

Siemens BACnet VAV Actuator



Description

The new Siemens BACnet VAV Actuator provides high performance direct digital control (DDC) of pressure-independent, variable-air-volume zone-level routines. The Siemens BACnet VAV Actuator Controller can operate stand-alone or can be networked to perform complex HVAC control, monitoring and energy management functions and is designed to reside on any BACnet control system.

Features

- Controller integrated with actuator for ease of installation.
- Automated checkout procedure for ease of startup/commissioning and troubleshooting.
- PID control of HVAC systems to minimize offset and maintain tighter setpoint control.
- Communicates using BACnet MS/TP protocol for open communications on BACnet MS/TP networks.

- Siemens BACnet VAV Actuator requires only 5 VA, an advantage when sizing electrical capacity.
- Suitable for installation in plenum areas.
- Setpoints and control parameters assigned and changed locally or remotely.
- Electrically Erasable Programmable Read Only Memory (EEPROM) used for storing setpoints and control parameters—no battery backup required.
- Return from power failure without operator intervention.
- No calibration required, thereby reducing maintenance costs.

Applications

Operating independently, or as part of a BACnet System, the Siemens BACnet VAV Actuator can control the following VAV pressure-independent zone applications.

Siemens BACnet Actuator:

- Slave Mode (Application 2597)
- VAV Cooling Only (Application 2560)
- VAV Cooling or Heating (Application 2561)
- VAV with Electric Reheat or Baseboard Radiation (Application 2562)
- VAV with Hot Water Reheat (Application 2563)
- VAV Electric Reheat with Series Fan (Application 2564)
- VAV Hot Water Reheat with Series Fan (Application 2565)
- VAV Electric Reheat with Parallel Fan (Application 2566)
- VAV Hot Water Reheat with Parallel Fan (Application 2567)

Control algorithms are preprogrammed. The controller is ready to operate after selecting the application and assigning the unit's controller address. If desired, the operator may adjust the air volume setpoints in cfm (lps), room temperature setpoints and other parameters. The controller is designed for operation and modification without vendor assistance.

Hardware

Controller Board

The Siemens BACnet VAV Actuator consists of an electronic controller, a differential pressure transducer and a damper actuator assembly. This controller provides all wiring terminations for system and local communication and power. The cable from the room sensor (purchased separately) connects to an RJ-11 jack on the controller. All other connections are removable terminal blocks.

The Siemens BACnet VAV Actuator has an AI (10K Thermistor), DI (dry contact) and 4 Triac type Digital outputs.

In addition to controlling the integrated damper actuator, the controller interfaces with the following external devices (purchased separately):

- Room temperature sensor with optional setpoint dial and night override button
- Service and commissioning tools
- Building Automation System from Siemens Building Technologies, Inc.

Room Sensor

The room sensor connection to the controller board consists of a quick-connect RJ-11 jack. This streamlines the installation and reduces the Siemens BACnet VAV Actuator's start-up time. See the *Room Temperature Sensors Technical Specification Sheet*, (149-312P25), for more information.

Differential Pressure Sensor

The Differential Pressure Sensor (on-board) is easily connected to the box's air-velocity sensing elements to provide measurement of the differential pressure. The measured value is converted to actual airflow in cfm (lps) by the Siemens BACnet VAV Actuator controller.

Specifications

| Controller and Actuator | |
|-----------------------------|---|
| Power Requirements: | |
| Power Source | 24 Vac +/- 15% |
| Frequency | 50/60 Hz |
| Power Consumption | 5 VA plus loads |
| Outputs | 4 Triacs, 12 VA each (requires 24 Vac source to allow switching; phase or neutral) |
| Inputs | AI (10K Ω Thermistor) DI (dry contact) |
| Operating Temperature Range | +32°F to +122°F (0°C to +50°C) |
| Storage Temperature Range | -20°F to +140°F (-29°C to +60°C) |
| Humidity Range | 10% to 95% non-condensing |
| Regulatory Compliance | UL/CUL 916 PAZX/PAZX7 (Enclosed Energy Management) FCC Part 15, Class B CSA-Std. C22.2 No 205 CE Mark; C-Tick |
| Dimensions | 5-9/16"H x 2-15/16"W x 4-3/16"D (142 mm x 75 mm x 106 mm) |
| Weight | 1.26 lb (.572 kg) |
| Actuator Torque | 550-430 44 lb-in. (5Nm) 550-431 88 lb-in (10Nm) |
| Run time for 90° | |
| GDE | 90 sec. at 60 Hz (108 sec. at 50 Hz) |
| GLB | 125 sec. at 60 Hz (150 sec. at 50 Hz) |
| Nom. Angle of Rotation | 90° |
| Max. Angle of Rotation | 95° |
| Actuator Shaft Size | 3/8" to 5/8" (8 to 16 mm) Dia 1/4" to 1/2" (6 to 13 mm) Sq. |
| Minimum Shaft Length | 3/4" (20 mm) |

