



# BAPI T1K Temperature Sensor Transmitters Instruction Manual

[Home](#) » [BAPI](#) » BAPI T1K Temperature Sensor Transmitters Instruction Manual 



Temperature Sensor Transmitters  
Installation & Operating Instructions  
22199\_ins\_T1K\_T100\_XMTR  
rev. 03/16/22

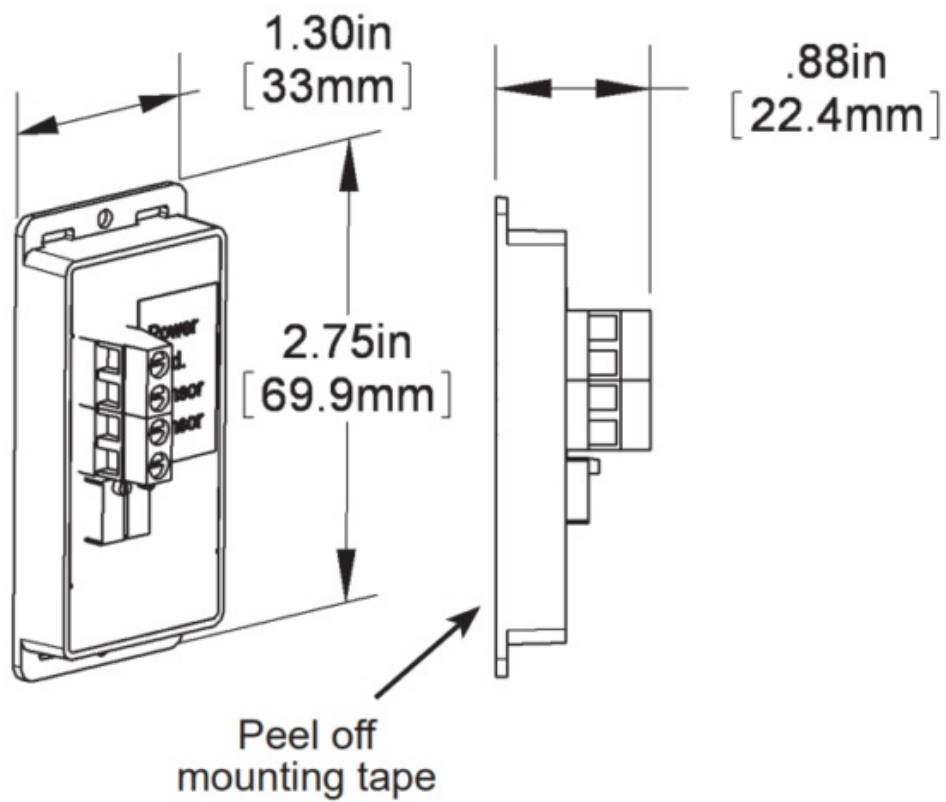
## Contents

- [1 Overview and Identification](#)
- [2 Wiring & Termination](#)
- [3 Diagnostics](#)
- [4 Specifications](#)
- [5 Documents / Resources](#)
  - [5.1 References](#)
- [6 Related Posts](#)

