



# BAPI 49733 Wireless Immersion Temperature Sensor Instruction Manual

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## BAPI 49733 Wireless Immersion Temperature Sensor Instruction Manual



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## Overview and Identification



### Wireless Immersion Temperature Sensor

- User adjustable settings
- Onboard memory
- Transmits to a digital Gateway or a wireless-toanalog Receiver

BAPI's Immersion Wireless Sensor measures the temperature and transmits the data via Bluetooth Low Energy to a receiver or gateway. This unit features a rugged IP66-rated BAPI-Box enclosure and stainless steel 1/4" (6.4mm) probe with standard probe lengths from 2" to 8" (51 to 203mm).

### Adjustable Settings

BAPI's wireless devices have several settings that can be field adjusted to suit the needs of the installation. All settings are configured by either the gateway or the receiver. (See the gateway or receiver instructions documents available on the BAPI website for more information on adjusting the settings.)

**Sample Rate/Interval** – The time between when the sensor wakes up and takes a reading. The available values are 10 sec, 30 sec, 1 min, 3 min or 5 min with the gateway, or 30 sec, 1 min, 3 min or 5 min with the receiver.

**Transmit Rate/Interval** – The time between when the sensor transmits the readings to the gateway or receiver. The available values are 30 sec, 1, 2, 3, 4, 5, 10, 15, 20 or 30 minutes, or 1, 6 or 12 hours with the gateway, or 1, 5, 10 or 30 minutes with the receiver.

**Delta Temperature** – The change in temperature between sample intervals that will cause the sensor to override the transmit interval and transmit the changed temperature at the next sample interval. The available values are 0.1, 0.2, 0.3, 0.4, 0.5, 1, 2, 3, 4, 5 °F or °C with the gateway, and 1 or 3 °F or °C with the receiver.

**Temperature Min/Max** – The maximum or minimum temperature that will cause the sensor to override the transmit interval and immediately transmit a reading to the gateway. (Only available when using a gateway.)

**Temperature Offset** – Adjusts the temperature value being transmitted to match that of a calibrated reference

device. The available values are  $\pm 0.1$ , 0.2, 0.5, 1, 2, 3, 4 or 5 °F or °C. (Only available when using a gateway.)

## Associated Receiver or Gateway

### RECEIVER (Wireless-to-Analog)

The wireless receiver from BAPI receives the data from one or more wireless sensors. The data is then transferred to the analog output modules and converted to an analog voltage or resistance. The receiver supports up to 32 sensors and up to 127 different analog output modules.



### GATEWAY

The wireless gateway from BAPI receives the data from one or more wireless sensors. The gateway then provides the data to the cloud via MQTT. The gateway also sends a confirmation signal to each sensor upon a successful reception of data. The gateway supports up to 32 sensors.



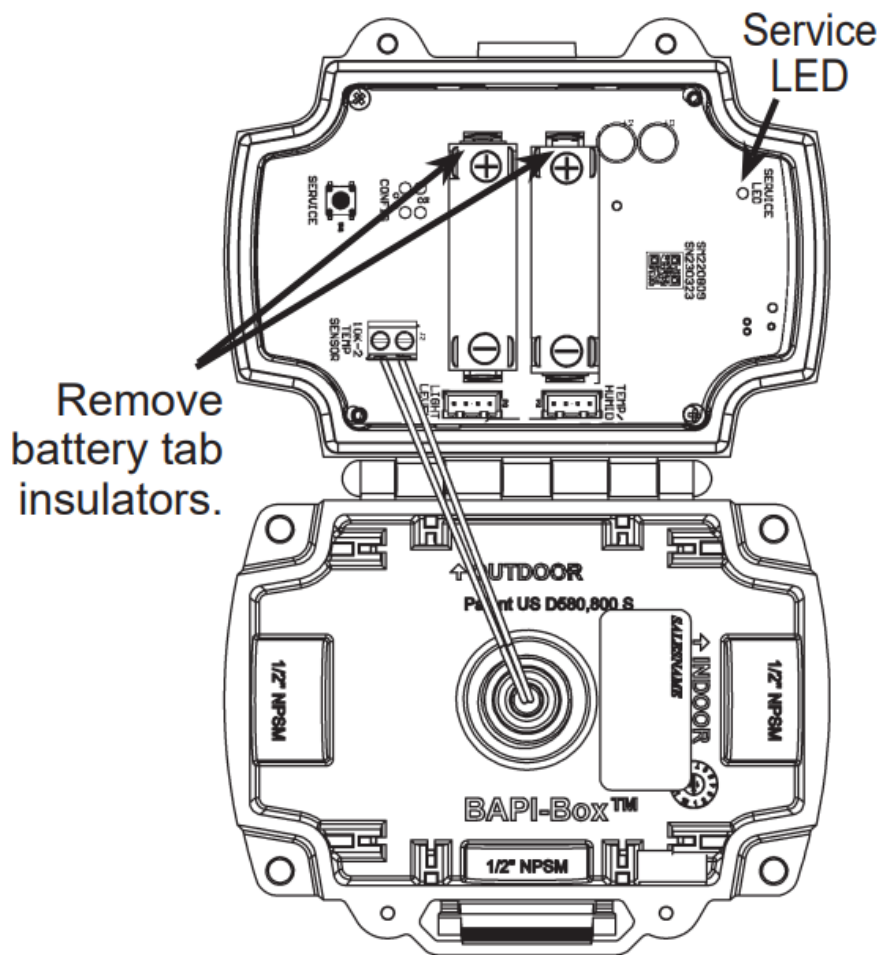
Please see BAPI's Wireless Quick Start Guide, or the gateway or receiver instructions documents available on the BAPI website to establish communication between the sensors and the gateway or receiver.

