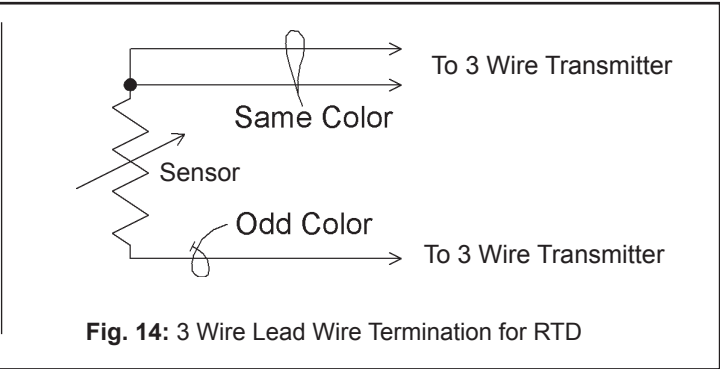
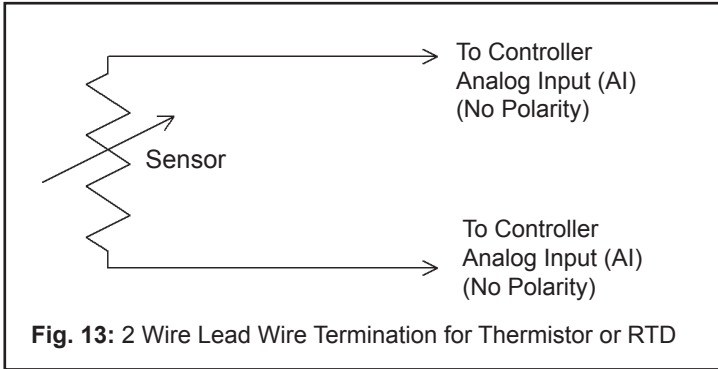


**Fig 12:** No Box (NB) Thermobuffer Installation

## Wiring & Termination

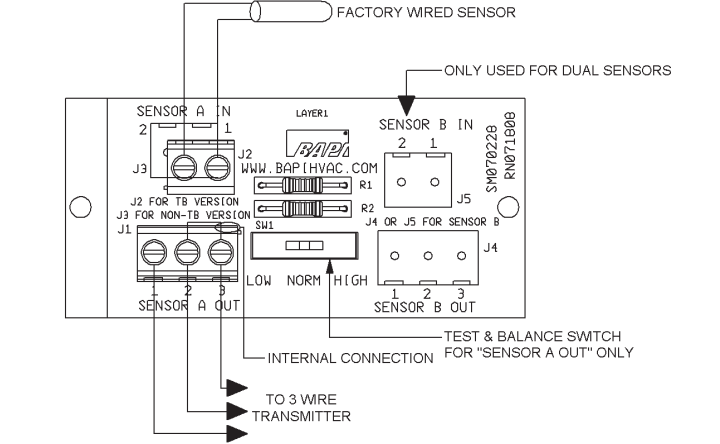
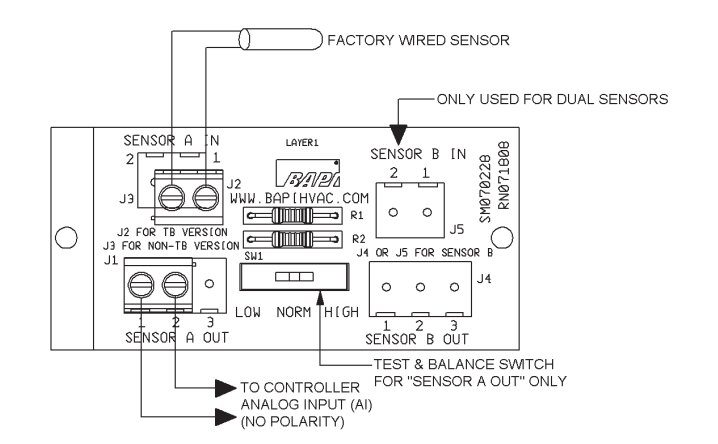
BAPI recommends using twisted pair of at least 22AWG and sealant filled connectors for all wire connections. Larger gauge wire may be required for long runs. All wiring must comply with the National Electric Code (NEC) and local codes. Do NOT run this device's wiring in the same conduit as high or low 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. 15: Terminal Strip (-TS) Option for 2 Wire Sensors Termination**

