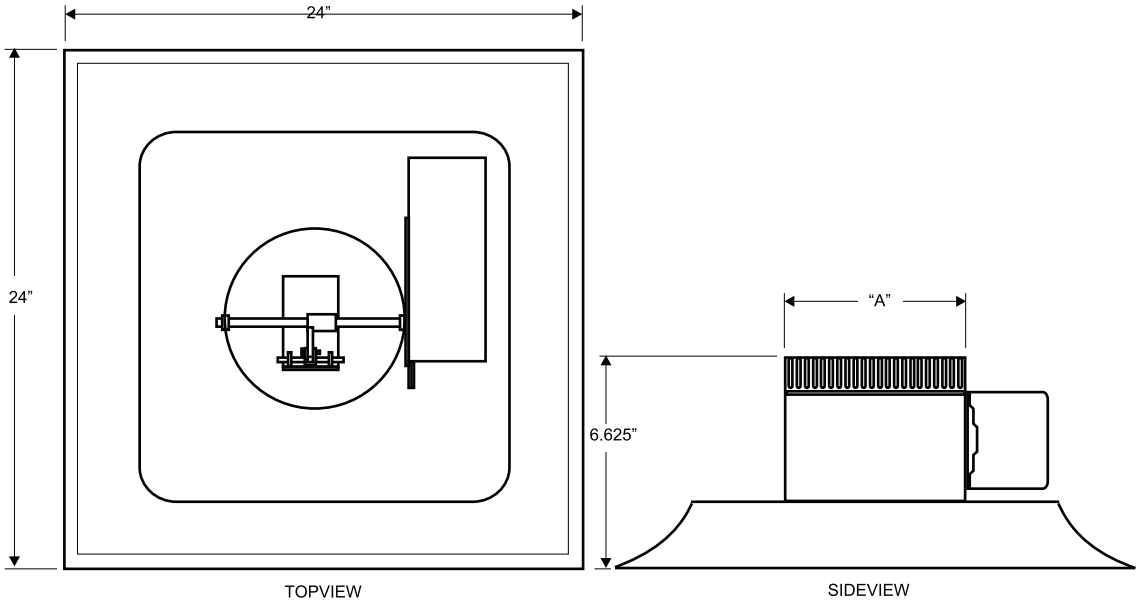
SPECIFIED CONTROLS

Specification Sheet

BACnet Electronic Diffuser

For variable air volume applications

SC-BN-XX



Suggested Specifications:
The electronically controlled variable air volume diffuser shall be the Specified Controls BACnet Electronic Diffuser. The removable face plate (minimum of 18 gauge steel) shall be attached to a unitary stamped backbone. The diffuser shall include an integral modulating disk that continually regulates the volume of supply air in response to the wall-mounted adjustable, communicating thermostat. Diffusers dependent on integral air induction ceiling-located sensors or wall-mounted setpoint adjustor methods other than from wall-mounted adjustable, communicating room sensors shall not be acceptable.

To ensure good temperature control, a modulated 24 VAC factory supplied native BACnet diffuser controller with integral actuator shall be used. Actuators that incorporate an expanding material shall not be acceptable. Electronic diffusers which incorporate an additional component for each or a group of electronic diffusers to allow proper communication via BACnet shall not be acceptable.

Dimensions:
SC-BN-XX diffusers are available in a 24” x 24” face size with ‘A’ neck sizes of 6”, 8”, 10”, 12” and 14” diameters.

Application:
The electronic BACnet diffuser is used to vary the supply air volume via a factory supplied and mounted BACnet control module in combination with a factory supplied, wall mounted, adjustable and communicating room sensor. The diffuser is designed to maintain coanda effect (draft free) of discharge air along the ceiling, providing a sustained discharge velocity throughout the volume range of 118 to 710 cfm. The BACnet interface is designed to allow integration into the BAS, providing information, scheduling and adjustment via the factory supplied room sensor or via a BACnet Building Automation System by others.

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Operation:
The electronic BACnet diffuser incorporates an integral modulating disk that continually regulates the volume of supply air in response to the factory supplied, wall-mounted, adjustable, communicating thermostat and the factory installed duct temperature sensor.

Construction:
Unitary stamped seamless backbone with removable face plate

Steel construction with baked enamel finish

Four-way discharge pattern

Factory mounted native BACnet electronic diffuser controller with integral actuator

Auto-changeover duct temperature sensor (stainless steel)

Accessories:

Diffuser Specific
Static pressure relief rings available for 8-14” neck sizes

Aluminum diffuser option

Baffles to change diffuser from four-way pattern to three, two or one-way

Hard ceiling mounting frames

Room Sensor Specific
Motion sensing option

Co2 detection option

Humidity monitoring option

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Controller Specifications

Power	
Voltage	24VAC; r 15%; 50/60Hz; Class 2
Protection	2.0A user-replaceable fuse 3.0A user-replaceable fuse for triacs when using the internal power supply
Power Consumption	10 VA typical plus all external loads [1] 85 VA maximum
Interoperability	
Communication Bus	BACnet MS/TP
BACnet Profile	B-ASC[2]
EOL Resistor	Built-in, jumper selectable
Baud Rates	9600, 19 200, 38 400, or 76 800 bps
Addressing	Dip Switch or Configurable with sensor
Hardware	
Processor	STM32 (ARM Cortex M3) MCU, 32 bit
Memory	384 kB Non-volatile Flash (applications) 1 MB Non-volatile Flash (storage) 64 kB RAM
Real Time Clock (RTC)	Built-in Real Time Clock without battery: Network time synchronization is required at each power-up cycle before the RTC becomes available
Status Indicator	Green LEDs: Power Status & LAN Tx Orange LEDs: Controller Status & LAN Rx
Environmental	
Operating Temperature	0°C to 50°C; 32°F to 122°F
Storage Temperature	-20°C to 50°C; -4°F to 122°F
Relative Humidity	0 to 90% Non-condensing
Enclosure	
Material	FR/ABS
Color	Black & blue casing & grey connectors
Dimensions (with Screws)	
- ECB-VVTS	4.8 L u 5.9 W u 2.5 H (122.7 mm u 149.1 mm u 63.0 mm)
- Other models	4.8 L u 8.4 W u 2.5 H (122.7 mm u 214.3 mm u 63.0 mm)
Shipping Weight	
- ECB-VVTS	2.30lbs (1.05kg)

Inputs	
Input Types	Universal
-Voltage	- 0 to 10VDC (40k: input impedance) - 0 to 5VDC (high input impedance)
-Current	0 to 20mA with 249: external resistor (wired in parallel)
-Digital	Dry contact
-Pulse	Dry contact; 500ms minimum ON/OFF
-Resistor	0 to 350 K: All thermistor types that operate in this range are supported. The following temperature sensors are pre-configured:
Thermistor	10K: Type 2, 3 (10K: @ 25°C; 77°F)
Input Resolution	16-bit analog / digital converter
Power Supply Output	15VDC; maximum 80mA (4 inputs @ 20mA each)
Outputs	
Digital	24 VAC Triac, digital (on/off), PWM, or floating; software configurable - 0.5A continuous - 1A @ 15% duty cycle for a 10-minute period - PWM control: adjustable period from 2 to 65sec. - Floating control: - Min pulse on/off: 500msec. - Adjustable drive time period
Universal	External or internal power supply (jumper selectable) 0 to 10VDC linear, digital 0 to 12VDC (on/off), floating or PWM. Built-in snubbing diode to protect against back EMF, for example when used with a 12VDC relay. - PWM control: adjustable period from 2 to 65sec. - Floating control: - Min pulse on/off: 500msec. - Adjustable drive time period - 20mA max. @ 12VDC - Minimum resistance 600:
Output Resolution	10-bit digital / analog converter

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Controller Specifications

Integrated Damper Actuator

Motor	Belimo LMZS-H brushless DC motor
Torque	35 in-lb, 4 Nm
Degrees of Rotation	95º adjustable
Fits Shaft Diameter	5/16 to 3/4; 8.5 to 18.2mm
Acoustic Noise Level	< 35 dB (A) @ 95º rotation in 95 seconds

Wireless Receiver[3]

Communication	EnOcean wireless standard
Number of wireless inputs[4]	18
Supported Wireless Receivers	Wireless Receiver (315) Wireless Receiver (868)
Cable	Telephone cord
- Connector	4P4C modular jack
- Length (maximum)	6.5ft; 2m

Standards and Regulation

CE -Emission	EN61000-6-3: 2007; Generic standards for residential, commercial and light-industrial environments
-Immunity	EN61000-6-1: 2007; Generic standards for residential, commercial and light-industrial environments
FCC	This device complies with FCC rules part 15, subpart B, class B

UL Listed (CDN & US)	UL916 Energy management equipment
Material[5]	Plastic housing, UL94-5VB flammability rating Plenum rating per UL1995
CEC Appliance Database	Appliance Efficiency Program[6]

Thermostat

Communication	RS-485
Number of sensors per controller	Up to 4, in daisy-chain configuration
Cable	Cat 5e or Cat 6, 8 conductor twisted pair
Connector	RJ-45

Agency Approvals

UL Listed (CDN & US)	UL916 Energy management equipment
Material[4]	UL94-5VA

1. External loads must include the power consumption of any connected modules such as an Allure EC-Smart-Vue sensor. Refer to the respective modules datasheet for related power consumption information.
2. Refer to Controls Protocol Implementation Conformity Statement for BACnet.
3. Available when an optional external Wireless Receiver module is connected to the controller. Refer to the Open-to-Wireless Solution Guide for a list of supported EnOcean wireless modules.
4. Some wireless modules may use more than one wireless input from the controller.
5. All materials and manufacturing processes comply with the RoHS directive and are marked according to the Waste Electrical and Electronic Equipment (WEEE) directive.
6. California Energy Commission's Appliance Efficiency Program: The manufacturer has certified this product to the California Energy Commission in accordance with California law.

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