b3885 VAV Controller with Built-in Actuator

The *Continuum* b3885 VAV Controller is a native BACnet Advanced Application Controller (B-AAC) that communicates on an RS-485 field bus as Master devices using the MS/TP BACnet protocol. The low-cost b3885 VAV Controller is equipped with a built-in actuator to streamline hardware installation and save commissioning time. Two universal inputs, an airflow sensor, two Form A triac-based outputs, and an integrated damper actuator, make this controller perfect for smaller VAV applications.

Similar to all b3 controllers, the b3885 features Flash memory and a fast (32-bit) processor for faster scan times.

As a native BACnet controller, the b3885 can communicate with other BACnet devices on the MS/TP network, in strict accordance with **ANSI/ASHRAE standard 135-2001**. By connection to the Andover b4920 device, the b3885s and other MS/TP devices can share and gather data from the wider Ethernet/IP network of controllers. Among those Ethernet controllers can be *Continuum* controllers (BACnet or Infinet) or third-party BACnet IP devices. All Andover devices, both BACnet and Infinet, are fully compatible with the *Continuum* CyberStation front-end software, a fully native BACnet Operator Workstation (B-OWS) application.
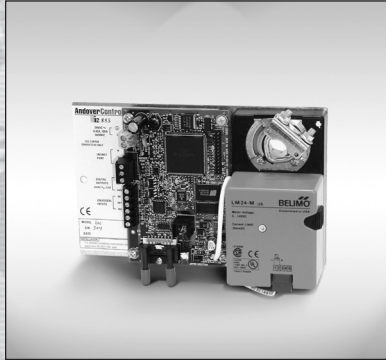
- **Native BACnet MS/TP Communications for Interoperability to Third-Party Systems**

- **Compact Terminal Controller Provides Low-cost VAV Control**

- **Built-in Damper Actuator Simplifies Hardware Installation**

- **Two Universal Inputs; Two Form A Outputs for Flexible Control Options**

- **Non-Volatile Flash Memory Allows Easy On-Line Software Updates and Application Storage**

- **On-Board Airflow Sensor**

- **Local On-Board Service Port**

- **Typical VAV Applications:**
  - **Cooling-Only**
  - **Cooling with 1 or 2-Stage Electric Heat**
  - **Cooling with Reheat Valve, PWM Control**
  - **Fan Powered with 1-Stage Electric Reheat**

INCREASED RELIABILITY WITH FLASH MEMORY

The b3885's non-volatile Flash memory stores your operating system *and* application programs, so that in the event of a power loss, your application will be restored when power is returned. In additon, the Flash memory allows for easy upgrades of your operating system via software downloads, eliminating the need to swap out proms.

INPUTS

The input configuration of the b3885 consists of two full range Universal inputs that accept voltage (0-5VDC), digital (on/off), counter signals (up to 4Hz), or temperature signals, plus an on-board air flow sensor. Typically the two inputs are used for room temperature, and either supply air temperature or a setpoint adjustment signal.

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OUTPUTS

The b3885 contains two Form A Triac-based outputs. Each Triac is ground referenced. These outputs can be used separately for on/off or pulsed control =of lighting, heat, and fan units or for bi-directional control of dampers and valves; or configured into one Form K Tri-state output. Outputs are rated for AC loads only. Typically, the outputs are used for 1- or 2-stages of electric heat, or a PWM reheat valve.

DAMPER ACTUATOR

The integrated Belimo® damper actuator allows simple direct mounting of the b3885 directly over the existing damper shaft. This eliminates the need for separate mounting, wiring, and positioning of the damper motor. All b3885 controllers have built-in software over-drive protection which senses repeated motor limit stall conditions and helps to prevent motor damage. Also, the actuator has a built-in clutch button to temporarily disengage the direct-drive gears during commissioning. The b3885 actuator may be preset for a limited range of motion using the mechanical "stops" provided.

SOFTWARE CAPABILITIES

The dynamic memory of the b3885 can be allocated for any combination of programs, scheduling, alarming, and data logging using the powerful Andover Controls *Plain English®* programming language. Our object-oriented *Plain English* language with intuitive keywords provides an easy method to tailor the controller to meet your exact requirements. Programs are entered into the b3885 using the *Continuum* CyberStation. Programs are then stored in, and executed by, the b3885.