**Fig. 16: Terminal Strip (-TS) Option for 3 Wire Sensors Termination**



**Fig. 17: Test & Balance (-TB) Option for 2 Wire Sensors Termination**

**Fig. 18: 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

<b>Sensor:</b>	Passive	<b>Buffer Chamber Dimensions:</b>	
Thermistor	NTC, 2 wire	1" Buffer	2.75"H x 1"Dia
RTD	PTC, 2 or 3 wire	2" Buffer	5.1"H x 1"Dia
		4" Buffer	7.1"H x 1"Dia
<b>Thermistor:</b>	Thermal resistor (NTC)	<b>Mounting:</b>	
Temp. Output	Resistance	Plastic Box	4 extension tabs (ears), 7/16" hole,
Accuracy (std)	±0.36°F, (±0.2°C)	Hanging Bracket	SS bracket with 1/8" holes or 3/8" spring clip
Accuracy (Hi)	±0.18°F, (±0.1°C), [XP] option	<b>Enclosure Types:</b>	
Stability	< 0.036°F/Year, (<0.02°C/Year)	No Box	-NB, intended for direct 1/2" NPT pipe mount
Heat dissipation	2.7 mW/°C	BAPI-Box:	-BB, w/ four 1/2" NPSM & one 1/2" drill-out
Temp. Drift	<0.02°C per year	BAPI-Box 2:	-BB2, w/ three 1/2" NPSM & three 1/2" drill-outs
Probe range	-40° to 221°F (-40° to 105°C)	Hanging Bracket	-HB, Intended to hang from shelving
<b>RTD:</b>	Resistance Temperature Device,	<b>Enclosure Ratings:</b>	
Platinum (Pt)	100Ω and 1KΩ @0°C, 385 curve,	No Box	-NB, No rating
Platinum (Pt)	1KΩ @0°C, 375 curve	BAPI-Boxes	-BB & -BB2, NEMA 4, IP66
Pt Accuracy (Std)	0.12% @Ref, or ±0.55°F, (±0.3°C)	Hanging Bracket	-HB, No rating
Pt Accuracy (High)	0.06% Ref, or ±0.277°F (±0.15°C), [A] Option	<b>Enclosure Materials:</b>	
Pt Stability	±0.25°F, (±0.14°C)	BAPI-Boxes	-BB & -BB2, Polycarbonate, UL94V-0, UV rated
Pt Self Heating	0.4 °C/mW @0°C	Hanging Bracket	-HB, 304 Satinless Steel bracket and clip
Pt Probe range	-40° to 221°F, (-40 to 105°C)	<b>Buffer Chamber Construction:</b>	
Nickel (Ni)	1000Ω @70°F, JCI curve	M-304	Machined 304 Stainless Steel, 0.7" core
Ni Probe range	-40° to 221°F (-40 to 105°C)	MAL	Machined Aluminum, 0.7" core
<b>Sensitivity:</b>	Approximate	<b>Liquid Fill:</b>	Food Grade Glycol (Customer provided)
Thermistor	Non-linear - Go to bapivac.com "Sensor Specs"	1" Buffer	5 mL
		2" Buffer	20 mL
RTD (Pt)	3.85Ω/°C for 1KΩ RTD, @0°C	4" Buffer	30 mL
	0.385Ω/°C for 100Ω RTD, @0°C	<b>Color:</b>	
Nickel (Ni)	2.95Ω/°F for the JCI RTD, @70°F	BAPI-Boxes	Warm White (beige)
<b>Lead Wire:</b>	22awg stranded	SS Buffer	Polished Stainless Steel
<b>Insulation:</b>	Etched Teflon, Plenum rated	Aluminum Buffer	Wire Brushed Aluminum
<b>Probe:</b>	304 Stainless Steel (SS), 0.25" OD	<b>Ambient (Enclosure):</b>	0 to 100% RH, Non-condensing
<b>Probe Process Connection:</b>		BAPI-Boxes	-40°F to 185°F, (-40° to 85°C)
-TB	304 SS Double threaded 1/2" NPT	No Box, w/ sensor	-40°F to 212°F, (-40° to 100°C)
<b>Probe Length:</b>	Probe tip to thread start	Hanging Bracket	-40°F to 122°F, (-40° to 50°C)
1"	0.75"	<b>Agency:</b>	RoHS, CE (Thermistors 10KΩ and smaller), Pt= DIN43760, IEC Pub 751-1983, JIS C1604-1989
2"	3.5"		
4"	5.5"		