BAC-7003 and BAC-7053 Advanced Application Controllers for VAV Fan Induction Units

Description and application

The BAC-7003 and BAC-7053 are native BACnet, direct digital controllers designed for VAV fan induction terminal units. An integrated actuator and the supplied programs make this an ideal controller for adding temperature setback, overrides, and other HVAC sequences. Install this versatile controller in stand-alone environments or networked to other BACnet devices. As part of a complete facilities management system, the BAC-7003/7053 controllers provides precise monitoring and control of connected points.

- BACnet MS/TP compliant
- Automatically assigns the MAC address and the device instance
- Standard VAV control sequences are incorporated to provide pressure independent control of a VAV fan induction unit
- On-board airflow sensor for use with a single or multi-point differential pressure measuring station or pitot tube
- Use to control heating, cooling, cooling with reheat, or cooling with time proportional reheat

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Specifications

Inputs

- 3 universal inputs each of which is programmable as an analog, binary or accumulator objects; a fourth input is dedicated to the airflow sensor
- Standard units of measure
- Pull-up resistors for switch contacts and other unpowered equipment. Switch selects none or 10K ohms
- Removable s
- Removable screw terminal block, wire size 14-22 AWG
- 10-bit analog-to-digital conversion
- Pulse counting to 16 Hz
- 0-5 volts DC analog input range
- Overvoltage input protection
- Compatible with KMD-1160/1180 series NetSensors

Output, Universal

- 1 universal output that is programmable as an analog or binary object
- Standard and custom units of measure
- Removable screw terminal block, wire size 14-22 AWG
- 0-10 volts DC for analog objects
- 0-12 volts DC for binary objects
- Output current limited to 100mA per output

Outputs, Triac

- 1 optically isolated triac output, programmable as a binary object
- Maximum switching 30 volts AC at 1 ampere
- Removable screw terminal block, wire size 14-22 AWG

Outputs, Relay

- 1 normally open relay contact
- Maximum switching 30 volts AC at 2 ampere
- Removable screw terminal block, wire size 14-22 AWG

Applications programs

KMC Controls supplies the BAC-7003 and BAC-7053 with programming sequences for VAV fan induction unit applications:

- Heating and Cooling
- Cooling with time proportional reheat.
- Cooling with reheat

Specifications (continued)

Programmable features
- 10 Control Basic program areas
- 4 PID loop objects
- 40 analog and 40 binary value objects
- See Pic statement for supported BACnet objects

Schedules
- 8 Schedule objects
- 3 Calendar objects

Alarms and events
- Supports intrinsic reporting
- 8 Notification class objects

Trends
- 8 Trend objects

Memory
- Programs and program parameters are stored in nonvolatile memory
- Automatically restarts after power failure

Communications
- MS/TP operating up to 76.8 kilobaud with automatic baud detection.
- Automatically assigns MAC addresses and dehhh h vice instance numbers
- NetSensor compatible through modular jack

Velocity sensor features
Platinum-ceramic flow-through, 0 to 3000 FPM (15.24 m/s) using 24 inch, 1/4 FR tubing and SSS-1000 series flow pickups. Range dependent upon DP pickup, tubing size/length and connections.

Actuator features
Actuator motor is programmed by output 4

Torque

Minimum	50 in-lb. (5.7 N•m)
Maximum	70 in-lb. (7.9 N•m)

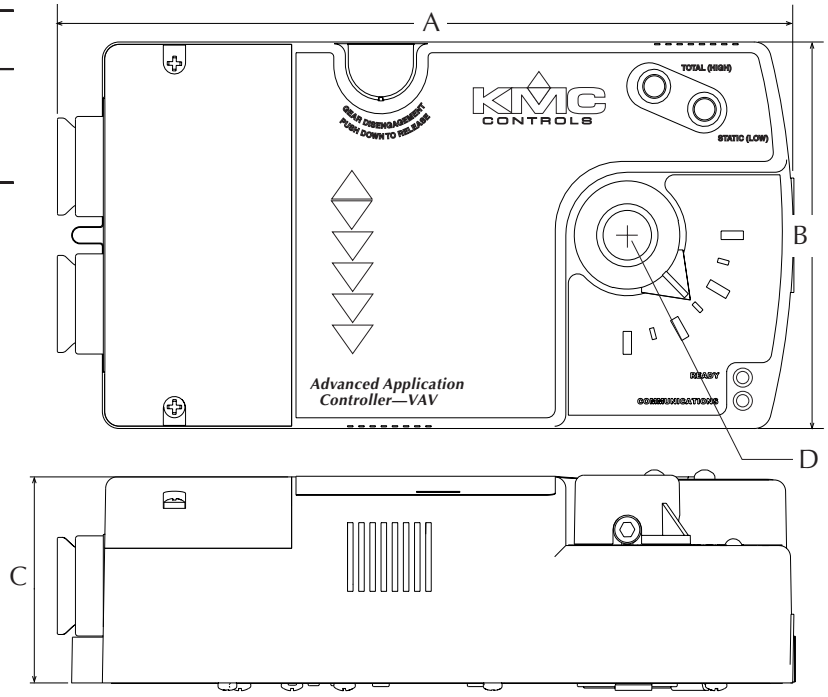
Angular Rotation
0 to 95° Adjustable end stops at 45/60/90° rotation

