



## Features & Options

- VOC Alone or Temperature and Humidity Combination
- Indicates Space Occupancy by Detecting Human-Generated VOCs
- Output is Correlated to a CO<sub>2</sub> Value Allowing You to Ventilate Using ASHRAE's Occupancy-Based VRP Algorithm

Humans respire Volatile Organic Compounds (VOCs) as well as CO<sub>2</sub>. The BAPI sensor is able to measure these VOCs and indicate when a space is occupied just as well as a CO<sub>2</sub> sensor.

The BAPI Sensor is different from other VOC sensors because it has been optimized for Demand Controlled Ventilation (DCV). Using a calibration algorithm, the sensor value is converted to an output with a high correlation to a CO<sub>2</sub> level<sup>1</sup>. This lets you use ASHRAE's occupancy-based VRP schedule to ventilate. (<sup>1</sup>More info on this correlated output is available on our website at [www.bapihvac.com](http://www.bapihvac.com))

Besides from respiration, the sensor picks up VOCs from other sources such as building materials, perfumes, colognes and furniture off gassing. Using this sensor to ventilate is a way of achieving true indoor air quality and not just CO<sub>2</sub> dilution.

The unit is available as a VOC sensor alone or as a combination temperature and humidity sensor. The optional display alternates between the measured values and is field adjustable between °F or °C. An optional three color LED indicates "VOC Level" of Good, Fair or Poor.



### Demand Controlled Ventilation with Confidence!

The VOC Sensor is part of BAPI's "True Blue IEQ Family". When used as a combination Temp. and Humidity Sensor, it addresses the Indoor Air Quality and Thermal Comfort portions of ASHRAE's Indoor Environment Quality (IEQ) section of Standard 189.1.



VOC Sensors with Temp. Setpoint and Override.

The top unit has the VOC Level of "Good, Fair or Poor" shown by an arrow on the display. The bottom unit has the VOC level shown by a 3-color LED.

## Specifications

### Power: (No AC Power)

- 0 to 5 VDC Output Units:
- 9 to 35 VDC @ 50 mA Max (9 to 15 VDC recommended)
- 0 to 10 VDC Output Units:
- 15 to 35 VDC @ 50mA Max (15 VDC recommended)

### Sensing Elements:

- Humidity: Capacitive Polymer, ±2% RH Accuracy
- VOCs: Micro-machined Metal Oxide

### Temp Sensor: Thermistor, RTD or Semiconductor

### Mounting: 2"x4" J-Box or drywall mount – screws provided

### VOC Detection Range: 0 to 2,000 CO<sub>2</sub> PPM equivalent

### Response Time: Less Than 60 Sec. (after Start-Up Time)

### Start-Up Time: 15 minutes

### Operating Environment:

- 32 to 122°F (0 to 50°C) • 0 to 95% RH non-condensing

### LCD Display:

- Main Display: 0.76" 4-digit Numeric (Numeric Values)
- Minor Display: 0.34" 3-digit Alpha-Numeric (PPM, %RH, °F, °C)
- Occupied/Unoccupied BAPI Man Icon: (Blk=Occupied)

### Measurement Offsets (field adjustable)

- ±5° (F or C) in 0.1° increments
- ±5% RH in 0.1% RH increments
- ±5% Contaminants in 0.1% increments
- ±100 ppp CO<sub>2</sub> Equivalent Contaminants in 2 ppm increments

### Analog Outputs (0 to 5, 0 to 10 or 2 to 10VDC [%RH only], >10KΩ impedance)

- VOC Contaminants: 0 to 2,000 CO<sub>2</sub> PPM equivalent
- %RH: 0 to 100% or 35 to 70% RH

### Override Output:

- Contact: SPST
- Sensor: Shorts out direct Temperature sensor (Temp)
- Setpoint: Contact in parallel, resistive setpoint only

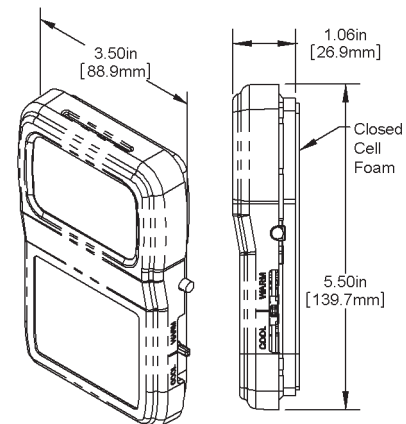
### LED CO<sub>2</sub> Equivalent Level Indicator:

- Good, Green < 1,000 PPM
- Fair, Yellow = 1,000 to 1,500 PPM
- Poor, Red > 1,500 PPM

