ALERTON UNITARY CONTROLLER

Alerton VisualLogic® Unitary controllers provide flexible, freely programmable, demand-led control that delivers tangible benefits to reduce energy spending while driving new levels of functionality and efficiency in today's buildings.

These new controllers offer BACnet® IP or BACnet® T1L as their backbone communication protocol along with Microset Bus and Modbus RTU as embedded integration protocols, flexible Universal Input/Output (UIOs), Power Relays (SPDT), and solid-state relays (SSRs).

They offer performance-based engineering via Alerton's VisualLogic® programming tool.

The optional integrated Bluetooth® Low Energy (BLE) capability enables an easy pairing with the Connect Mobile app for efficient wiring validation.

Alerton Unitary Controllers are available in large and small housing options.

FEATURES AND BENEFITS

COMMUNICATION

- Supports BACnet® IP communication which enables faster download, thereby reducing commissioning time, and increased data bandwidth for increased data sharing.
- Built-in 2-port Ethernet switch supports 10/100 Mpbs.
- Supports full duplex IPv4, IPv6 addressing, DHCP, SLAAC, and Link Local addressing modes.
- Supports Rapid Spanning Tree Protocol (RSTP) and Network Time Protocol (NTPv4).
- Supports fail-safe daisy chains (T1L) with distances between devices of up to 984 ft. (300 m), way above the 328 ft. (100 m) limit of standard CAT5 ethernet.
- Features a non-isolated RS-485 interface for Modbus communication (future firmware upgrade required).

CHARACTERISTICS

- Color-coded, removable terminal blocks to simplify wiring and replacement.
- Real-time clock with super capacitor circuit providing up to 24 hours of date/time retention.
- 24 VDC at 75 mA auxiliary supply for field devices.
- Up to 16 Universal Inputs/ Outputs (UIO) configurable as analog voltage/current output or as a analog/binary input.
- 4 x relays with SPDT contacts, providing up to 12 A constant combined current.
- 4 x 24 VAC/VDC solid state relay outputs with 1.5 A continuous and 3.5 A in-rush for 100 milliseconds per output.

SUPPORTS

- Supports Microtouch, Microset II, and Microset 4 wall modules.

FREELY PROGRAMMABLE

- All control logic is programmed using Alerton's easy-to-learn graphical programming language VisualLogic®.
- Using BD9 DDC the Unitary Controller can execute more complex calculations to meet the needs of increasingly demanding sequences of operations for building systems.

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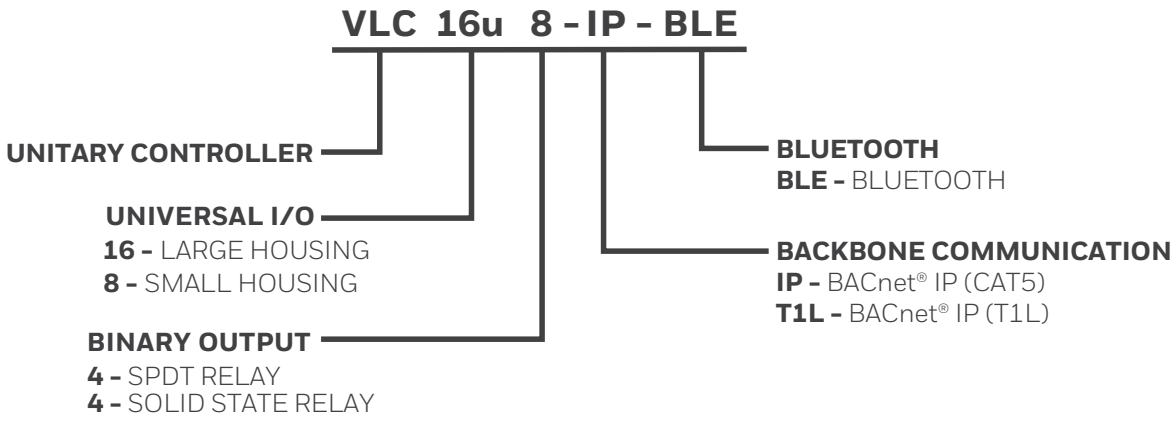
CONTROLLER PART DESCRIPTION