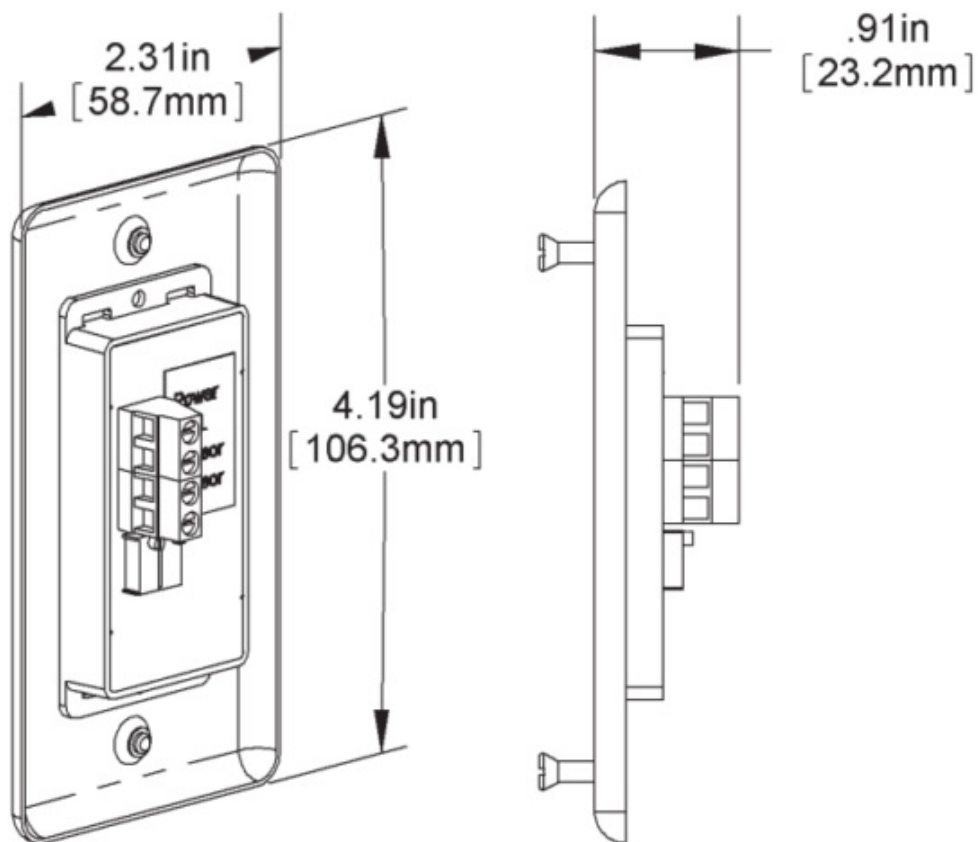
## Overview and Identification

BAPI Temperature Transmitters are 4 to 20mA output (loop powered) or 0 to 5VDC or 0 to 10VDC output transmitters. They come with flying leads but terminals are available (-TS).

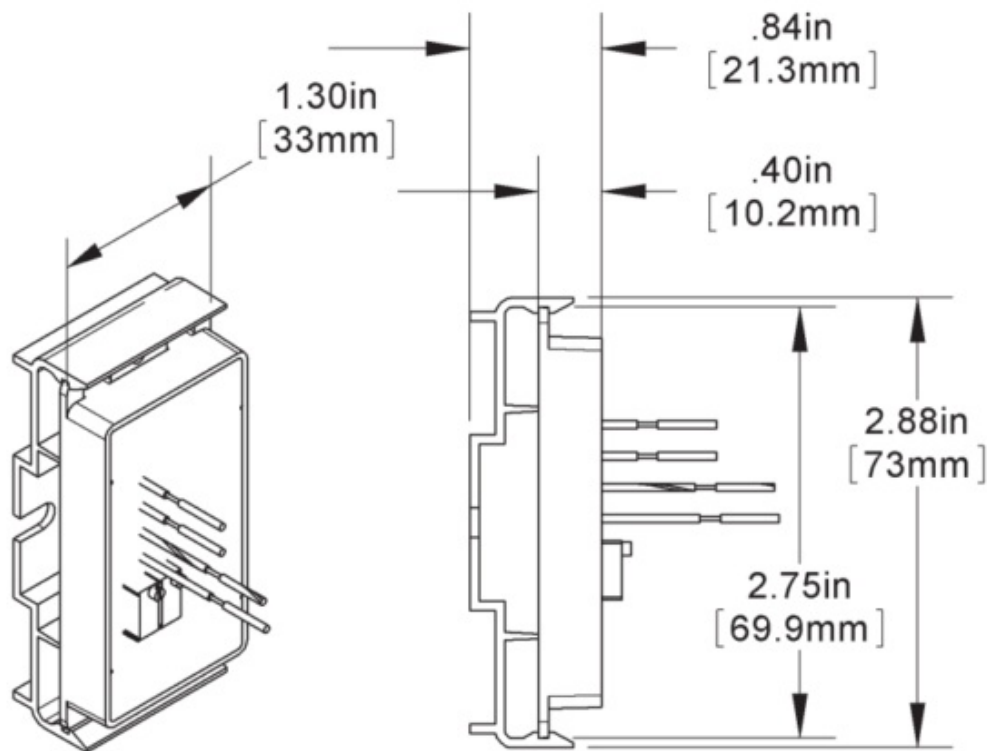
**Fig. 1:** Transmitter only (BA/T1K-XOR-STM-TS)



