Thermo Buffer

Installation and Operation Instructions

19817_ins_thermo_buffer rev. 12/18/07

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 AC power wiring of NEC class 1, NEC class 2, NEC class 3 or with wiring used to supply highly inductive loads such as motors, contactors and relays. BAPI's tests show that fluctuating and inaccurate signal levels are possible when AC power wiring is present in the same conduit as the signal lines. If you are experiencing any of these difficulties, please contact your BAPI representative

BAPI does not recommend wiring the sensor with power applied as accidental arcing may damage the product and will void the warranty

Temperature Sensor Lead Wire Colors				
Thermistors				
3K	Yellow/Black		**20K**	White/White
10K-2	Yellow/Yellow		**100K**	Yellow/White
10K-3	Yellow/Red		**2KΩ**	Brown/Brown
10K-4	Black/Blue		**2K-2**	Brown/Orange
10K3(11K)	Yellow/Blue			
Platinum RTDs				
Single Point Two Wire			**Single Point Three Wire**	
100Ω	Red/Red		**100Ω**	Red/Red/Black
1KΩ	Orange/Orange		**1KΩ**	Orange/Orange/Black

Description

The air temperature of commercial walk-in freezers may not represent the temperature of the contents. During busy periods, with lots of freezer access, the air temperature may be tens of degrees warmer than the contents. A thermo buffer is required to accurately determine the temperature of the **contents** of the freezer. The added mass of the Thermo Buffer, filled with a water-glycol solution, approximates the temperature at the center of a small box on the freezer's shelf. The figures below show a BAPI thermo buffer

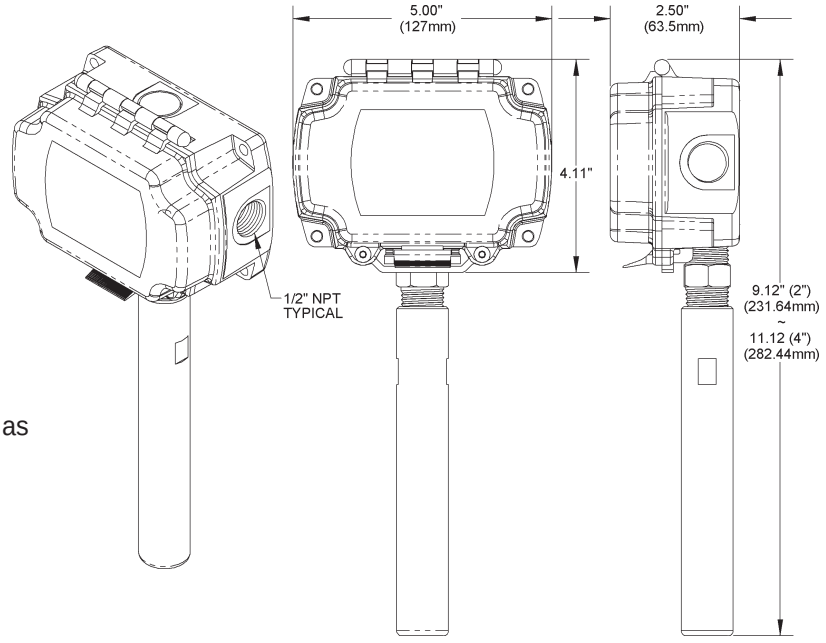

Figure 1:
The Thermo Buffer is designed as 2-inch and 4-inch units.

Specifications subject to change without notice.

There are two sizes of Thermo Buffers, a 2-inch and 4-inch.

The recommended amounts of Glycol are as follows,
The two inch buffer requires 30 CC
The four inch buffer requires 40 CC.
Use a glycol deemed food safe such as Cool Flow FG.
Be sure that the glycol solution is mixed for a temperature below the lowest expected freezer temperature.

Assembly

Wrap the threads on the sensor with Teflon tape. Use food safe silicone if desired to make a good liquid tight seal.

Do not use pipe dope as it is not food safe.

After filling the thermo buffer with the appropriate amount of glycol thread the buffer onto the probe by first threading it onto the ½" NPT threads until it is snug. It should not leak. Use a 15/16" wrench to tighten.

Do not use a channel locks or pliers as it may leave marks in the material that may allow for bacteria growth.

