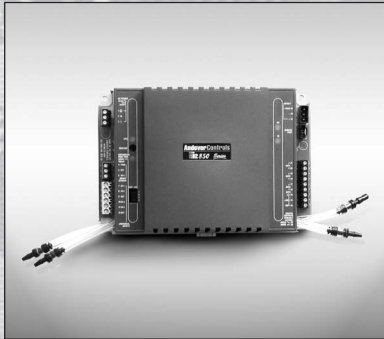


Continuum[®]

BACnet Family[™]



- Native BACnet MS/TP Communications for Interoperability to Third-Party Systems
- Compact Terminal Controllers Provide VAV Control for a Broad Range of Applications
- Expandable I/O Meets Additional Point Count Needs
- Non-Volatile Flash Memory Provides Utmost Reliability — Stores Both Application Program and Operating System
- Flash Memory Allows Easy On-Line Software Updates
- Local, Extended Storage of Log Data
- On-Board Airflow Sensor
- Optional Display/Keypad Provides Easy Operator Interface (Mounted Separately)
- View and Modify Information with Optional *Smart Sensor* Display

b3850 Series of Terminal Controllers

The *Continuum* b3850 series controllers are native BACnet Advanced Application Controllers (B-AAC) that communicate on an RS-485 field bus as Master devices using the MS/TP BACnet protocol. The b3850, b3851, and b3853 provide cost-effective DDC control of individual terminal units: VAV boxes, fan-powered induction units, unit ventilators, heat pumps, etc. The b3850 series is a perfect fit for your VAV applications where external damper actuators are used. And because all b3850s feature a built-in expansion port for additional I/O, these controllers are perfect for your more demanding control applications.

Choose the b3850 series controller with the input configuration that matches your application:

- The **b3850** is designed for single-duct VAV applications, with four universal inputs plus an on-board air flow sensor.
- The **b3851** contains four Universal inputs as well, but does not have the on-board air flow sensor and is perfect for applications such as heat pumps and fan coils.
- The **b3853** is for dual-duct VAV applications. It contains two on-board airflow sensors and four universal inputs.

All three models feature an additional room sensor input, which supports Andover's *Smart Sensor*, or any standard room temperature sensor; plus three Form A relays and one Form K Tri-state relay output.

The b3850 series features Flash memory, increased user memory, and a fast (32-bit) processor for faster scan times, with plenty of memory available for data logging of your critical data.

As native BACnet controllers, the b3850 series 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 b3850s 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.

Andover Controls
WE'RE BUILDING SMART



INCREASED RELIABILITY WITH FLASH MEMORY

The b3850'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 addition, the Flash memory allows for easy upgrades of your operating system via software downloads, eliminating the need to swap out proms. The b3850 controllers include an on-board battery to safeguard your runtime data — protecting all point data and log data from being lost if power is removed.

INPUTS

The input configuration on the b3850 series consists of four full range Universal inputs that accept voltage (0-5VDC), digital (on/off), counter signals (up to 4Hz), temperature signals, or supervised alarm circuits for security applications. The b3850 features one on-board air flow sensor; the b3853 provides two. All models offer an additional input to support the Andover *Smart Sensor*, or any standard room temperature sensor.

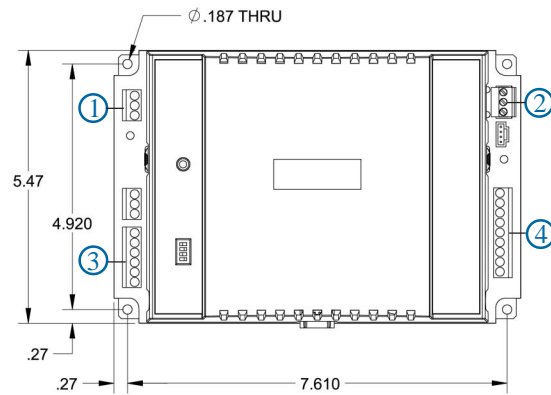
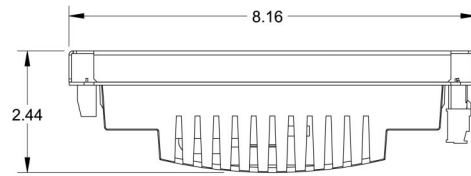
OUTPUTS

The b3850 series contains three Form A relay outputs and one Form K Tri-state output. Each is rated for 24 VAC/VDC, 3 amp. These outputs can be used separately for on/off or pulsed control of lighting, heat, and fan units. The pre-configured Form K Tri-state output can be used for bi-directional control of dampers and valves. (Note: Any two consecutive Form A outputs can be configured to form an additional Form K output.)