## Initial Activation

### Battery Power Units

The unit comes with two pre-installed batteries. To activate the unit, open the cover to access the batteries. Find the battery tab insulators and pull them out. Press the Service button and the Service LED should flash once to confirm power.

**Fig. 1: Battery Power Unit**

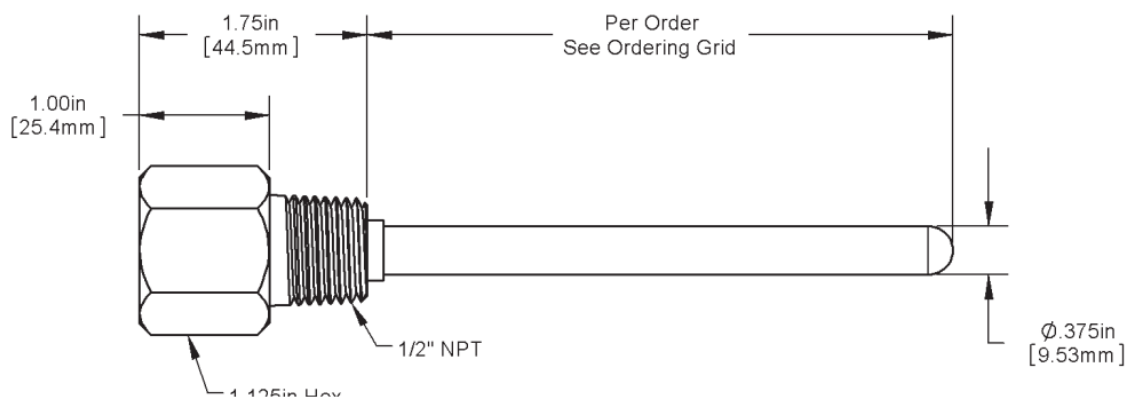


