

### Description

The SimplyVAV series of controllers are an easy and unique approach to operating a wide variety of VAV terminal units. The integrated actuators, internal airflow sensors, and wide variety of application programs make these BACnet Application Specific Controllers ideal for either new or retrofit installations.

**Easy to install** Just mount the controller, wire it to a 24 volt transformer, and then connect airflow and temperature sensors. A SimplyVAV controller automatically detects sensors as they are connected without special programming or software tools.

**Simple, menu-driven setup** The controllers feature simple, menu-driven setup choices. No special programming skills or software tools are required to choose applications, enter setpoints, set network addressing, and balance airflow. All options can be set by using only an STE-8001 Digital Sensor, which can be installed as the permanent room sensor or connected temporarily as a technician's service tool.

**New or retrofit applications** SimplyVAV controllers are ideal for new installations or upgrades of older, less efficient controllers.

- Staged, modulated, floating, or time-proportional reheat
- Series or parallel fan control
- Single or dual duct application

**Native BACnet** All models are BACnet Application Specific Controllers that are ready to connect to a BACnet MS/TP network. Device instance, MAC address, and baud rate are set from an STE-8001 Digital Sensor without special software.

**Easy system integration** For SimplyVAV installations that are part of a BACnet building automation system, the controllers provide system diagnostic indicators. Through the MS/TP network, the controllers signal demands for higher static duct pressure, cooler or warmer supply air, and when to start air handling units.



### Specifications

#### Inputs and outputs

All inputs and outputs for SimplyVAV controllers are set up at the factory and do not require field programming.

##### Inputs

- Sensors are automatically detected
- Inputs accept industry-standard 10K ohm thermistor sensors
- Input overvoltage protection up to 24 volts AC, continuous
- 12-bit analog-to-digital conversion

##### Triac outputs

- Optically isolated triac output
- Maximum switching 24 volts AC at 1.0 ampere for each output
- Maximum for controller is 3.0 amperes

##### Analog outputs

- Short-circuit protected
- Output voltage 0–10 volts DC
- 30 mA per output, 30 mA total for all analog outputs
- 12-bit digital-to-analog conversion

## Specifications

### Air flow sensor features

CMOS differential pressure 0-2 inches of water (0-500 Pa) measurement range. Internally linearized and temperature compensated.

- Configured as BACnet analog input object
- Span accuracy 4.5% of reading
- Zero point accuracy 0.0008 in. H<sub>2</sub>O/0.2 Pa at 25° C
- Barbed connections for 1/4 inch FR tubing

### Actuator features

All SimplyVAV controllers include an integrated actuator.

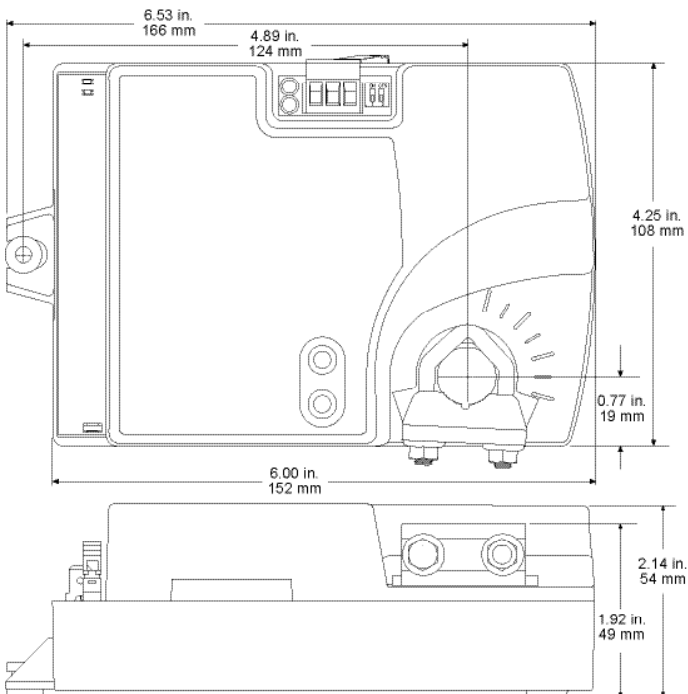
<b>Torque</b>	40 in-lb. (4.5 N·m)
<b>Angular Rotation</b>	0 to 95° Adjustable end stops at 45° and 60° rotation

### Motor Timing

BAC-8001, BAC-8005, and BAC-8007	90 sec./90° at 60 Hz 108 sec./90° at 50 Hz
BAC-8205	60 sec./90° at 60 Hz

### Shaft size

Mounts directly on 3/8 to 5/8 inch (9.5 to 16 mm) round or 3/8 to 7/16 inch (9.5 to 11 mm) square damper shafts.



