

BAC-7003 and BAC-7053 Advanced Application Controller 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 and BAC-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.

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 and KMD-118 series NetSensors



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.

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 VAC/VDC, 2A Max
- ◆ Removable screw terminal block, wire size 14-22 AWG

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 device instance numbers
- ◆ NetSensor compatible through RJ-12 connector

Actuator features

The fourth output programs the actuator motor.

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 and 90° rotation.

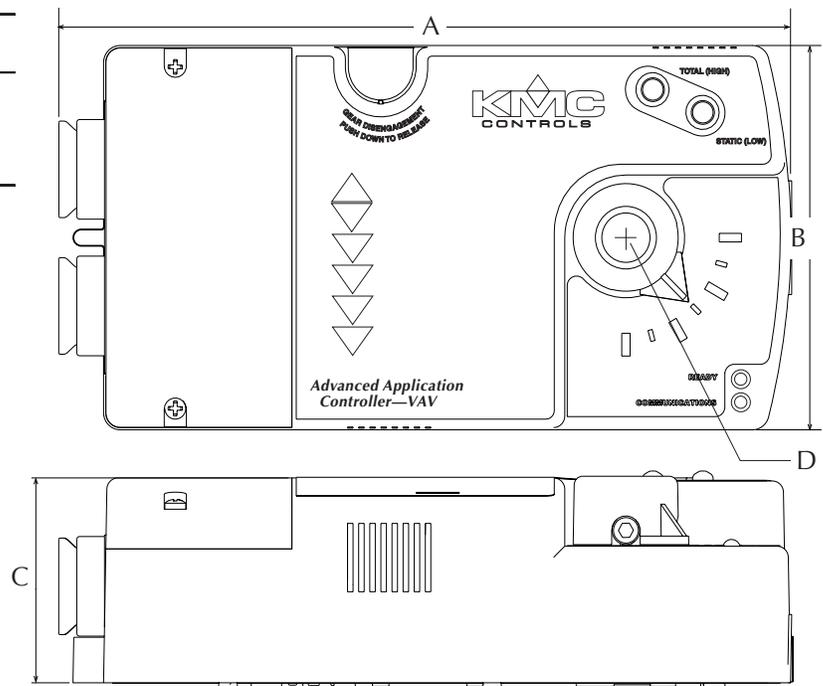
Motor Timing

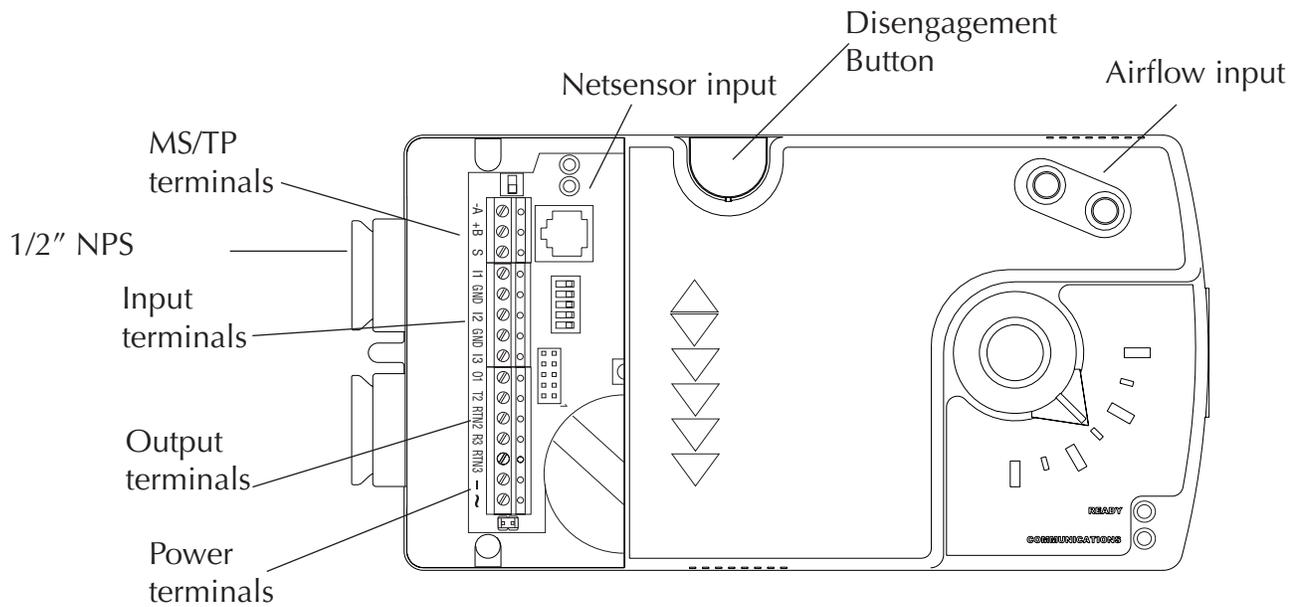
BAC-7003	18°/minute at 60 Hz. 15°/minute at 50 Hz.
BAC-7053	60°/minute at 60 Hz 50°/minute at 50 Hz

Velocity sensor input

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.

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% 25 VA

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

Software compatibility

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

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

BAC-7003 VAV Controller with 18°/minute actuator

BAC-7053 VAV Controller with 60°/minute actuator

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