### Wire Power Units

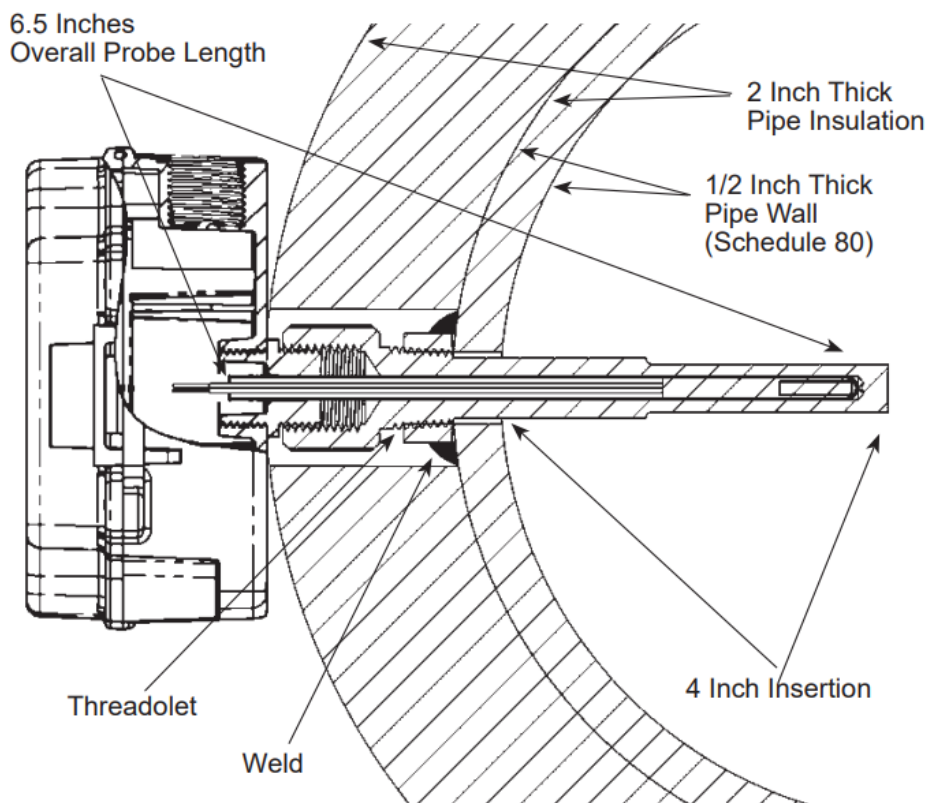
To activate the unit, open the cover to access the circuit board and apply the 9 to 30 VDC or 24 VAC to the power terminals as shown. Press the Service button and the Service LED should flash once to confirm power.

**Fig. 2: Wire Power Unit**





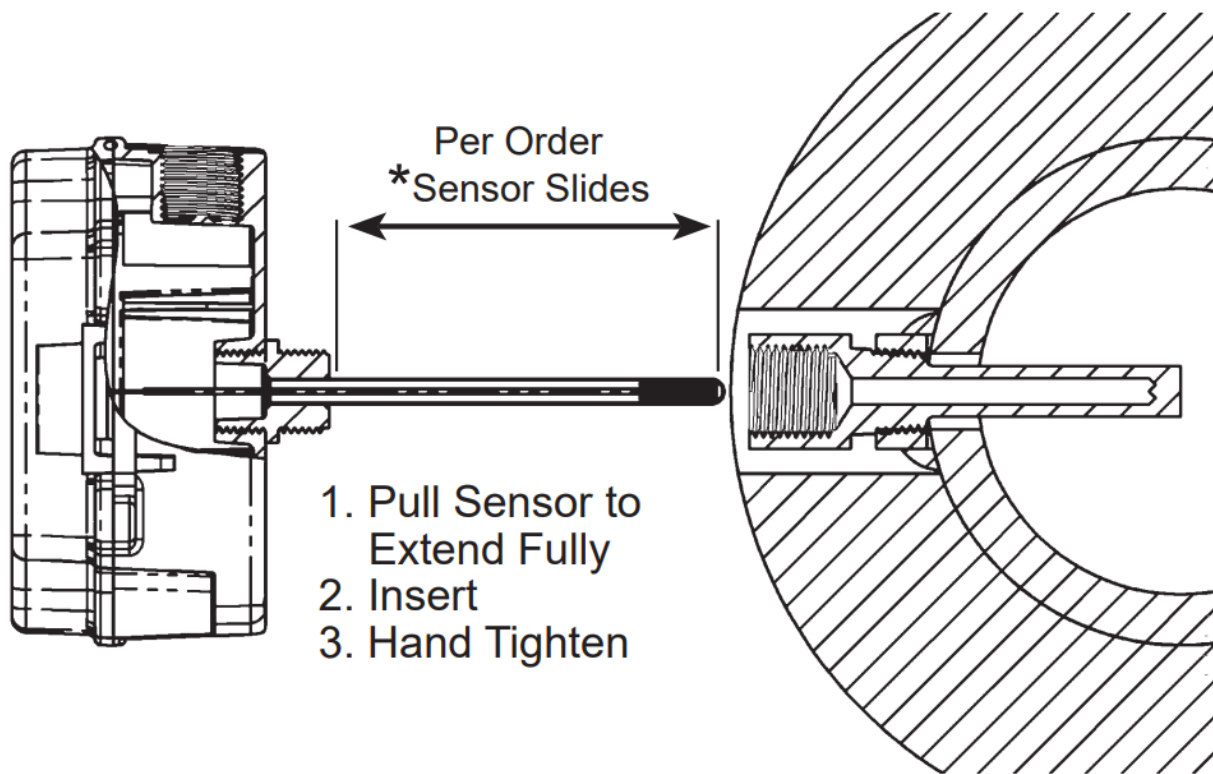
**Fig. 5: Typical Sensor and Thermowell Installation**