### Operating Sequences

SimplyVAV models are supplied with the following factory-included programs.

#### BAC-8001

Model BAC-8001 is supplied with inputs, outputs, and sequences of operation for the following functions.

- Single-duct heating and cooling VAV
- Automatic heating/cooling changeover
- Occupancy setback—requires STE-8201
- System diagnostic indicators
- Airflow balancing

#### BAC-8005 and BAC-8205

Models BAC-8005 and BAC-8205 are supplied with inputs, outputs, and sequences of operation for the following functions.

- Single-duct heating and cooling VAV
- Modulating, floating, time proportional, and staged reheat
- Series and parallel fan control
- Automatic heating/cooling changeover including morning warmup
- Discharge air temperature limiting
- Occupancy setback—requires STE-8201
- Actuator position feedback for true damper positioning (BAC-8205 only)
- System diagnostic indicators
- Airflow balancing

#### BAC-8007

Model BAC-8007 is supplied with inputs, outputs, and sequences of operation for the following functions.

- Dual-duct VAV heating and cooling
- Occupancy setback—requires STE-8201
- System diagnostic indicators
- Airflow balancing
- Secondary damper control—requires TSP-8001

### BACnet communication

- Integrated, peer-to-peer BACnet MS/TP network communications.
- Network speed from 9600 to 76,800 baud
- Meets or exceeds ANSI/ASHRAE BACnet Standard 135-2008 for Application Specific Controllers.

## Installation

<b>Supply voltage</b>	24 volts AC (–15%, +20%), 50-60 Hz, 5 VA, Class 2 only
<b>Weight</b>	13.2 ounces (375 grams)
<b>Case material</b>	Gray and black flame retardant plastic
<b>Environmental limits</b>	
Operating	32 to 120° F (0 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Humidity	0-95% relative humidity (non-condensing)

### Regulatory

- UL 916 Energy Management Equipment
- BACnet Testing Laboratories listed as Application Specific Controller (B-ASC)
- CE compliant
- SASO PCP Registration KSA R-103263
- FCC Class B, Part 15, Subpart B and complies with Canadian ICES-003 Class B
- UL 864 Non-dedicated Smoke Control (BAC-8205 only)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## Accessories

### Airflow sensors

For VAV boxes without flow pickups, order one of the following airflow sensors.

SSS-1012	3-5/32 in. length (80 mm)
SSS-1013	5-13/32 in. length (137 mm)
SSS-1014	7-21/32 in. length (195 mm)
SSS-1015	9-29/32 in. length (252 mm)
Kit-8001	A 3-5/32 inch sensor with 3 feet of FR tubing

### SimplyVAV digital sensors

STE-8001W80	SimplyVAV sensor and digital display
STE-8201W80	SimplyVAV sensor and digital display with motion sensor

### SimplyVAV discrete temperature sensors

STE-6010W80	Temperature sensor with RJ-45 connector
STE-6014W80	Temperature sensor with rotary setpoint dial, RJ-45 connector
STE-6017W80	Temperature sensor with rotary setpoint dial, override button, RJ-45 connector

### Dual-duct actuator

TSP-8001	Secondary VAV actuator with airflow inputs (required for dual-duct applications)
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## Ordering information

Model description	Model number
BACnet ASC: VAV Cooling/Heating, 40 in-lbs, 90 sec actuator	BAC-8001
BACnet ASC: VAV Fan and Reheat, 40 in-lbs, 90 sec actuator	BAC-8005
BACnet ASC: VAV Dual Duct, 40 in-lbs, 90 sec actuator	BAC-8007
BACnet ASC: VAV Fan and Reheat, Position, 40 in-lbs, 60 sec actuator	BAC-8205

## Controller selection guide

Models	Single-duct heating and cooling	Dual-duct heating and cooling	DAT limiting	1,2,3 staged reheat	Floating reheat	Modulating reheat	Time proportional reheat	Series fan	Parallel fan	True damper positioning	90 second rotation	60 second rotation
BAC-8001	•										•	
BAC-8005	•		•	•	•	•	•	•	•		•	
BAC-8007		•									•	
BAC-8205	•		•	•	•	•	•	•	•	•		•

## Sensor selection guide

For details, refer to the data sheet for each sensor model.

Model	Temperature sensor	Setpoint dial	Override button	Setpoint buttons	Motion sensor	Digital display	Configuration tool	Balancing tool
STE-8001W80	•			•		•	•	•
STE-8201W80	•			•	•	•	•	•
STE-6010W80	•							
STE-6014W80	•	•						
STE-6017W80	•	•	•					



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