BAPI 50388 Wireless Remote Probe Temperature Sensor Installation Guide

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BAPI 50388 Wireless Remote Probe Temperature Sensor

Product Information

The BAPI Wireless Remote Probe Temperature Sensor is a device that measures temperature and transmits the data via Bluetooth Low Energy (BLE) to a receiver or gateway. It features a 1.75″ (44mm) long stainless steel probe with either Plenum-Rated or FEPJacketed Cable and an IP66-rated BAPI-Box enclosure. The sensor comes with five lead lengths ranging from 5 to 25 feet (1.5 to 7.6 meters).

The wireless sensor has adjustable settings that can be field adjusted to suit the needs of the installation. All settings are configured by either the gateway or the receiver. For moreinformation on adjusting the settings, refer to the gateway or receiver instructions documents available on the BAPI website.

There are two options for receiving data from the wireless sensor:

1. **Receiver (Wireless-to-Analog):** The wireless receiver from BAPI receives the data from one or more wirelesssensors. 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.
2. **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 successful reception of data. The gateway supports up to 32 sensors

To establish communication between the sensors and the gateway or receiver, refer to BAPI's Wireless Quick Start Guide or the gateway/receiver instructions documents available on the BAPIwebsite.

Product Usage Instructions

1. **Initial Activation:**
    - To activate the unit with battery power, open the cover to access the batteries. Find the battery tab

insulators and pull themout. Press the Service button, and the Service LED should flash once to confirm power.
    - To activate the unit with wire power, open the cover to access the circuit board. Apply a 9 to 30 VDC or 24 VAC power to the terminals as shown. Press the Service button, and the Service LED should flash once to confirm power.
2. **Mounting:**
    - Mount the enclosure to the surface using BAPI recommended #8 screws. Use the enclosure tabs to mark the pilot hole locations.
    - To mount the probe to a pipe, follow the steps shown in Fig. 4 of the user manual.
3. **Operation:**
    - Power the unit as described in the Initial Activation section. Follow the gateway or receiver instructions for pairing the unit and changing the adjustable settings. Refer to the instructions available on the BAPI website.

Overview and Identification

- User adjustable settings
- Onboard memory
- Transmits to a digital Gateway or a wireless-to-analog Receiver BAPI's Remote Probe Wireless Sensor measures the temperature and transmits the data via Bluetooth Low Energy to a receiver or gateway. It features a 1.75" (44mm) long SS probe with either Plenum-Rated or FEPJacketed Cable and an IP66-rated BAPI-Box enclosure. Five lead lengths from 5 to 25 feet (1.5 to 7.6 meters).

Adjustable Settings

- BAPI's wireless devices have several settings that can be 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 minumum 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 ±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.

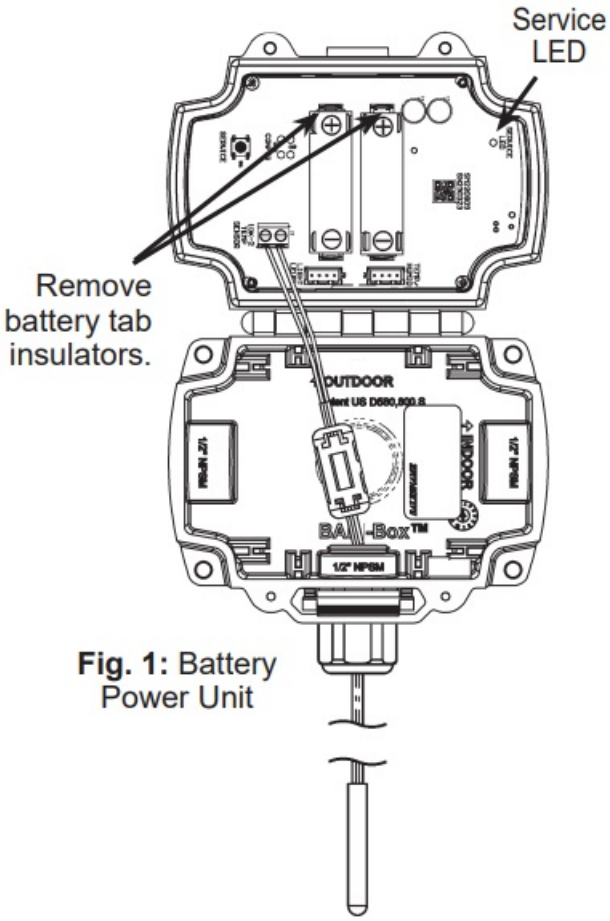


Fig. 1: Battery Power Unit

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.