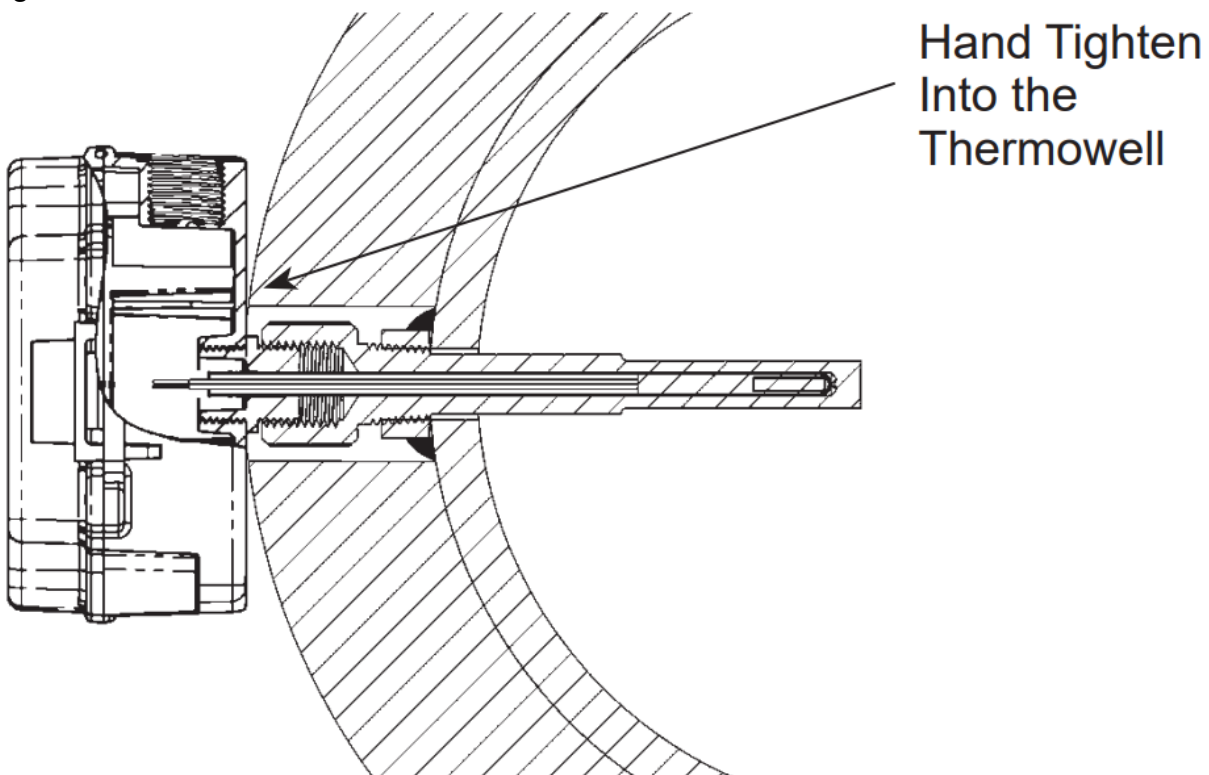
### Immersion Sensor Installation

Immersion probes come with a plastic fitting that screws into the threads at the top of the thermowell. Pull the probe away from the plastic fitting until the probe is fully extended. Insert the immersion probe into the thermowell until the plastic fittings come into contact with the threads in the thermowell. Hand tighten the immersion sensor snugly into the thermowell without too much torque. The unit is designed so that the temperature probe slides back into the enclosure as the sensor contacts the bottom of the thermowell. Make sure that the tip of the immersion sensor probe is in good contact with the bottom of the thermowell by pushing on the flaired end of the probe until the tip bottoms out in the thermowell.

