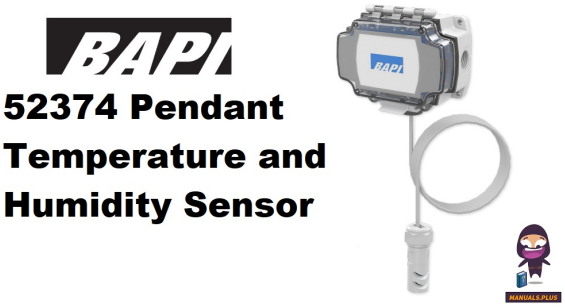


BAPI 52374 Pendant Temperature and Humidity Sensor Installation Guide

Contents

BAPI 52374 Pendant Temperature and Humidity Sensor

Specifications

- **Power:** 16 to 40VDC, 40 mA max (20 mA/loop) DC
- **Humidity Sensor Type:** Capacitive Polymer
- **Temperature Sensor Type**: 1KΩ, 2 Wire Platinum RTD, 385 Curve
- **Humidity Output**: 4 to 20mA over 20 to 90%RH Range
- **Temperature Output:** 4 to 20mA over 40 to 120°F Range
- **Humidity Drift:** 0.5%RH per year
- **Humidity Accuracy:** ±2% (20 to 80%RH @ 25°C), Non-condensing±3% (80 to 90%RH @ 25°C), Non-condensing
- **Temperature Accuracy:** ±0.3°C
- **Output Impedance (Max Load/Loop):** 700Ω @ 24VDC, Voltage drop is 10VDC (Supply Voltage – 10VDC) / 0.02 Amps = Max load Impedance
- **Response Time**: < 5 seconds in moving air
- **Environmental Operation Range:**
  - **Temperature: –**40 to 158°F (-40 to 70°C)
  - **Humidity:** 0 to 95%RH, non-condensing Fully Temperature Compensated
- **BAPI-Box Material:** UV-resistant Polycarbonate, UL94 V-0
- **Agency**: RoHS

Specifications subject to change without notice.

Product Usage Instructions

Mounting

Mount the BAPI-Box enclosure to a wall or other surface with the pendant sensor pointed downward. Use the

BAPI Clean-Cut tool to drill out the ports.

Wiring and Termination

- Use twisted pair of at least 22AWG for terminations to pluggable terminal block. Larger gauge wire may be required for long runs. Ensure all wiring complies with NEC and local codes.
- Avoid running the device's wiring in the same conduit as AC power wiring of NEC class 1, 2, or 3, or with wiring for highly inductive loads. Wiring should be done with power disconnected to prevent damage.

Terminal Connections

Terminal	Purpose
V1+	Power for Temperature 16 to 40VDC
GND1	Temperature Output and Ground of Controller
GND2	Humidity Output and Ground of Controller
V2+	Power for Humidity 16 to 40VDC

Humidity Diagnostics

Possible Problems: Unit will not operate, Humidity output is at its maximum

Possible Solutions:

- Check for proper supply power.
- Ensure the humidity sensor is wired properly.
- Verify humidity with a reference sensor. If humidity drops to 5% or below, the output will go to the maximum value.

Overview

- 4 to 20mA Temperature Output over a 40 to 120°F Range
- 4 to 20mA Humidity Output over a 20 to 90%RH Range
- Sensor Hangs from 12 feet of PVC-Jacketed Cable
- ±2%RH Humidity Accuracy
- ±0.3°C Temperature Accuracy
- NIST Certificate Included

BAPI's Hanging Temperature and Humidity Sensor features a BAPI-Box enclosure and 12 feet of PVC-jacketed cable.
The temperature measurement has a 4 to 20mA output over a 40 to 120°F range with an accuracy of ±0.3°C. The humidity measurement has a 4 to 20mA output over a 20 to 90%RH range with an accuracy of ±2%RH.

Fig. 1: Pendant Sensor

Mounting

- Mount the BAPI-Box enclosure to a wall or other surface and the pendant sensor pointed downward as shown in Fig. 2.
- **Note:** BAPI recommends using the BAPI “Clean-Cut” tool (shown below) to drill out the ports.
- Pull the wiring into the unit and terminate to pluggable terminal blocks as directed on page 2. Best practice is to seal the wiring hole with caulk after the wiring is installed.

