

# BAC-7001, BAC-7051

## Advanced Application Controllers for Variable Air Volume Terminal Units

### Description and application

The BAC-7001 and BAC-7051 are native BACnet, direct digital controllers designed for VAV terminal units. An integrated actuator and the supplied programs make these an ideal controller for temperature setback, overrides, proportional reheat 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-7001 and BAC-7051 controllers provide 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 single-duct VAV 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 heat change-over, cooling with time proportional reheat or three-stage, sequential 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 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-1180 series NetSensors

#### Outputs

- ◆ 3 universal outputs each of which 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.

#### Applications programs

KMC Controls supplies the BAC-7001 and BAC-7051 with programming sequences for three single-duct VAV applications:

- ◆ Heating-cooling changeover
- ◆ VAV with time proportional reheat
- ◆ VAV with three-stage 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 device instance numbers
- ◆ NetSensor compatible through RJ-12 connector

### 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)

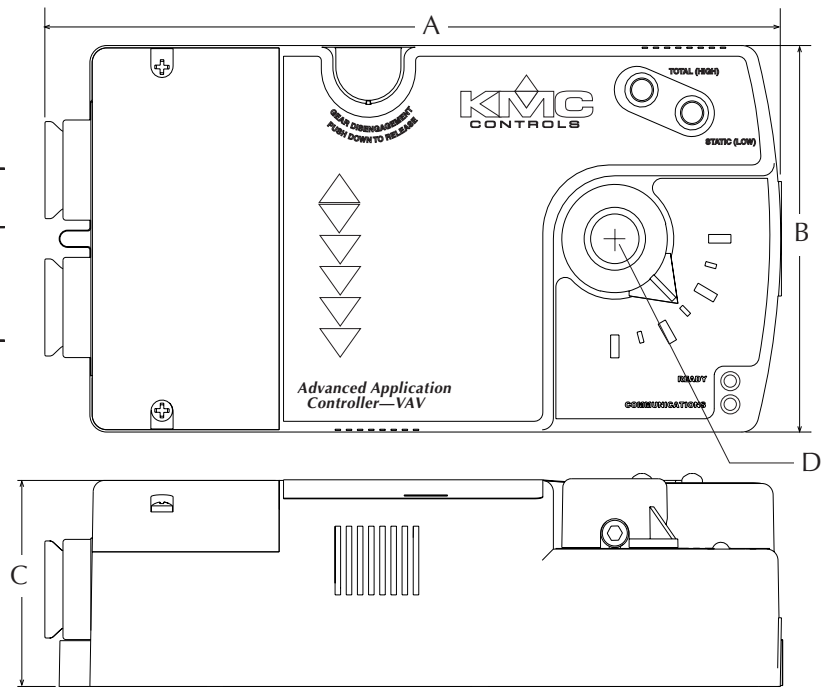
#### Angular Rotation

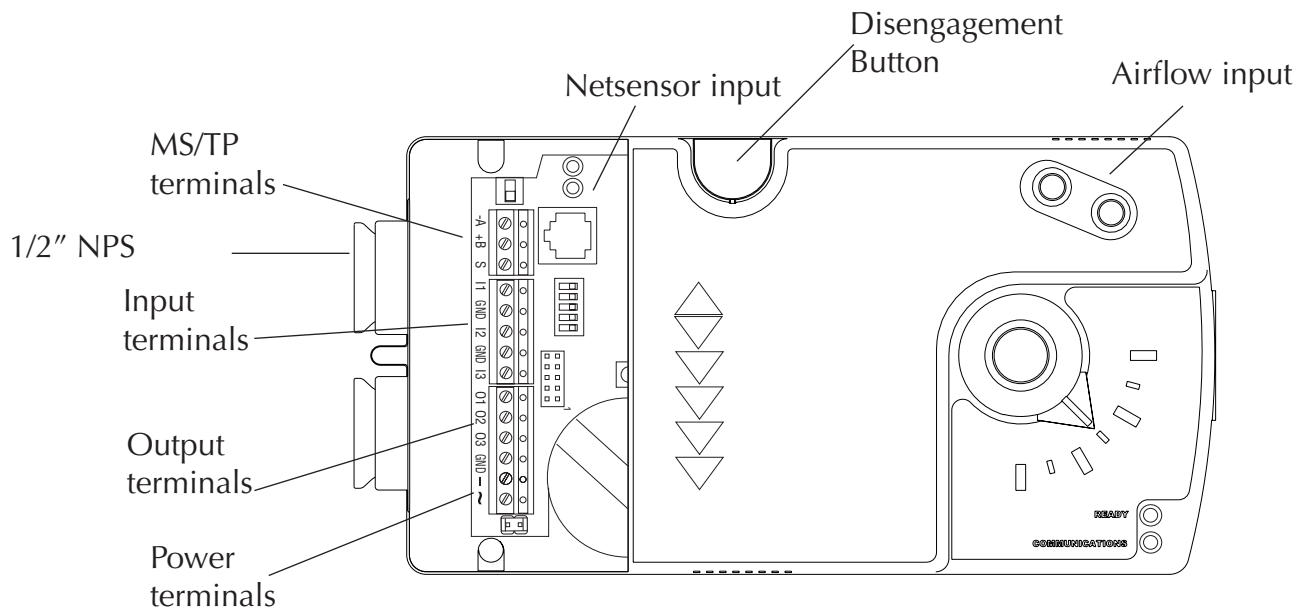
0 to 95° Adjustable end stops at 45/60/90° rotation

#### 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

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** Green and black 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

### Software compatibility

Requires BACstage version 2.4 or later for configuration and programming.

## 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-7001 VAV Controller with 18°/minute actuator

BAC-7051 VAV Controller with 60°/minute actuator

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