**Fig. 6: BAPI-Box Unit Before Insertion**



**Fig. 7: BAPI-Box Unit Inserted**



## **Installation in Pipes Less than 3" in Diameter**

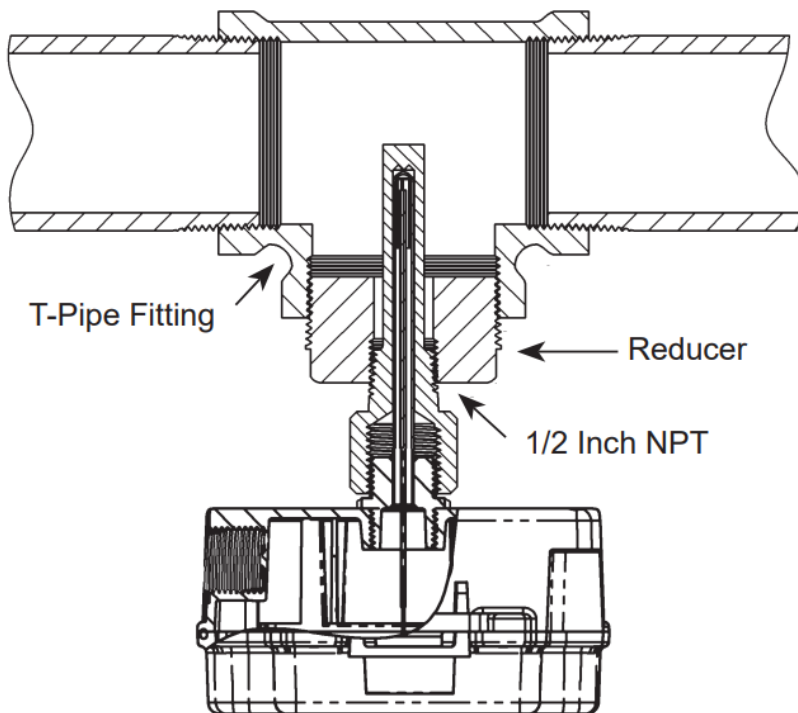
### **T- Mount**

Fig 8 shows how a 2" Tee and a 1/2" to 2" bushing allows a 2" thermowell to measure the temperature of the contents of a 2" water pipe. Be sure to use a thread sealant on the outside threads of the thermowell. Corner Mount

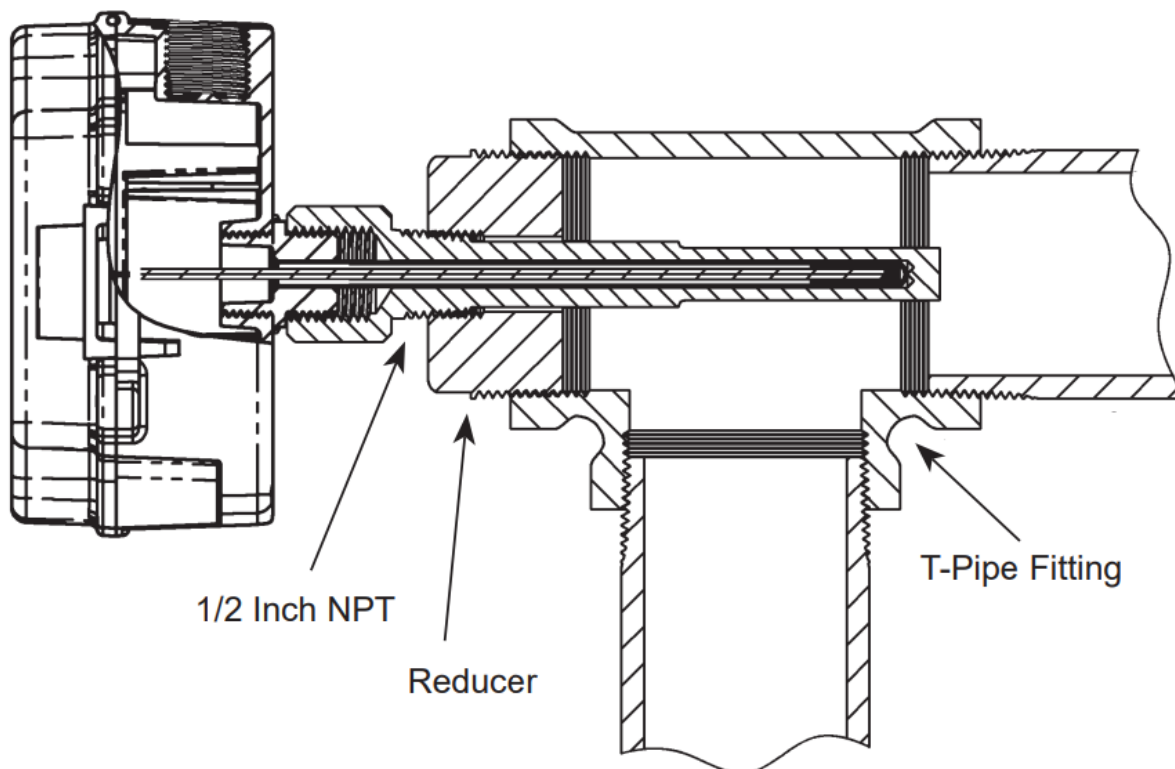
Fig 9 shows how a pipe Tee can be used in an elbow application. A 2" tee and a 1/2" to 2" bushing allows a 4" thermowell to measure the temperature of the contents of a 2" water pipe.