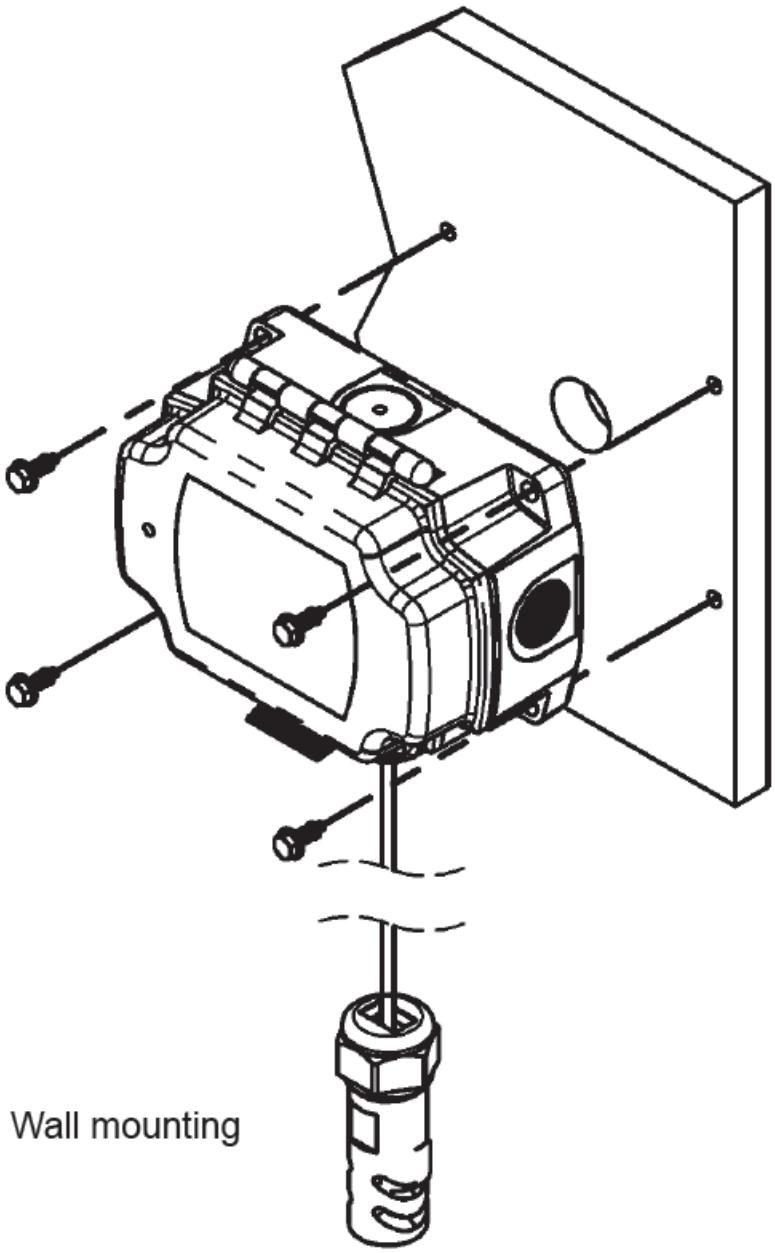


Fig. 2: Wall mounting

Clean-Cut Tool Part#: BA/CLN-CUT-50 For drilling out the ½" threaded ports in the BAPI-Box enclosure

Wiring and Termination

- BAPI recommends using twisted pair of at least 22AWG to make terminations to pluggable terminal block.. 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 recommends wiring the product with power disconnected. Proper supply voltage, polarity, and wiring connections are important to a successful installation. Not observing these recommendations may damage the product and will void the warranty.