Transformer Requirements and Recommended Voltages

| | |
|------|---------------------------------------|
| Type | Class 2, 24 VAC, 50/60 Hz, SELV, PELV |
|------|---------------------------------------|

Ordering Information

| Description | Product Number |
|---------------------------------|-----------------------|
| Siemens BACnet VAV GDE Actuator | 550-430 |
| Siemens BACnet VAV GLB Actuator | 550-431 |

| Documentation | Product Number |
|--|-----------------------|
| Siemens BACnet Actuator Owner's Manual | 125-5037 |
| Room Temperature Sensors Technical Specification Sheet | 149-312P25 |

BACnet Protocol Implementation Conformance Statement

Products

| Product | Model Number | Protocol Revision | Software Version | Firmware Version |
|---------------------------------------|---------------------|-------------------|------------------|------------------|
| BACnet Terminal Box Controller (BTEC) | 550-430/ 550-431 | 135-2001b | 1.2 | BV13 1.0 |

Date Tested: August 2005 – B-ASC

Vendor Information

Siemens Building Technologies
1000 Deerfield Parkway
Buffalo Grove, IL 60089
www.sbt.siemens.com

Product Description

The controller is an integral part of Siemens controls system. The controller can operate stand-alone or can be networked to perform complex HVAC control, monitoring, and energy management functions. This controller communicates using BACnet MS/TP.

BACnet Standardized Device Profile

| Product | Device Profile | Tested |
|---------|--|--------|
| BTEC | BACnet Application Specific Controller (B-ASC) | ✓ |

Supported BIBBs

| Product | Supported BIBBs | BIBB Name | Tested |
|---------|-----------------|--|--------|
| BTEC | DS-RP-B | Data Sharing-ReadProperty-B | ✓ |
| | DS-RPM-B | Data Sharing-ReadPropertyMultiple-B | ✓ |
| | DS-WP-B | Data Sharing-WriteProperty-B | ✓ |
| | DM-DDB-B | Device Management-DynamicDeviceBinding-B | ✓ |
| | DM-DOB-B | Device Management-DynamicObjectBinding-B | ✓ |
| | DM-DDC-B | Device Management-DeviceCommunicationControl-B | ✓ |

Standard Object Types Supported

| Product | Object Type | Creatable | Deletable |
|---------|---------------|-----------|-----------|
| BTEC | Analog Input | No | No |
| | Analog Output | No | No |
| | Binary Input | No | No |
| | Binary Output | No | No |
| | Device | No | No |

Data Link Layer Options

| Product | Data Link | Options |
|---------|--------------|---------------------------|
| BTEC | MS/TP Master | 9600, 19200, 38400, 76800 |
| | MS/TP Slave | 9600, 19200, 38400, 76800 |

Segmentation Capability

| Product | Segmentation Type | Supported | Window Size (MS/TP product limited to 1) |
|---------|-------------------------------------|-----------|---|
| BTEC | Able to transmit segmented messages | No | |
| | Able to receive segmented messages | No | |

Device Address Binding

| Product | Static Binding Supported |
|---------|--------------------------|
| BTEC | Yes |

Networking Options

| Product | Static Binding Supported |
|---------|--------------------------|
| BTEC | No |

Character Sets

| Product | Character Sets supported |
|---------|--------------------------|
| BTEC | ANSI X3.4 |

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