**Note:** Temperatures in pipes as small as 1-1/4" may be measured by this method. In small pipes, the diameter of the thermowell may become a significant obstruction, so be sure to check for proper flow rates after installation is complete.

**Fig. 8: Typical T-Mount**



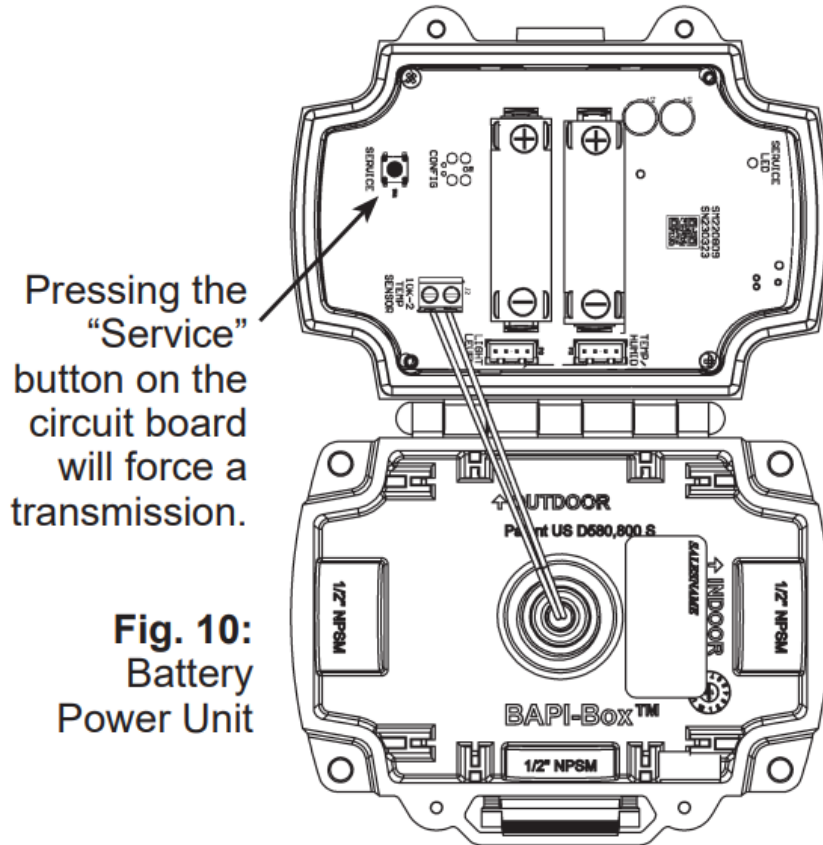
**Fig. 9: Typical Corner Mount**



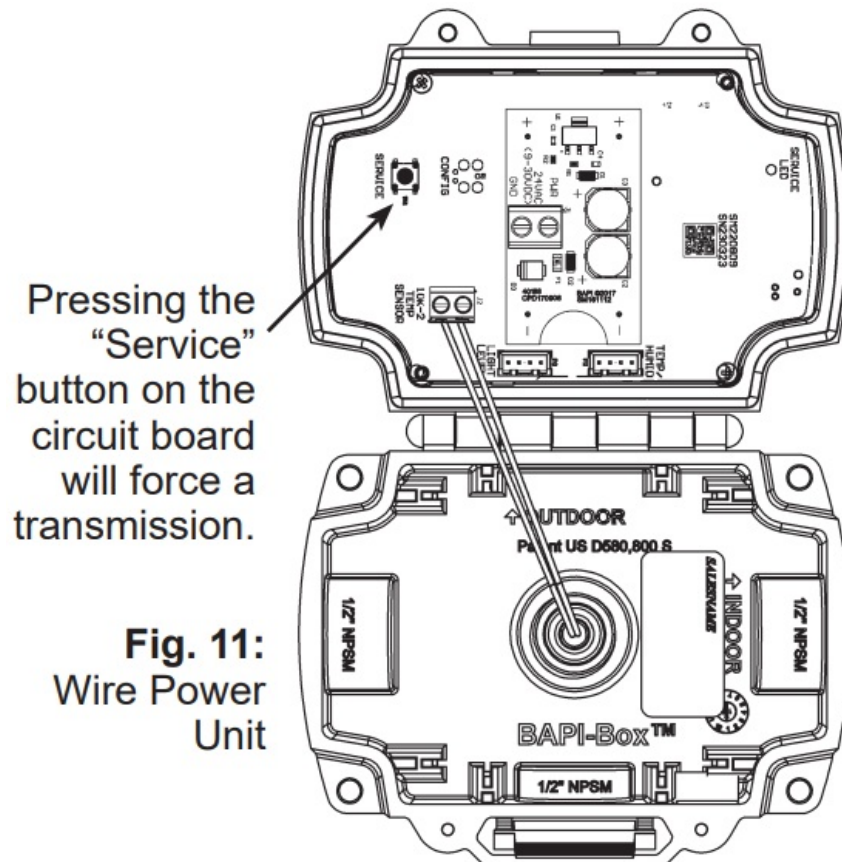
## Operation

Power the unit as described in "Initial Activation" section. Follow the gateway or receiver instructions for pairing the unit and changing the adjustable settings. (The instructions are available on the BAPI website.)

