



SPV Humidity Transmitter(4 to 20mA, 0 to 5V) & Temp Transmitter(4 to 20mA) Combination Sensors

Termination and Troubleshooting

14151_ins_spv_hum_temp_transcombo

rev. 9/1/04

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

Humidity Transmitter Table

Wire color	Purpose	Note
Yellow	Temperature Sensor	Factory connection, no customer connection allowed
Yellow	Temperature Sensor	Factory connection, no customer connection allowed
Blue	Humidity Sensor	Factory connection, no customer connection allowed
Blue	Humidity Sensor	Factory connection, no customer connection allowed
White	Voltage output	0 to +5VDC output, To Analog Input of Controller
Black	GND (Common)	0 to +5VDC Output Ground; 4 to 20mA output, To Analog Input of Controller
Red	Power	+12 to +24 VDC

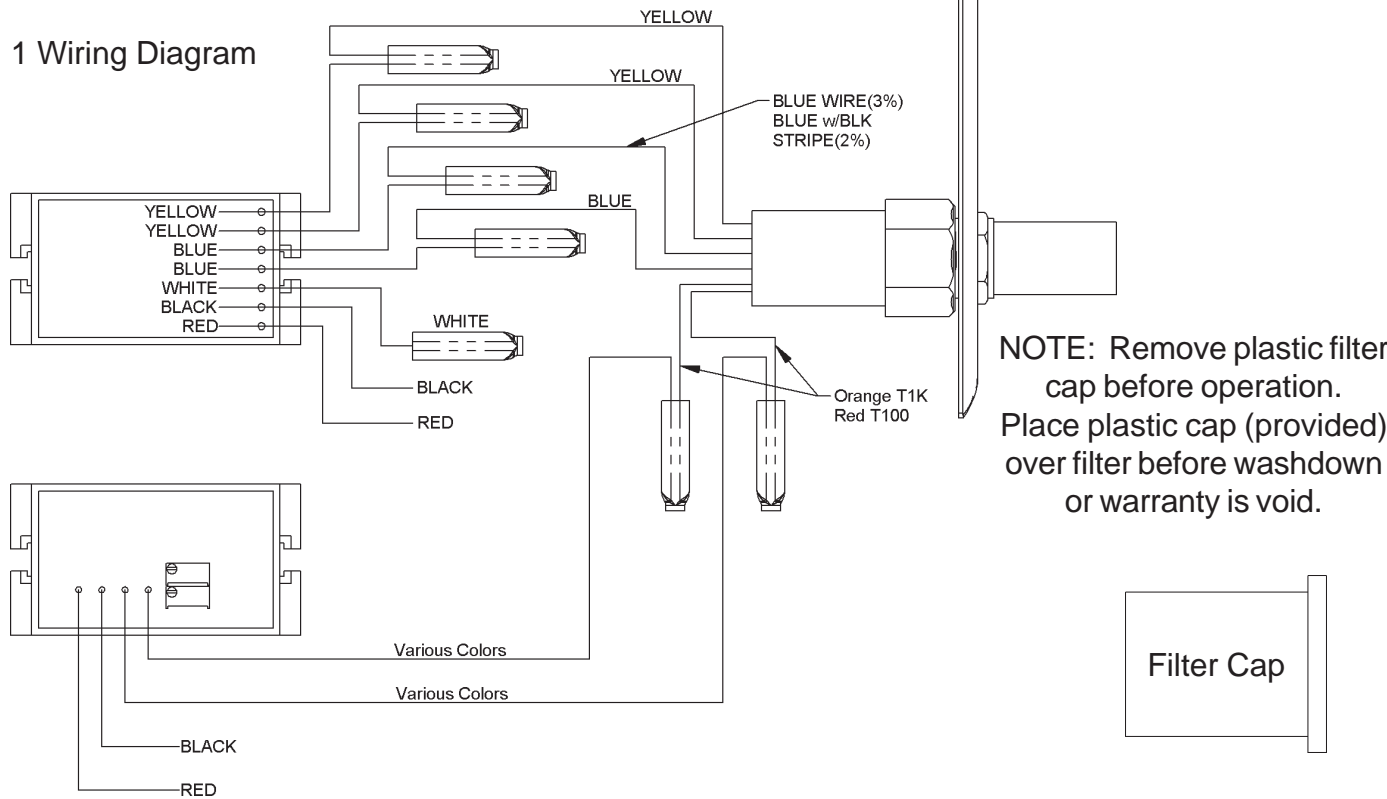
Temperature Transmitter Table

Wire color	Purpose	Note
Various-depends on transmitter type	Sensor	Factory connection, no customer connection allowed
Various-depends on transmitter type	Sensor	Factory connection, no customer connection allowed
Black	Output	4 to 20mA output, to analog input of Controller
Red	Power	+8 VDC to +35 VDC

BAPI's 2% and 3%, humidity transmitters **ARE** polarity sensitive as well as reverse polarity protected. All **BA/H200** and **BA/H300** transmitters must be powered with a +12 to +24 Volt DC supply.

BAPI's temperature transmitters **ARE NOT** polarity sensitive and must be powered with an +8 to +35VDC supply.