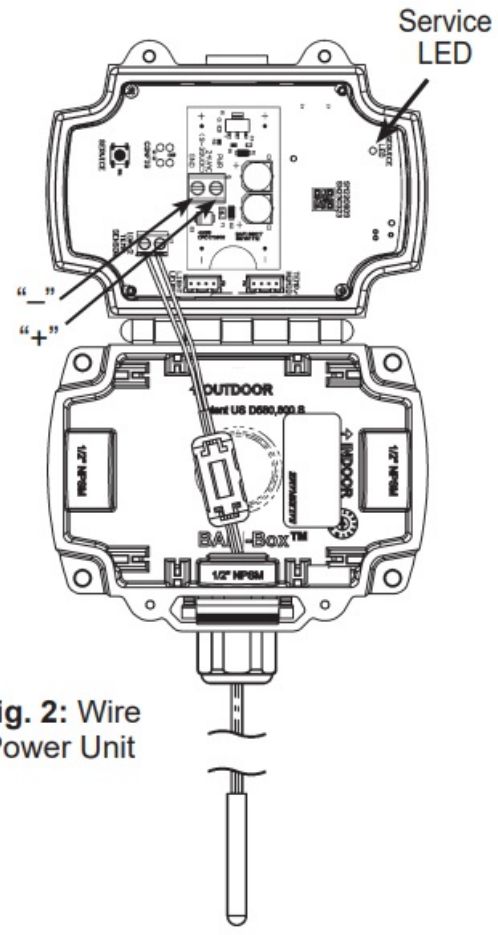


Fig. 2: Wire Power Unit

Mounting

Mount the enclosure to the surface using BAPI recommended #8 screws as shown in Fig 4. A 1/8” inch pilot screw hole makes mounting easier through the tabs. Use the enclosure tabs to mark the pilot hole locations.

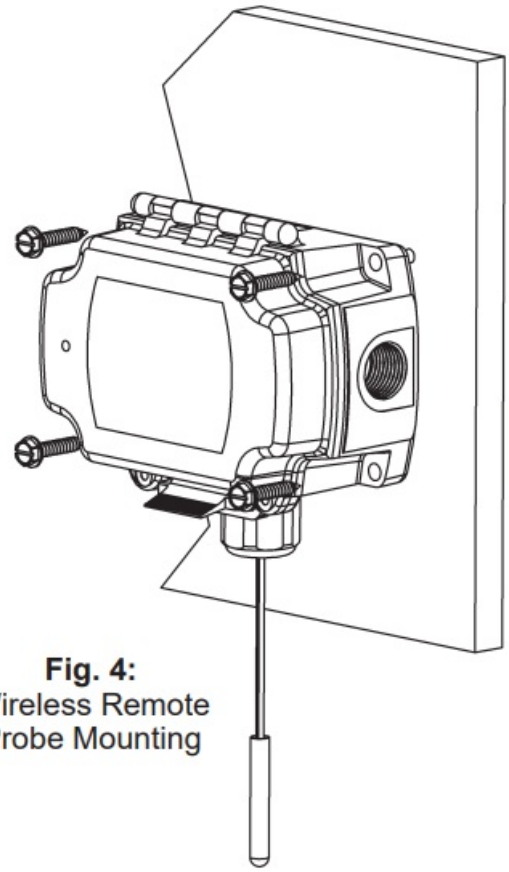


Fig. 4:
Wireless Remote
Probe Mounting

MOUNTING THE PROBE TO A PIPE
Step 1: Secure sensor to have good contact with bare pipe
Step 2: Insulate Over The Sensor. Insulation should be installed a minimum of 4 pipe diameters on each side of the strap-on sensor.
Example: ½” pipe x 4 = 2”. Insulation should be 2” on each side of the sensor wrapped all the way around the pipe.

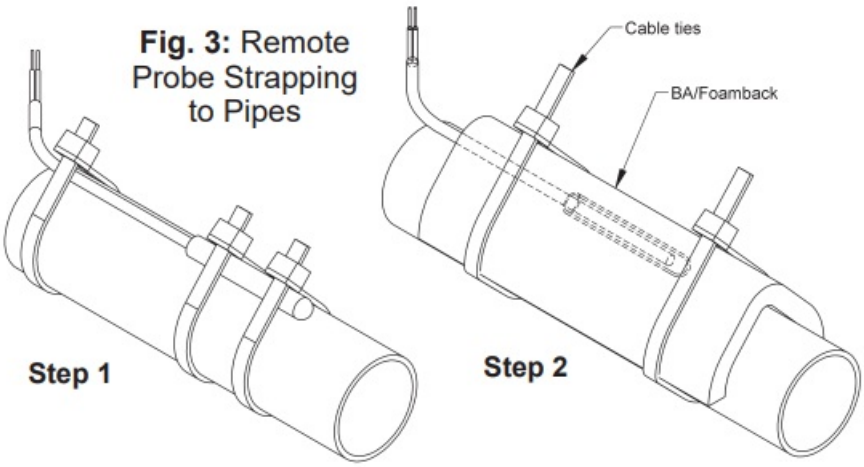


Fig. 3: Remote
Probe Strapping
to Pipes

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.)