**Fig. 10: Battery Power Unit**



**Fig. 11: Wire Power Unit**



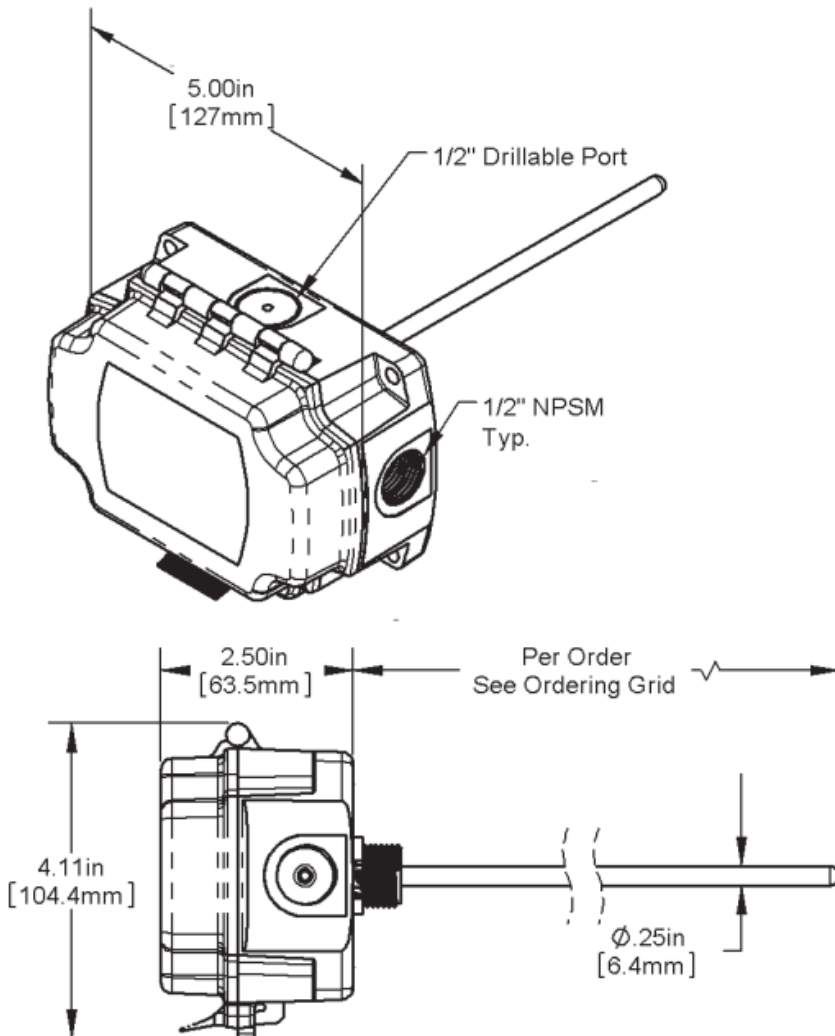
## Wireless Sensor Reset

Sensors remain paired to the gateway or receiver and output modules when power is interrupted or the batteries are removed. To break the bonds between them, the sensors need to be reset. To do this, press and hold the

Make sure the sensor is within range of the gateway or receiver. Verify that the green LED on the sensor circuit board flashes when the “Service” button is pressed, indicating a transmission. If it does not flash, replace the batteries.

Verify that the sensor is properly paired to the gateway or receiver and analog output modules as described in the gateway or receiver instructions available on the BAPI website. Re-pair them if needed. If necessary, perform the “Wireless Sensor Reset” procedure as described on the pg 3.

## Specifications



- **Battery Power:** Two included 3.6V 14505, 14500 or equivalent lithium batteries  
(**Note:** Standard AA batteries are not compatible)
- **Wire Power:** 9 to 30 VDC or 24 VAC, halfwave rectified
- **Temperature Sensor Accuracy:**  $\pm 1.0^{\circ}\text{F}$  ( $0.55^{\circ}\text{C}$ ) from 32 to 158°F (0 to 70°C)
- **Temperature Range:** -4 to 221°F (-20 to 105°C)
- **Transmission Distance:** Varies by application\*
- **Environmental Operation Range:**
  - **Temp:** -4 to 149°F (-20 to 65°C)
  - **Humidity:** 10 to 90%RH, non-condensing
- **Enclosure Rating, Material & Material Rating:** IP66, UV-Resistant Polycarbonate, UL94 V-0
- **Frequency:** 2.4 GHz (Bluetooth Low Energy)
