Siemens BACnet VAV Actuator

The 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.
- BTL listed as a B-ASC device.
- 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.
- Plenum rated controller.

- Setpoints and control parameters assigned and changed locally or remotely.
- Setpoints and control parameters stored in Electrically Erasable Programmable Read Only Memory (EEPROM)—no battery backup required.
- Return from power failure without operator intervention.
- No calibration required, thereby reducing maintenance costs.

Applications

- 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 controller start-up time.

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.

VAV Actuator 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 × 2-15/16"W × 4-3/16"D (142 mm × 75 mm × 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 90º	
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

Product Ordering Information

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

Documentation Information

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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