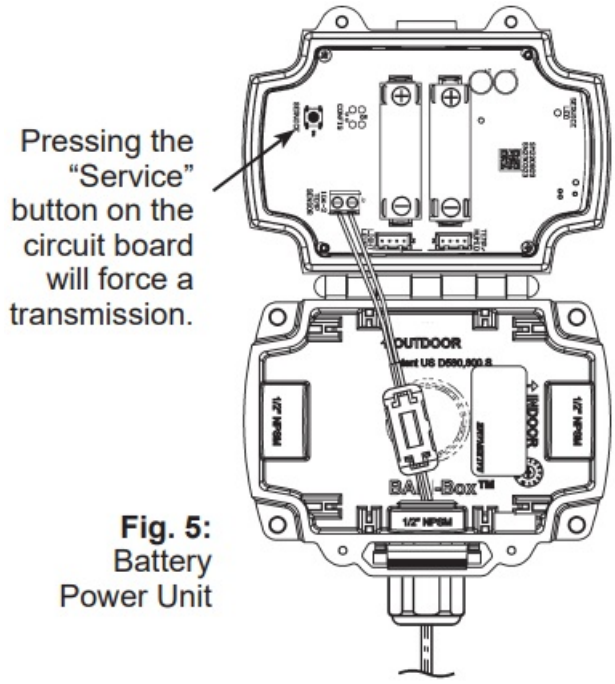


Fig. 5: Battery Power Unit

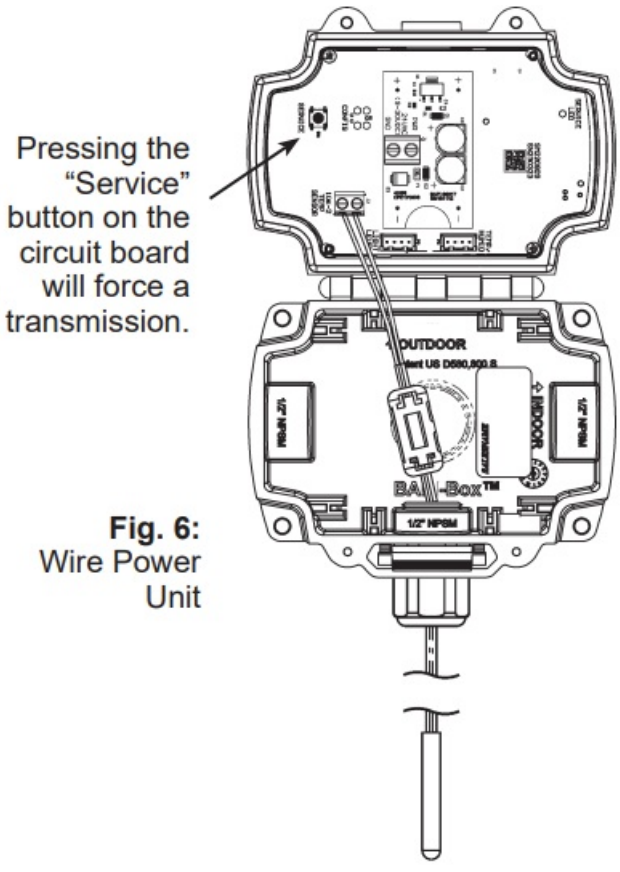


Fig. 6: Wire Power Unit

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 “Service Button” on the sensor for about 30 seconds. During those 30 seconds, the green LED will be off for about 5 seconds, then flash slowly, then begin flashing rapidly. When the rapid flashing stops, the reset is complete. The

sensor can now be paired to a new receiver or gateway. To re-pair to the same receiver or gateway, you must reset the receiver or gateway. Output modules that were previously paired to the sensor do not need to be re-paired.

Battery Replacement

Open the cover to access the batteries (Fig 7).
Remove the batteries from their holders and discard in an environmentally safe manner.
Replace with new batteries in the correct orientation.