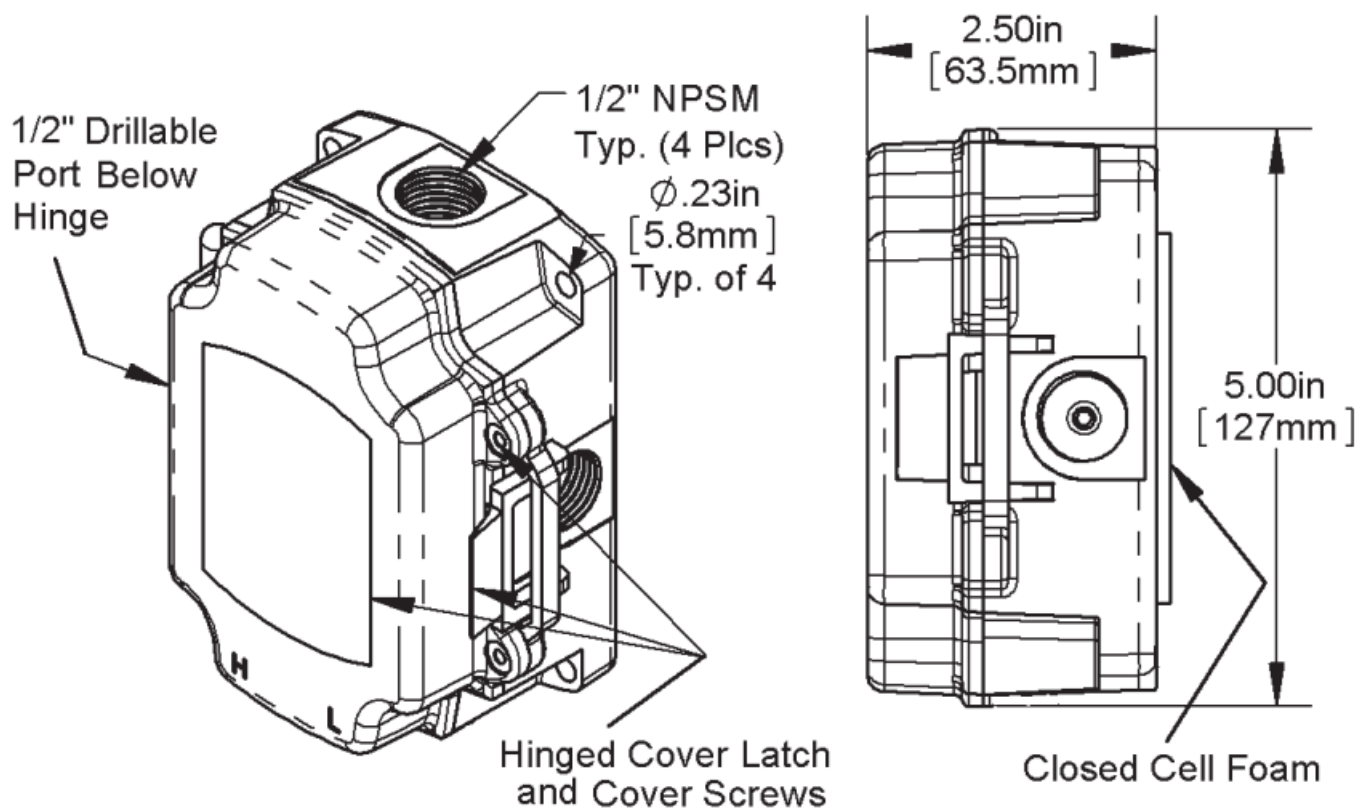
**Fig. 2:** Transmitter with plate (BA/T1K-XOR-TS)



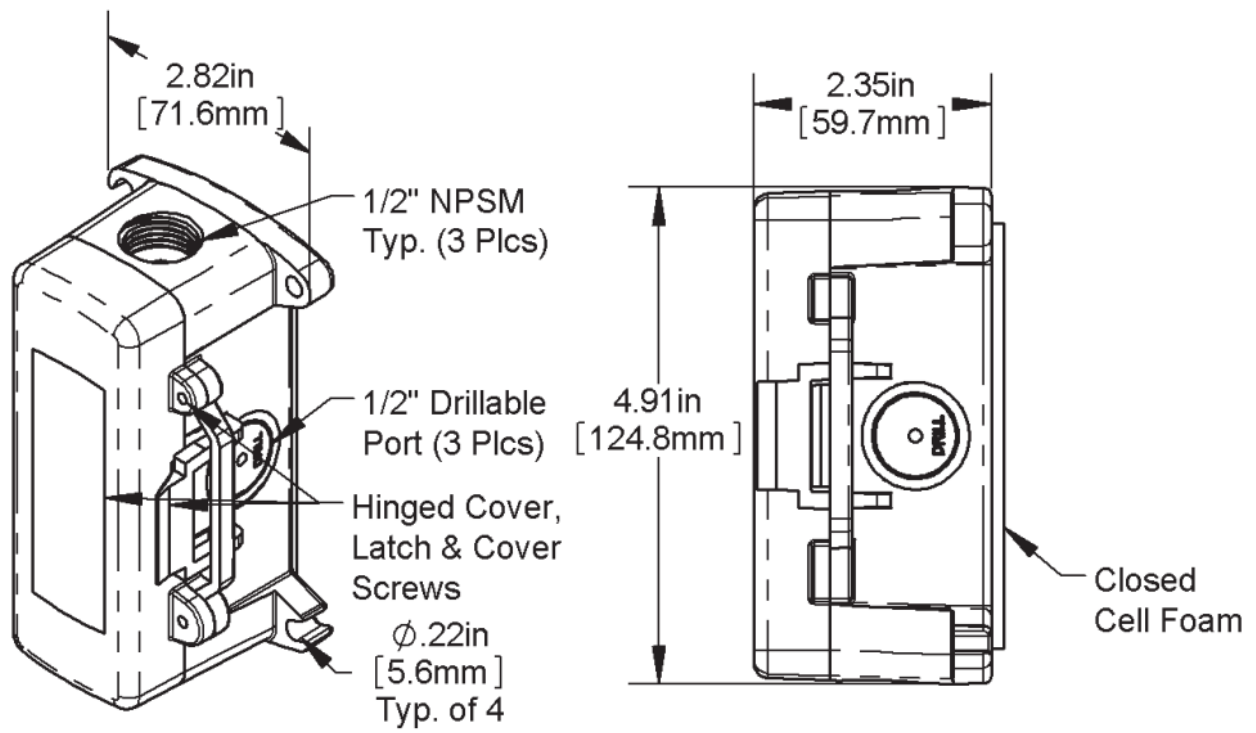
**Fig. 3:** Transmitter with Snaptrack (BA/T1K-XOR-TRK)