Fig. 1 Wiring Diagram



Troubleshooting - Humidity

Possible Problems:

Unit will not operate

Humidity reading is maximum 5V or 20mA

Humidity reading is minimum 0V or 4mA

Humidity reading in controller's software appears to be off more than the specified accuracy

Possible Solutions:

- Check power supply/controller voltage supply for +12VDC to +24VDC
- Disconnect humidity transmitter power wires, check the wire coming from the power supply for +12VDC to +24VDC
- Make sure the humidity sensor is installed properly and is not shorted
- **QUICK CHECK:** Open one of the blue wire connections. Does the reading change? If so, the sensor may be faulty. If not, contact *BAPI* technical support.
- Verify that the humidity sensor is installed
- **QUICK CHECK:** Short the two blue wire connections with a short piece of wire. Does the reading change? If so, the sensor may be faulty. If not, contact *BAPI* technical support.
- Check all software parameters
- If available, check the sensor against a calibrated control such as a hygrometer
- Measure the humidity transmitter's output. Using the humidity formula, calculate the output. If it is different from the software reading, contact *BAPI* technical support.
- Determine if the sensor is exposed to an external source different from the measured environment

Output	Humidity Formula
4 to 20 mA	$\%RH = (mA - 4)/0.16$
0 to 5 VDC	$\%RH = V/0.05$



Troubleshooting - Temperature

Problems:

Temperature sensor in front end software is reading high

Possible Solutions:

- Check if the sensor is damaged
- Make sure wiring is correct
- Disconnect wires and measure temperature sensor with an Ohm meter
- Determine if the sensor is exposed to an external source different from the room environment(conduit draft).
- Verify the "Sensor" output is correct (See note below)

Temperature sensor in front end software is reading low

- Check if the sensor is damaged
- Verify that wiring is correct
- Disconnect wires and measure temperature sensor with an Ohm meter
- Determine if the sensor is exposed to an external source different from the room environment(conduit draft)
- Verify the "Sensor" output is correct (See note below)

Temperature Equation

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

T = Temperature at sensor

T_{low} = Low temperature of span

T_{high} = High temperature of span

T_{span} = T_{high} - T_{low}

A = Ammeter reading in mA

Note: Measure the physical 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.

Filter Cover

Please install rubber protective cover over stainless steel filter before any washdown procedures begin. This will insure the correct operation of the sensor.

Filter Care

A sintered filter protects the humidity sensor from various airborne particles that might reduce the sensor's accuracy. Depending on the sensor's location and environment, this filter may need periodic cleaning. To do this, gently unscrew the filter from the probe. Rinse the filter under warm water until clean. Warm soapy water may be used if necessary. Gently replace the filter by screwing it back into the probe. The filter should screw all the way into the probe, or at the most have only one or two threads showing. Hand tighten only. If a replacement filter or replacement probe is needed, call **BAPI** for more information.

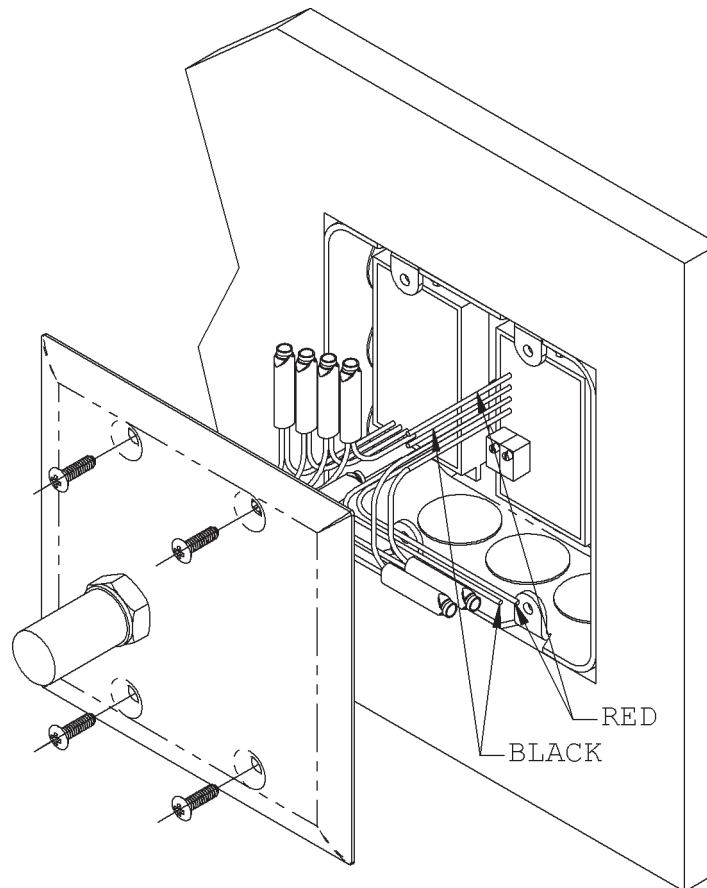
Installation Notes

Fig. 2: SPV Mounting

BAPI recommends mounting the SPV unit in a 2 gang junction box. Place both transmitters in the wall cavity behind vivarium wall plate. Using BAPI sealant filled connectors, terminate the wires as shown on page 1. DO NOT add extra wire between the transmitter and the wall plate, BAPI provides the maximum allowed wire length between the units. Screw wall plate to the wall making sure that the foam on the back of the wall plate makes a good seal to the wall. The transmitters generate heat so it is important to insulate them from the wall plate.