Battery Specifications:
Two 3.6V Lithium batteries:
(#14505, 14500 or equivalent)

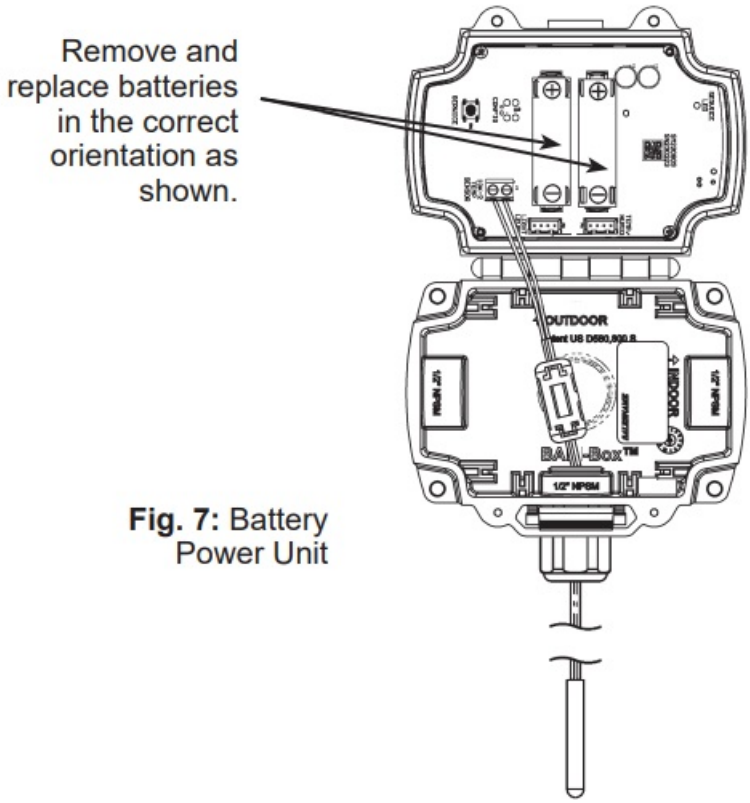


Fig. 7: Battery Power Unit

Onboard Memory

Sensor retains up to 16,000 readings should the communication become interrupted. The sensor only stores readings from missed transmissions and only when the sensor is paired to a gateway. Once communication is re-established with the gateway, the stored readings are transmitted and then erased from the sensor. The current reading and nine previous readings are sent at each transmit interval until the sensor is caught up.

Diagnostics

Possible Problems:
Sensor is not communicating with the gateway or receiver, or the transmitted values are incorrect.

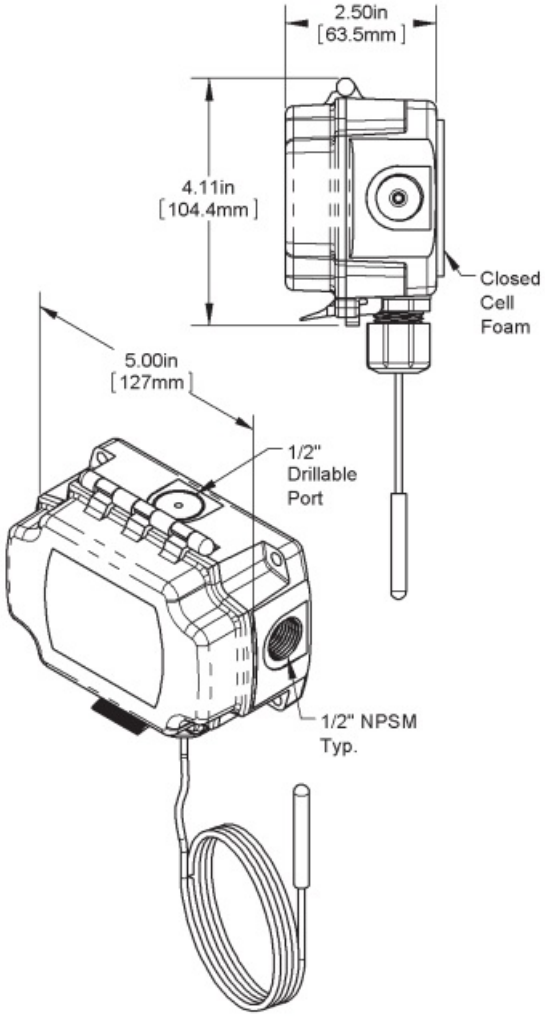
Possible Solutions:
Make sure the sensor is within range of the gateway or receiver.
Verify that the green LED on the sensor circuit board flashes when the “Service” button is pressed, indicating a transmission. If it does not flash, replace the batteries. Verify that the sensor is properly paired to 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:** ±1.0°F (0.55°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:** ±0.1°F/C to ±5.0°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

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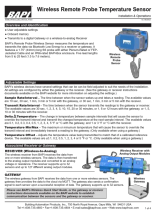
Documents / Resources

	**BAPI 50388 Wireless Remote Probe Temperature Sensor** [pdf] Installation Guide 50388 Wireless Remote Probe Temperature Sensor, 50388, Wireless Remote Probe Temperature Sensor, Remote Probe Temperature Sensor, Probe Temperature Sensor, Temperature Sensor, Sensor

References

- **BAPI - Sensor Products for HVAC/R Duct and Room**