### Material: ABS Plastic, Material Rated UL94V-0

### Certifications: RoHS

### Warranty Period: Two years from manufacture date





# VOC Room Sensor, BAPI-Stat 3 Enclosure

D3

Rev. 10/16/12

Air Quality Sensors

Ordering Information		VOC Room Sensor in the BAPI-Stat 3 Style Enclosure								
BA/										
Temperature Display Mode (Must select one)										
BS3F	Temperatures Displayed in °F (Temperature is displayed by default but can be turned off by the user. See instruction sheet.)									
BS3C	Temperatures Displayed in °C (Temperature is displayed by default but can be turned off by the user. See instruction sheet.)									
BS3X	No LCD Display									
VOC Output (Must select one)										
-VOC05	VOCs Transmitted as 0 to 2,000 ppm CO2 Equivalent, 0 to 5 VDC output									
-VOC10	VOCs Transmitted as 0 to 2,000 ppm CO2 Equivalent, 0 to 10 VDC output									
Humidity Output (Skip if not required)										
-H205	±2% Humidity Transmitter, 0 to 5 VDC output									
-H210	±2% Humidity Transmitter, 0 to 10 VDC output									
-H212	±2% Humidity Transmitter, 2 to 10 VDC output									
Setpoint Display Options (Skip if not required)										
#	<u>Desired Range</u>	<u>Designator</u>	<u>Desired Range</u>	<u>Designator</u>						
	-2 to +2	P	60 to 80 °F or 15 to 27 °C	E						
	-3 to +3	A	65 to 80 °F or 18 to 27 °C	F						
	-5 to +5	B	70 to 74 °F or 21 to 23 °C	L						
	50 to 90 °F or 10 to 32 °C	C	45 to 96 °F or 7 to 36 °C	G						
	55 to 85 °F or 13 to 30 °C	D								
Setpoint Output Value Range (Skip if not required)										
##	<u>Desired Range</u>	<u>Designator</u>	<u>Desired Range</u>	<u>Designator</u>						
	674 to 274 Ω	23	15 to 5 kΩ	61						
	800 to 1200 Ω	25	0 to 20 kΩ	80						
	1800 to 2200 Ω	27	4.75 to 24.75 kΩ	81						
	0 to 1 kΩ	40	7.87 to 27.87 kΩ	83						
	500 to 1500 Ω	41	10 to 30 kΩ	84						
	2 to 3 kΩ	42	0 to 100 kΩ	90						
	0 to 10 kΩ	60	0 to 5 V*	00*						
Additional Setpoint Ranges are available. See App. Notes Pg.2 for complete list.										
SETPOINT LEGEND (insert Designator #)										
<u>Legend Range</u>	<u>Designator</u>	<u>Legend Range</u>	<u>Designator</u>							
No Legend	L0	COOL/WARM	L6							
Additional Legends are available. Call BAPI for more information.										
Sensor Type (Skip if resistive sensor in not required)										
0	100 Platinum RTD, 100Ω @ 0°C, 0.385Ω/°C temp coeff.									
-1375	1K Platinum RTD, 1,000Ω @ 0°C, 3.75Ω/°C temp coeff.									
-1NI	1K Nickel RTD, 1,000Ω @ 21°C, 5Ω/°C temp coeff.									
-1	1K Platinum RTD, 1,000Ω @ 0°C, 3.85Ω/°C temp coeff.									
-2	2K Silicon RTD, 2,000Ω @ 20°C, 8Ω/°C temp coeff.									
-18	1.8K Thermistor, 1,800Ω @ 25°C									
-3	3K Thermistor, 3,000Ω @ 25°C									
-33	3.3K Thermistor, 3,300Ω @ 25°C									
-102	10K-2 Thermistor, 10,000Ω @ 25°C									
-103	10K-3 Thermistor, 10,000Ω @ 25°C									
-10311	10K-3[11K] Thermistor, 5,238Ω @ 25°C, 11KΩ shunt resistor									
-20	20K Thermistor, 20,000Ω @ 25°C									
-50	50K Thermistor, 50,000Ω @ 25°C									
-100	100K Thermistor, 100,000Ω @ 25°C									
-592	AD592 Semiconductor, 273 μA @ 0°C									
Override Configuration (Must select one)										
-J	Override as a Separate Output.* (Dry contact only, not intended to switch a load.)									
-N	Override in Parallel (//) with Sensor									
-P	Override in Parallel (//) with Setpoint: NOT available on voltage setpoint models									
-Z	No Override. (Needed if no override is required)									
Optional Communication Jack Mounted in unit's base										
-C35L	3.5 mm Phono Jack w/ Leads Attached									
-C35LT	3.5 mm Phono Style Jack with Leads and Terminal Block									
Optional Test and Balance Switch (Skip if not required)										
-TB	Three Position Switch									
Differential Ground – Setpoint & Temp Sensor (Skip if not required)										
-DF	Differential Ground (Default is Common Ground, Only add -DF if required)									
VOC Level Indication (Must select one)										
-LED	Green/Orange/Red LED on Logo Plate to Indicate VOC PPM Level. Includes Legend for Good, Fair and Poor.									
-ARW	Black Arrow on Display to Indicate VOC PPM Level. Includes Legend Below Display for Good, Fair and Poor									
-BNK	No LED or Arrow Indicators, No Legend									
EXAMPLE										
BA/	BS3F	-VOC05	-H205	-A	80L6	-0	-J	-C35L	-TB	-LED
Example Part Number: BA/BS3F-VOC05-H205-A80L6-0-J-C35L-TB-LED										
Your Part Number:										

Call BAPI if you have questions about the above ordering/pricing grid or the configuration of the product you are ordering.

\*Not available with Differential Ground (-DF) option