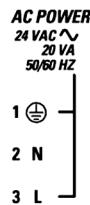
I/O EXPANSION

The b3850 series contains an I/O expansion port for the addition of up to two Andover xP expansion modules directly on the bottom of the controller. The xP family of modules includes the DI-8, D0-2, D0-4, AO-2, and AO-4. In addition, the I/O bus supports the xP Local Display Module, which allows the user to view and change point values.

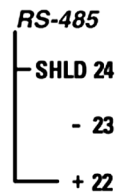
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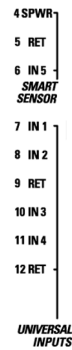
Dimensional Drawing



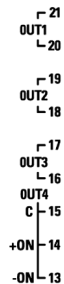
① Power Drawing



② Communications Drawing



③ Inputs/Smart Sensor Drawing



④ Outputs Drawing

SPECIFICATIONS



B3850 Series of Terminal Controllers

ELECTRICAL

Power:	24 VAC, +10% -15%, 50/60 Hz
Power Consumption:	20 VA
Overload Protection:	Fused with 2 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:	5.47" H x 8.16" W x 2.44" D (139H x 207W x 62) mm
Weight:	1.08 lbs. (.50 kg)
Enclosure Type:	UL Open class, IP 10. Flammability rating of UL94-5V
Mounting:	Panel mount

BATTERY

Battery Backup:	Replaceable, non-rechargeable, lithium battery. Provides 5 years typical accumulated power failure backup of RAM memory
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COMMUNICATIONS

Communications Interface:	RS-485 BACnet, MS/TP 127 devices maximum
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 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:	4 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). Supervised Alarm (single or double resistor). Current input (0 - 20 mA) using external 250 ohm resistor 1 <i>Smart Sensor</i> Temperature Input (32°F to 105°F) (0°C to 41°C) Airflow sensor (0 to 2" W.C.) (b3850- qty 1; b3853-qty 2)
Input Voltage Range:	0-5.115 volts DC
Input Impedance:	10K ohm to 5.120V or 5M ohm with pull-up resistor disabled
Input Protection:	24 VAC or 24 VDC temporarily on any single channel, ±1000V transients (Tested according to EN61000-4-4)

INPUTS/OUTPUTS (CONTINUED)

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 2" W.C. (0-500 Pa)
Resolution:	0.005" W.C. (1.25 Pa) @ 23°C (73°F)
Accuracy:	±0.025" W.C. (6.25 Pa) @ 23°C (73°F)
Outputs:	3 single pole single throw (SPST) Form A relays 1 Form K Tri-state relay output (Any two consecutive Form A outputs can be configured as one Form K Tri-state)
Output Rating:	Maximum 3A, 24VAC/VDC, ±1500V transients (Tested according to EN61000-4-4)
Output Accuracy:	0.1 sec. for pulse width modulation
Expansion Bus:	Interfaces to optional xP I/O Expansion Modules

CONNECTIONS

Power:	3-position fixed screw terminal connector
Inputs:	6-position fixed screw terminal connector
Outputs:	9-position fixed screw terminal connector
Smart Sensor:	3-position fixed screw terminal connector
Communications:	3-position removeable screw terminal connector
Expansion Port:	6-position shrouded connector
Service Port:	4-position shrouded connector

USER LEDS/SWITCHES

Status Indicator LEDS:	
CPU	CPU Active
TD	Transmit Data
RD	Receive Data
EXPANSION PORT PWR	Power Status
Switches:	
RESET	
Input Pull-up Resistor Switch (per input)	

GENERAL

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

Note: b3850 Series REQUIRES Continuum V1.6 version (or later) of software

AGENCY LISTINGS

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



OPTIONS

UL864, Smoke Control System Equipment, UUKL (b3850-S, b3851-S, b3853-S)

SOFTWARE CAPABILITIES

The dynamic memory of the b3850 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 b3850 using the *Continuum* CyberStation. Programs are then stored and executed by the b3850 controllers.

Programming multiple b3850 controllers is inherently easy with *Plain English*. A complete copy of one b3850's programs can be loaded directly into other b3850s without changing any point names or programs.

SMART SENSOR INTERFACE

The b3850 provides a built-in connection for Andover's *Smart Sensor*. The *Smart Sensor* provides a 2-character LED display and a 6-button programmable keypad that enables operators and occupants to change setpoints, balance VAV boxes, monitor occupancy status, and turn equipment on and off. An enhanced version of the *Smart Sensor* is also available with a 4-digit custom LCD that provides the following icons: PM, %, °, Setpoint, Cool, Heat, CFM, Fan, OA, and SP.

LOCAL DISPLAY

The local display with keypad (xP Display) allows for the addition of a fully programmable local display module that can be mounted within 10 feet (3 meters) of the controller. Connected via a ribbon cable, the xP-Display easily allows the Operator Interface to be mounted on the door of an enclosure or on a wall below or next to the controller.

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