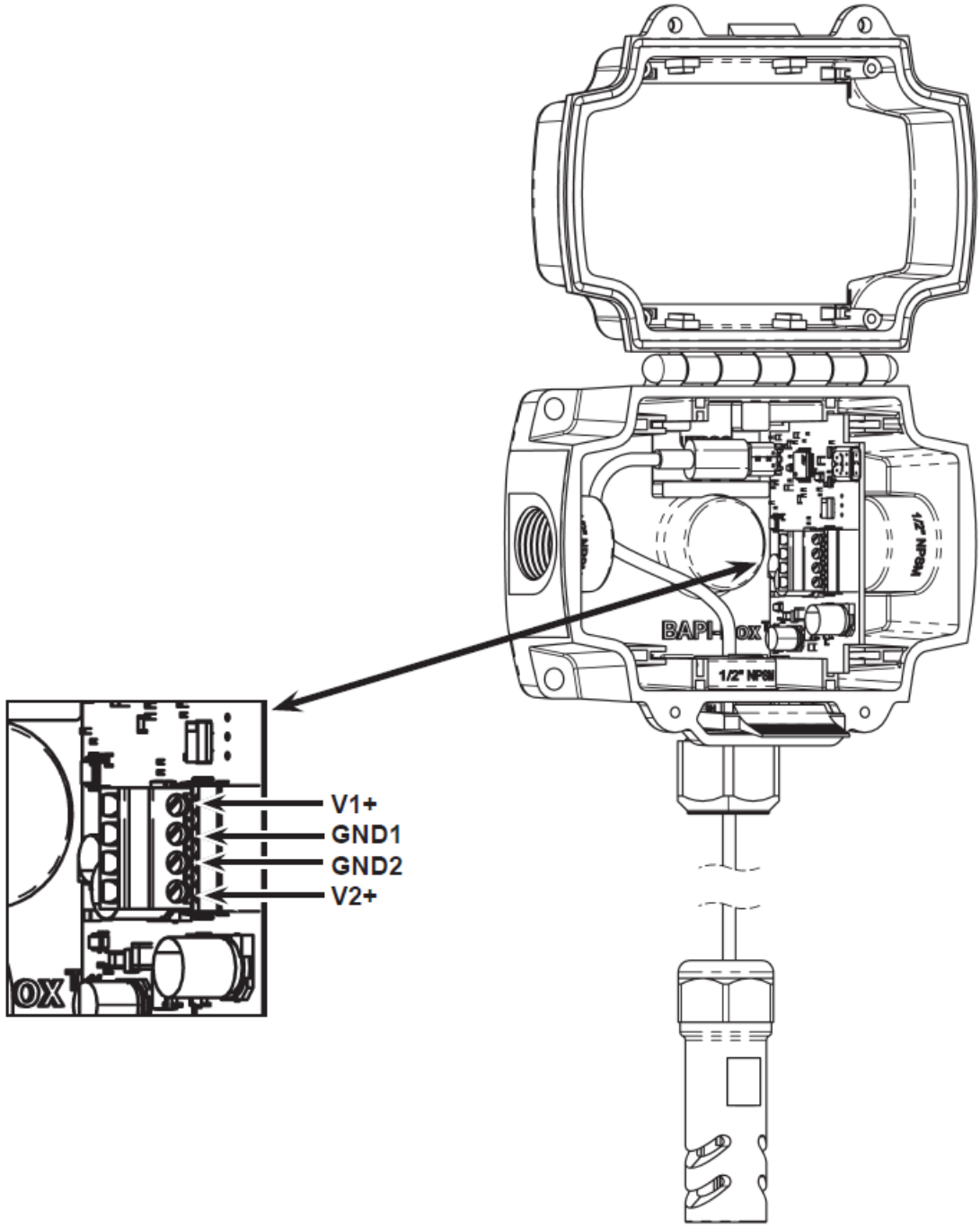
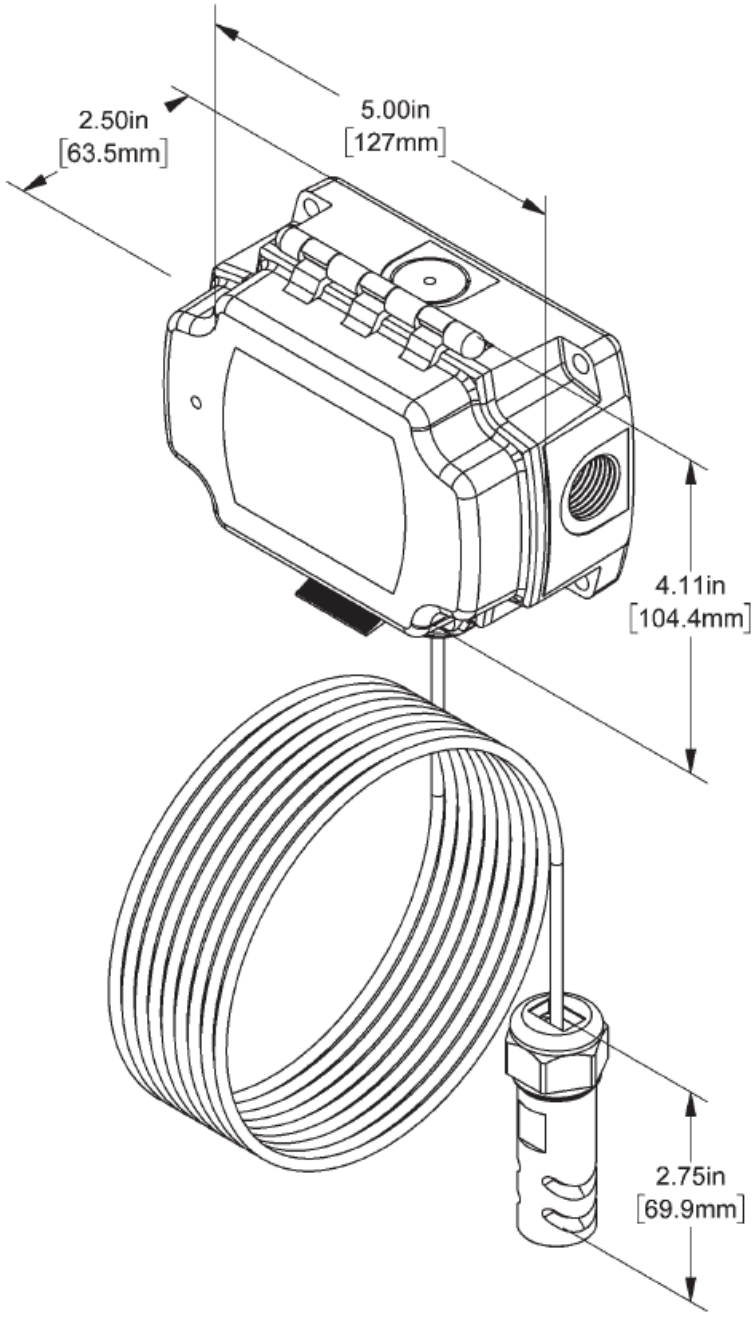