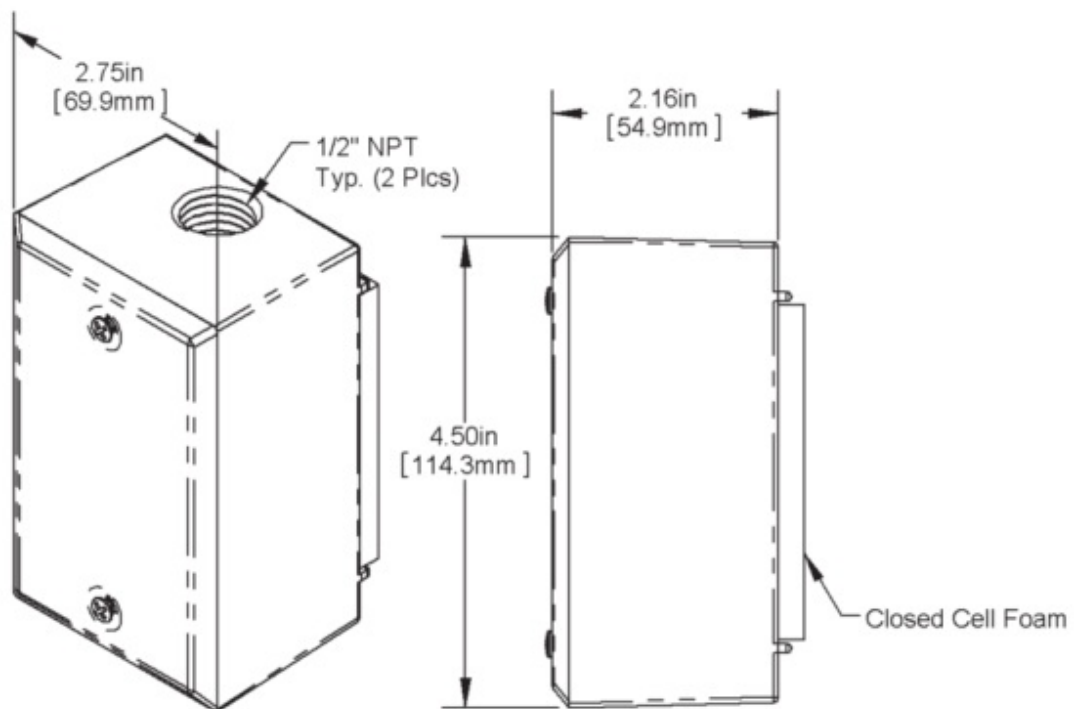
**Fig. 4:** Transmitter in BAPI-Box (BA/T1K-XOR-BB)



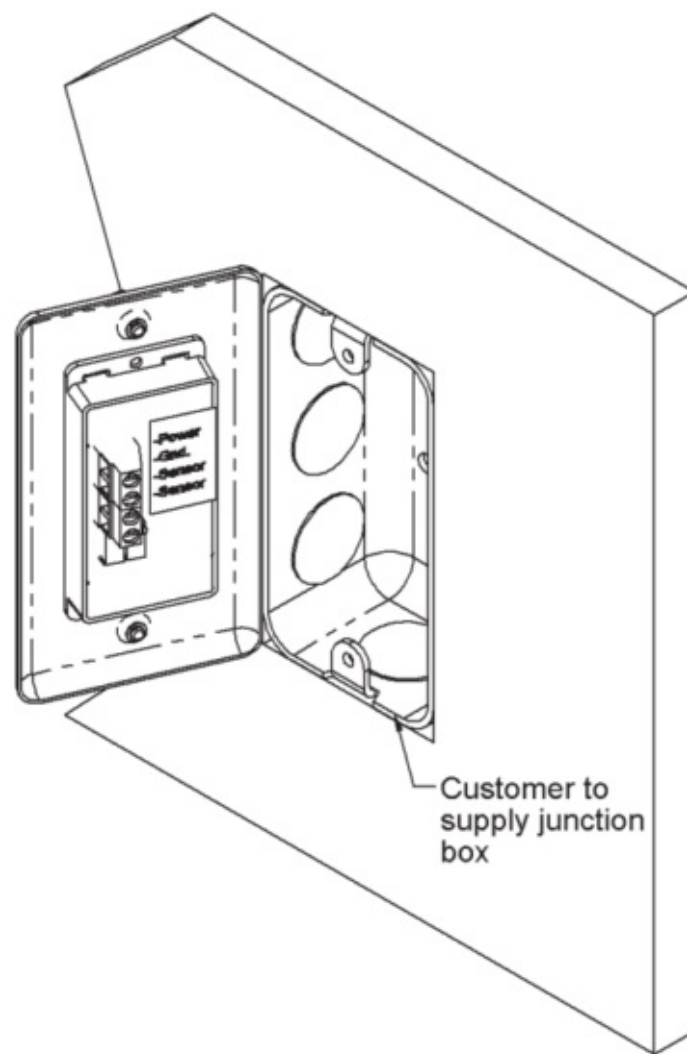
**Fig 5:** Transmitter in BAPI-Box 2 (BA/T1K-XOR-BB2)