Programming multiple b3885s is inherently easy with *Plain English.* A complete copy of one b3885's programs can be loaded directly into other b3885s without changing any point names or programs.
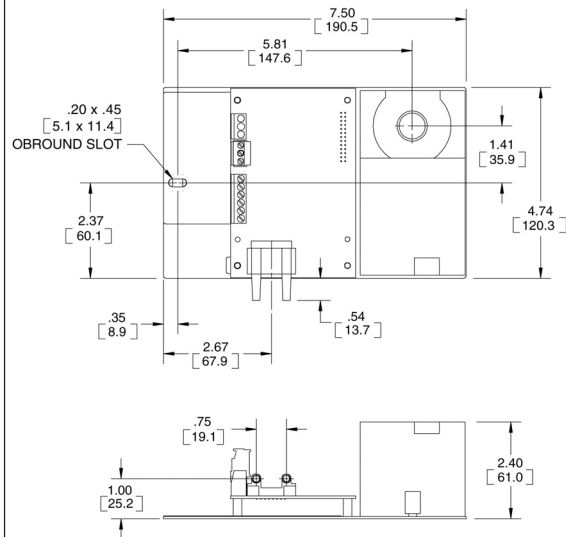
Dimensional Drawing

Wiring Drawing
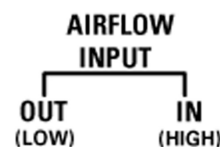
Airflow Input

ELECTRICAL

Power:	24 VAC, +10% -15%, 50/60 Hz
Power Consumption:	10 VA
Overload Protection:	Fused with 1 amp fuse. MOV protected.
Software Real-Time Clock:	Synchronized through MS/TP via BACnet

MECHANICAL

Operating Environment:	32°–120°F (0–49°C), 10–95% RH (non-condensing)
Size:	5.28"H x 7.50"W x 2.40"D (134.5H x 190.5W x 61D) mm
Weight:	1.70 lbs. (0.77kg)
Enclosure Type:	None; UL Open Class. Recommend Nema Type 1 Enclosure. Flammability rating of UL94-5V

COMMUNICATIONS

Communications Interface:	RS-485, BACnet MS/TP
Communications Speed:	9600, 19.2K, 38.4K, 76.8K baud*
BACnet Device Profile:	B-AAC, BACnet Advanced Application Controller
Bus Length:	4,000 ft. (1,220m) standard; BACnet repeater module allows extension to longer distances.
Bus Media:	Twisted, shielded pair, low capacitance cable

Note: Baud rates REQUIRE Continuum V1.62 version (or later) of software

INPUTS/OUTPUTS

Inputs:	2 Universal inputs: Voltage (0-5.115 VDC); Temperature -30°F to 230°F (-34°C to 110°C), Digital (on/off), Counter (up to 4Hz at 50% duty cycle, 125 ms min. pulse width). Current input (0 - 20 mA) using external 250 ohm resistor. 1 airflow sensor (0 to 1" W.C.)
Input Voltage Range:	0-5.115 volts DC
Input Impedance:	10K ohm to 5.120V
Input Protection:	±1000V transients (Tested according to EN61000-4-4)
Input Resolution:	5.0 mV
Input Accuracy:	±15mV (±0.56°C from -23°C to +66°C or ±1°F from -10°F to +150°F)
Airflow Input:	
Range:	0 to 1" W.C. (0-250 Pa)
Resolution:	0.005" W.C. (1.25 Pa) @ 23° C (73° F)
Accuracy:	±0.05" W.C. (12.50 Pa) @23°C (73°F)
Outputs:	2 single pole single throw (SPST) Form A Triacs can also be configured as one Tri-state Form K. 1 integrated damper actuator

INPUTS/OUTPUTS (CONTINUED)

SPST Output Rating:	Maximum 0.5A, 24VAC, ±2000V transients (Tested according to EN61000-4-4) Minimum: 30 mA AC. Each Triac is ground referenced, DC loads not permitted.
SPST Output Accuracy:	0.1 sec. for pulse width modulation

DAMPER ACTUATOR

Rated Torque:	35 in-lb. (3.95 Nm)
Range of Travel:	0-95 degrees, with adjustable mechanical stops
Rotation Speed:	1.0 degree/sec nominal
Position Resolution:	0.1 degrees with a 1.0 degree min. positioner movement
Actuator Output:	1.0 sec minimum pulse duration
Shaft Accommodations:	Accepts shafts 1/4" - 5/8" diameter (6.35mm - 15.9mm)

CONNECTIONS

Power:	2-position fixed screw terminal connector
Communications:	3-position removeable screw terminal connector
Inputs/Outputs:	6-position fixed screw terminal connector
Damper Shaft:	1/4" - 5/8" diameter (6.35mm - 15.9mm)
Service Port:	4-position connector

USER LEDS/SWITCHES

Status Indicator LED:	
CPU	CPU Active
Switch:	
Motor Direction Jumper (CW/CCW)	

GENERAL

Memory:	128KB SRAM, 1MB FLASH
Processor:	Motorola 32-bit Coldfire

Note: b3885 REQUIRES *Continuum* V1.6 version (or later) of software for CyberStation.

AGENCY LISTINGS

UL/CUL 916, FCC CFR 47 Part 15, ICES-003, EN55022, AS/NZS 3548, and VCCI Class A, CE

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