Table 1: Wiring Connections

Table 1: Wiring Connections		
Terminal	**Purpose**	**Note**
V1+	Power for Temperature	16 to 40VDC
GND1	Temperature Output and Ground	4 to 20mA, to Analog Input of Controller
GND2	Humidity Output and Ground	4 to 20mA, to Analog Input of Controller
V2+	Power for Humidity	16 to 40VDC

DIMENSION



TROUBLESHOOTING

- Humidity Diagnostics
- Temperature Diagnostics

Possible Problem	Possible Solution
Humidity Diagnostics Unit will not operate	– Check for proper supply power (see page 2 for wiring diagram and power specifications).
	– Make sure the humidity sensor is wired properly.
Humidity output is at its maxi mum	– Verify humidity with a reference sensor. If humidity drops to 5% or below, the output will go to the maximum value.
	– Make sure the humidity sensor is wired properly.
Humidity output is at its mini mum	– Check all software parameters.
Humidity reading in controller ’s software appears incorrect	– Determine if the sensor is exposed to an external air source different from the i ntended measured environment or reference device.
	– Check the Humidity transmitter output against a calibrated reference (e.g., a 2 % accurate hygrometer).
	– Measure humidity at the sensor’s location using the reference meter, then calc ulate the humidity transmitter output using the equation below.
	– Compare the calculated output to the actual humidity transmitter output (see t he wiring diagram on page 2 for output wires).
	– If the calculated output differs from the humidity transmitter output by more tha n 5%, contact BAPI technical support.
Temperature Diagnostics The controller reports incorre ct temperature	– Confirm the input is set up correctly in the controller’s software.
	– Verify that the sensor wires are not physically shorted or open.
	– Check wiring for proper termination.
	– Check the Temperature transmitter output against a calibrated reference.
	– Measure the temperature at the sensor’s location using the reference meter, t hen calculate the temperature transmitter output using the equation below.
	– Compare the calculated output to the actual temperature transmitter output (s ee the wiring diagram on page 2 for output wires).
	– If the calculated output differs from the temperature transmitter output by more than 5%, contact BAPI technical support.

Humidity Equation:
%RH = (((MEASUREDmA – 4mA) / 16mA) * (maxRH – minRH)) + minRH

to 20mA Temperature Equation
T = TLow + (A -4) x (TSpan)/16

- **T** = Temperature at sensor
- **TLow =** Low temperature of span

- **THigh** = High temperature of span
- **TSpan** = THigh – TLow
- **A =** Signal reading in mA

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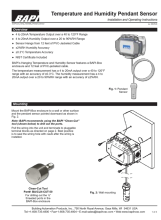
Documents / Resources

	BAPI 52374 Pendant Temperature and Humidity Sensor [pdf] Installation Guide 52374, 52374 Pendant Temperature and Humidity Sensor, 52374, Pendant Temperature and Humidity Sensor, Humidity Sensor, Sensor

References

- User Manual