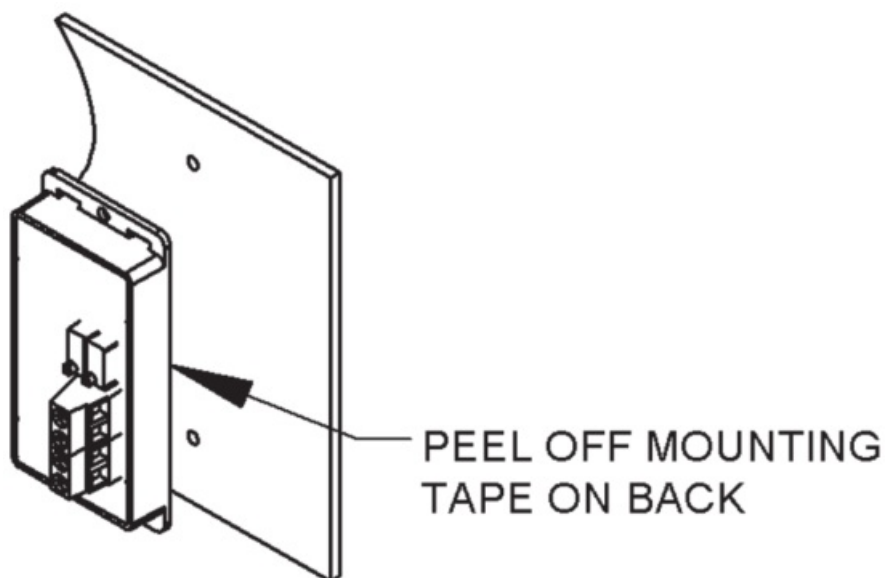
**Fig. 6:** Transmitter in Weatherproof Enclosure (BA/T1K-XOR-WP)



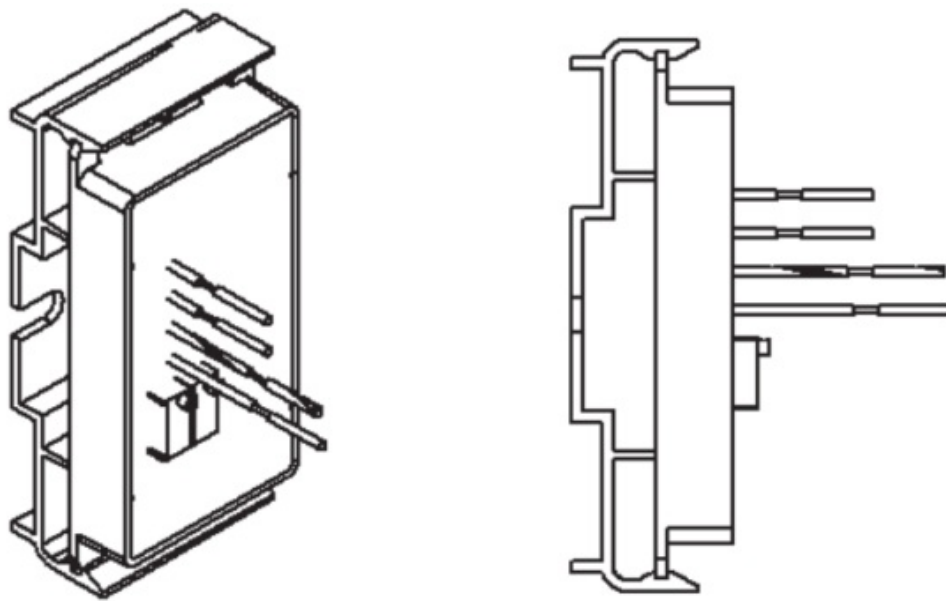
**Fig. 7:** Transmitter w/ plate mounted in a Handy Box