- **Receiver Sensitivity:** -97 dBm
- **User Adjustable Settings:**
  - **Delta T (Temp):** 0.1°F/C to 5.0°F/C
  - **Transmit Interval:** 30 sec to 12 hour

- **Sample Interval:** 10 sec to 5 min
- **Temp Offset:**  $\pm 0.1^{\circ}\text{F/C}$  to  $\pm 5.0^{\circ}\text{F/C}$
- **Onboard Memory:** Sensor retains up to 16,000 readings should the communication become interrupted. If using a Gateway, the data is re-transmitted once communication is re-established.
- **Agency:** RoHS

In-building range is dependent on obstructions such as furniture and walls and the density of those materials. In wide open spaces, the distance may be greater; in dense spaces, the distance may be less.

Actual battery life is dependent on the sensor's adjustable settings and environmental conditions.

Calculated Battery Life**		
Transmit Interval	Sample Rate	Estimated Life (years)
30 sec	30 sec	1.04
1 min	1 min	1.95
3 min	1 min	3.46
5 min	5 min	4.63
10 min	5 min	7.02

Specifications subject to change without notice.

## Costumer Support

**Building Automation Products, Inc., 750 North Royal Avenue, Gays Mills, WI 54631 USA**


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## Documents / Resources

	<p><b><a href="#">BAPI 49733 Wireless Immersion Temperature Sensor</a></b> [pdf] Instruction Manual  49733, 49733 Wireless Immersion Temperature Sensor, Wireless Immersion Temperature Sensor, Immersion Temperature Sensor, Temperature Sensor, Sensor</p>
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## References

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

[Manuals+](#).