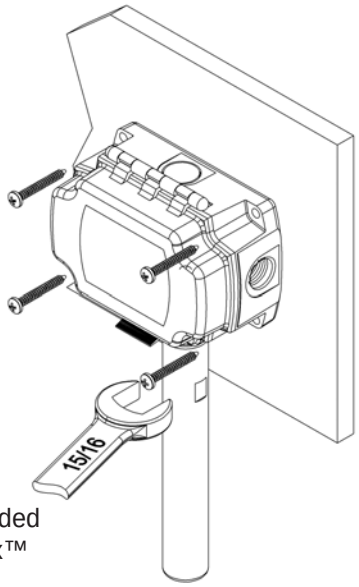

Figure 2:
Thermo Buffer with a double-threaded temperature probe on a BAPI-Box™

Mounting

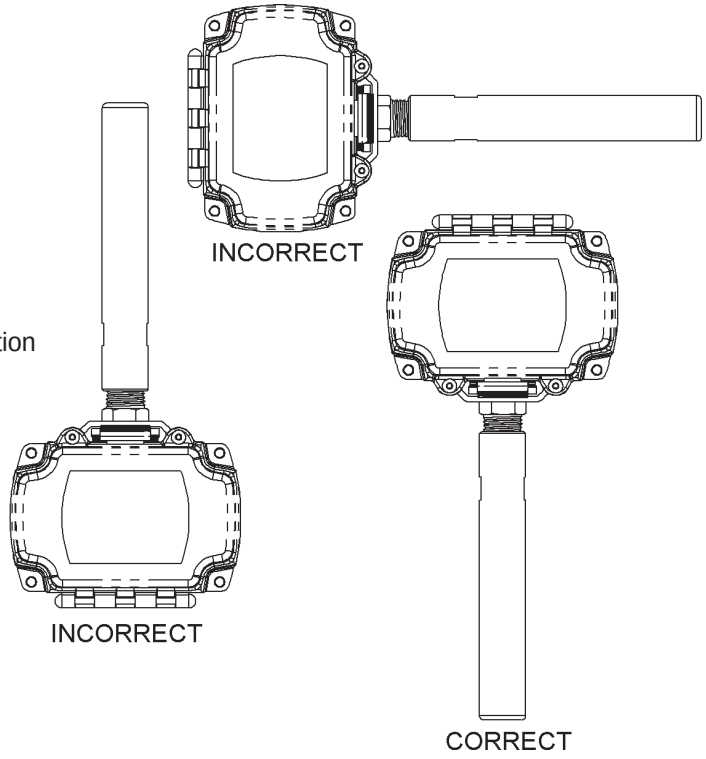

Figure 3:
Proper Mounting Configuration

Mounting Continued ...

The Thermo Buffer is mounted on the wall of the freezer saving valuable shelf space. Wall mounting also prevents handling the Thermo Buffer during operation and inadvertently placing it in a bad location. Mount near the part of the coil that you would consider the **"Return"** for the coil. This is usually to the left or the right end of the coil.

Do not mount to the coil or the enclosure of the coil which may cause inaccuarate readings.
Do not mount in front of the coil "Supply" as this is not the proper location for accurate temperature measurement.

Mount with the sensor probe pointed down. Drill a hole large enough for your sensor cable through your mounting surface. Mount the unit to the surface with the wiring knock out centered over the wiring hole. 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.

Be sure that the foam on the back of the unit compresses to about 1/2 of its thickness to make a gasket type seal against the surface.

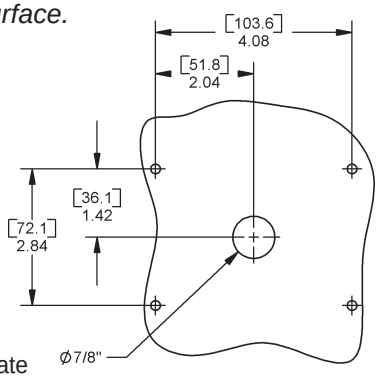

Figure 4:
Mounting Template

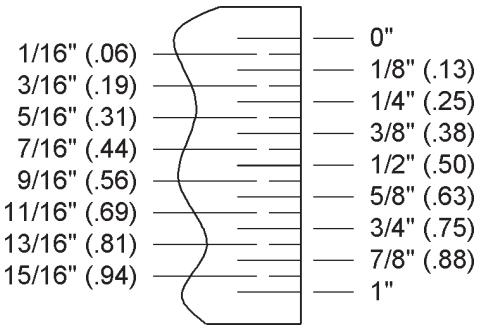

Figure 5:
1 Inch Scale

Diagnostics - Temperature

Problems:	**Possible Solutions:**
Controller reports higher than actual temperature	- Confirm the input is set up correctly in the front end software - Verify that the wires are not physically shorted or open - Check wiring for proper termination
Controller reports lower than actual temperature	- Disconnect wires and measure sensor resistance with an Ohm meter - Verify the "Sensor" output is correct (See note below) - Confirm the input is set up correctly in the front end software - Verify that the sensor is not physically open or shorted - Check wiring for proper termination - Disconnect wires and measure sensor resistance with an Ohm meter - Verify the "Sensor" output is correct (See note below)

Note: Measure the temperature at the temperature sensor's location using an accurate temperature standard. Disconnect the temperature sensor wires and measure the temperature sensor's resistance with an ohmmeter. Compare the temperature sensor's resistance to the appropriate temperature sensor table on the BAPI web site. If the measured resistance is different from the temperature table by more than 5%, call BAPI technical support. BAPI's web site is found at www.bapihvac.com; click on the button labeled SENSORS on the left of the screen and then click on the type of sensor you have.