**Fig. 8:** Transmitter with double-stick mounting tape

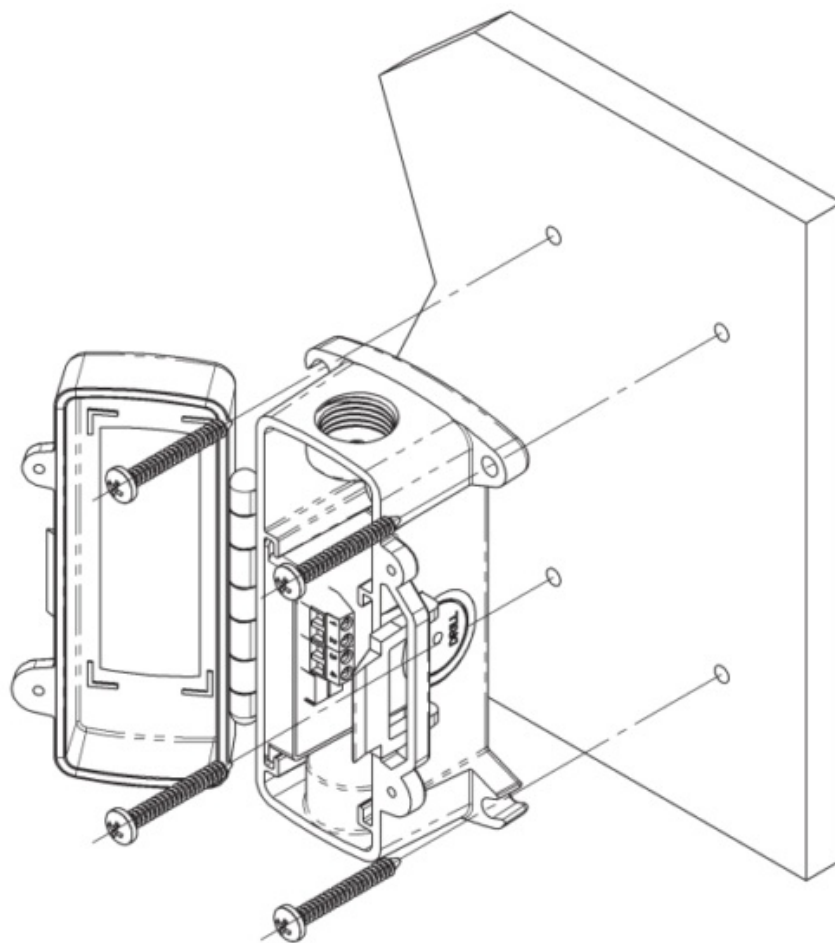


**Fig. 9:** Transmitter in Snaptrack

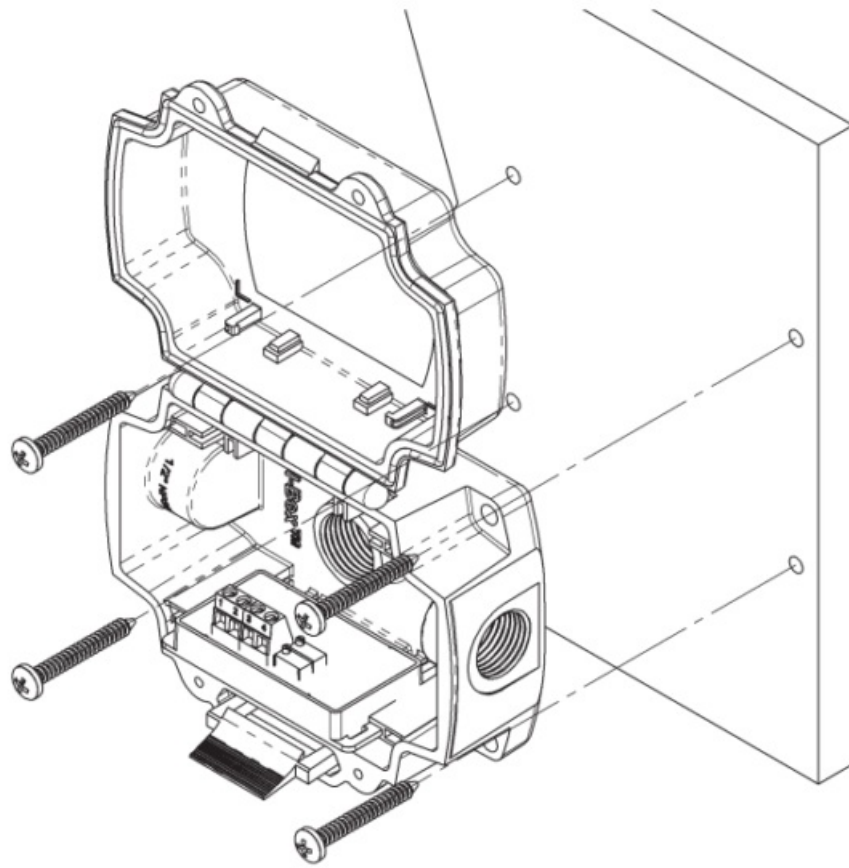


1. Mount track with screws through the bottom of the plastic track.
2. Insert one edge of the transmitter, then snap the other edge in.