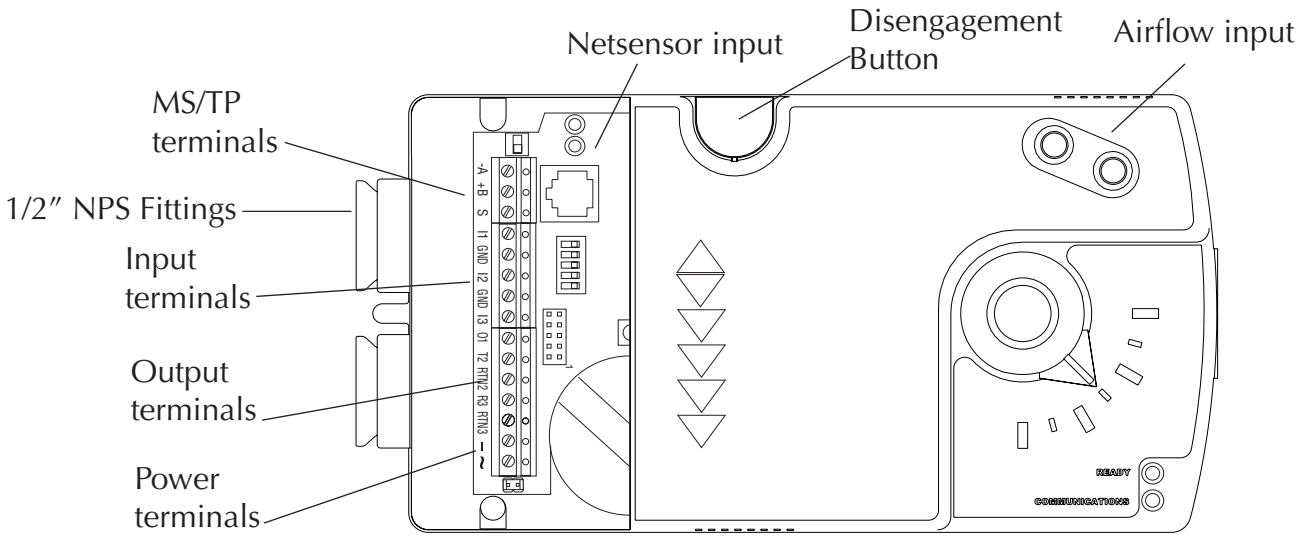
Motor Timing

BAC-7001	18°/minute at 60 Hz
	15°/minute at 50 Hz
BAC-7051	60°/minute at 60 Hz
	50°/minute at 50 Hz

Software compatibility
Requires the current version of BACstage or TotalControl for full configuration and programming features.

A	B	C	D
8.23 in.	4.22 in.	2.25 in.	0.51 in.
209 mm	107 mm	57 mm	13 mm





Installation

Supply voltage 24 volts AC (–15%, +20%), 50-60 Hz, 8 VA minimum, 15 VA maximum load, Class 2 only, non-supervised (all circuits, including supply voltage, are power limited circuits)

Weight 2.4 lbs (1.1 kg)

Case material Steel and green flame retardant plastic

Environmental limits

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
- FCC Class B, Part 15, Subpart B
- BACnet Testing Laboratory listed
- CE compliant
- SASO PCP Registration KSA R-103263

Accessories

HFO-0011 3/8 inch (9.5 mm) shaft adaptor

Airflow sensors

Order one of the following for installation on VAV units without airflow sensors. A tubing adaptor (3/16 to 1/4) is required.

SSS-1002	3-5/32 in. length (80 mm)
SSS-1003	5-13/32 in. length (137 mm)
SSS-1004	7-21-32 in. length (195 mm)
SSS-1005	9-29/32 in. length (252 mm)

Power transformer

XEE-6111-40	Single-hub 120 volt transformer
XEE-6112-40	Dual-hub 120 volt transformer

Models

Description	Rotation speed with 50 Hz power	Rotation speed with 60 Hz power
BACnet AAC for VAV FIU 18°/minute at 60 Hz	15 degrees/minute	18 degrees/minute
BACnet AAC for VAV FIU 60°/minute at 60 Hz	50 degrees/minute	60 degrees/minute

BACnet International

MS/TP automatic MAC addressing is protected under United States Patent Number 7,987,257.

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