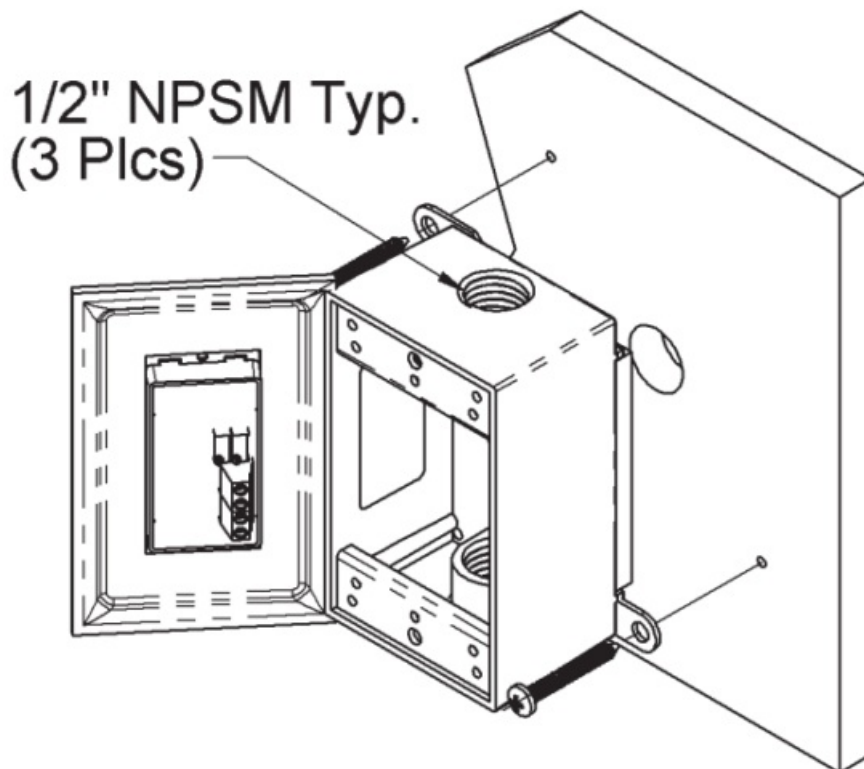
**Fig. 10:** Transmitter in a BAPI-Box Enclosure



**Fig 11:** Transmitter in a BAPI-Box 2 Enclosure



**Fig. 12:** Transmitter in a Weatherproof Enclosure



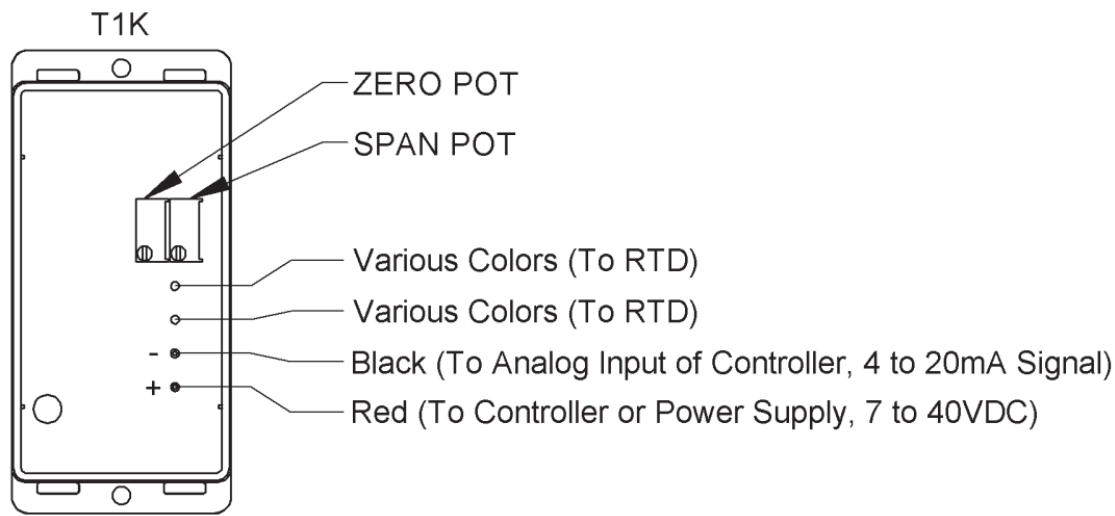
## Wiring & Termination

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.

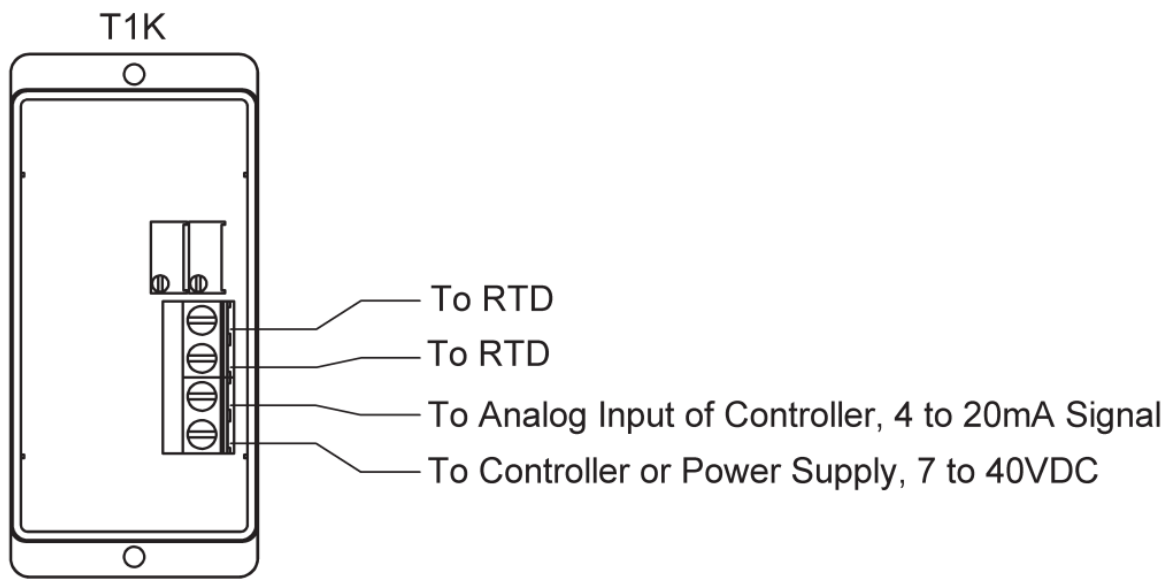
Do NOT run this device's wiring in the same conduit as high or low-voltage AC power wiring. BAPI's tests show

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

**Fig. 13:** Typical RTD 4 to 20mA Transmitter with Flying Leads



**Fig. 14:** Typical RTD 4 to 20mA Transmitter with Terminals



**Diagnostics**



Possible Problems:	Possible Problems:
<ul style="list-style-type: none"> <li>• Unit will not operate.</li> </ul>	<ul style="list-style-type: none"> <li>– Measure the power supply voltage by placing a voltmeter across the transmitter's (+) and (-) terminals. Make sure that it matches the drawings above and the power requirements in the specifications.</li> <li>– Check if the RTD wires are physically open or shorted together and are terminated to the transmitter.</li> </ul>
<ul style="list-style-type: none"> <li>• The reading is incorrect in the controller.</li> </ul>	<ul style="list-style-type: none"> <li>– Determine if the input is set up correctly in the controllers and BAS software.</li> <li>– For a 4 to 20mA current transmitter measure the transmitter current by placing an ammeter in series with the controller input. The current should read according to the "4 to 20mA Temperature Equation" shown below.</li> </ul>

### 4 to 20mA Temperature Equation

$$T = T_{Low} + \frac{(A - 4) \times (T_{Span})}{16}$$

T = Temperature at sensor  
 T<sub>Low</sub> = Low temperature of span  
 T<sub>High</sub> = High temperature of span  
 T<sub>Span</sub> = T<sub>High</sub> - T<sub>Low</sub>  
 A = Signal reading in mA

## Specifications

### Platinum 1K RTD Transmitter

Power Required: ..... 7 to 40VDC

Transmitter Output: ..... 4 to 20mA, 850Ω @ 24VDC

Output Wiring: ..... 2 wire loop

Output Limits: ..... <1mA (short), <22.35mA (open)

Span: ..... Min. 30°F (17°C), Max 1,000°F (555°C)

Zero: ..... Min. -148°F (-100°C), Max 900°F (482°C)

Zero & Span Adjust: ..... 10% of span

Accuracy: ..... ±0.065% of span

Linearity: ..... ±0.125% of span

Power Output Shift: ..... ±0.009% of span

Transmitter Ambient:..... -4 to 158°F (-20 to 70°C) 0 to 95% RH, Non-condensing

Resistance ..... 1KΩ @ 0°C, 385 curve (3.85Ω/°C)

Standard Accuracy ..... 0.12% @ Ref, or ±0.55°F (±0.3°C)

High Accuracy..... 0.06% @ Ref, or ±0.277°F (±0.15°C), [A]option

Stability ..... ±0.25°F (±0.14°C)

Self Heating ..... 0.4°C/mW @ 0°C

Probe Range ..... -40 to 221°F (-40 to 105°C)

Wire Colors: ..... General color code (other colors possible)

1KΩ, Class B ..... Orange/Orange (no polarity)

1KΩ, Class A ..... Orange/White (no polarity)

**Enclosure Ratings:** (Part number designator in bold)

Weatherproof: ..... **-WP**, NEMA 3R, IP14

BAPI-Box: ..... **-BB**, NEMA 4, IP66, UV rated

BAPI-Box 2: ..... **-BB2**, NEMA 4, IP66, UV rated  
**Enclosure Material:** (Part number designator in bold)  
Weatherproof: ..... **-WP**, Cast Aluminum, UV rated  
BAPI-Box: ..... **-BB**, Polycarbonate, UL94V-0, UV rated  
BAPI-Box 2: ..... **-BB2**, Polycarbonate, UL94V-0, UV rated  
**Ambient (Enclosure):** 0 to 100% RH, Non-condensing (Part number designator in bold)  
Weatherproof ..... **-WP**, -40 to 212°F (-40 to 100°C)  
BAPI-Box ..... **-BB**, -40 to 185°F (-40 to 85°C)  
BAPI-Box 2 ..... **-BB2**, -40 to 185°F (-40 to 85°C)

## Agency:

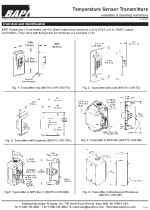
RoHS

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



Specifications are subject to change without notice.  
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## Documents / Resources



**[BAPI T1K Temperature Sensor Transmitters](#)** [pdf] Instruction Manual

T1K, Temperature Sensor Transmitters, T1K Temperature Sensor Transmitters, XMTR, T100

## References

- 
[BAPI - Sensor Products for HVAC/R Duct and Room](#)

[Manuals+](#).