CONTROLLER PART NUMBER DESCRIPTION

PART NUMBER	HOUSING	UNIVERSAL IO	SOLID STATE RELAY (SSR)	SPDT RELAY	COMMUNICATION	MSET BUS	BLUETOOTH
VLC8u8-IP	Small	8	4	4	BACnet® IP (CAT5)	Yes	No
VLC8u8-IP-BLE	Small	8	4	4	BACnet® IP (CAT5)	Yes	Yes
VLC8u8-T1L*	Small	8	4	4	BACnet® IP (T1L)	Yes	No
VLC8u8-T1L-BLE*	Small	8	4	4	BACnet® IP (T1L)	Yes	Yes
VLC16u8-IP	Large	16	4	4	BACnet® IP (CAT5)	Yes	No
VLC16u8-IP-BLE	Large	16	4	4	BACnet® IP (CAT5)	Yes	Yes
VLC16u8-T1L*	Large	16	4	4	BACnet® IP (T1L)	Yes	No
VLC16u8-T1L-BLE*	Large	16	4	4	BACnet® IP (T1L)	Yes	Yes
Note: *Coming Soon.							

Note: CAT5 cables are used primarily because they offer a connection speed of 100 Mbps. This helps to avoid confusion regarding the actual speed of the connection. CAT6 cables can also support up to 10 Gbps, but this higher capacity would not be fully utilized in the current setup, as the network infrastructure is designed for 100 Mbps.

ACCESSORIES/REPLACEMENT PARTS

PARAMETER	SPECIFICATION
10BASE-T1L-ADAPT-0	BACnet® IP (T1L) single pair media adapter that allows converting 10BASE-T traffic to 10BASE-T1L (without power supply)

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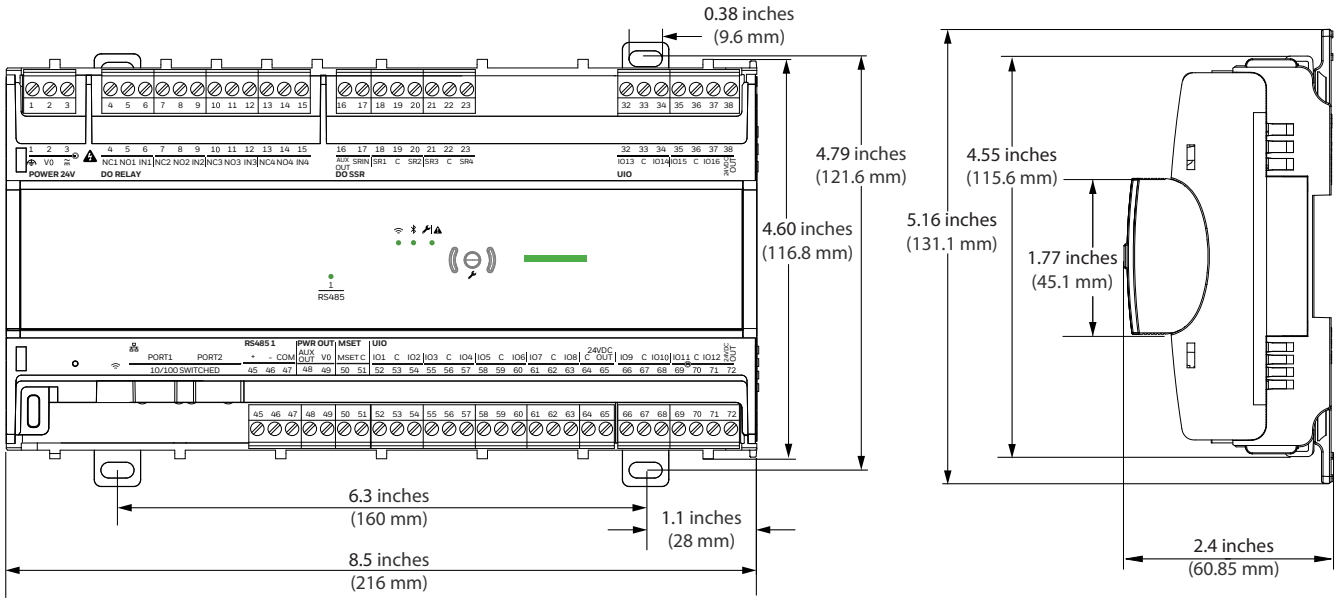
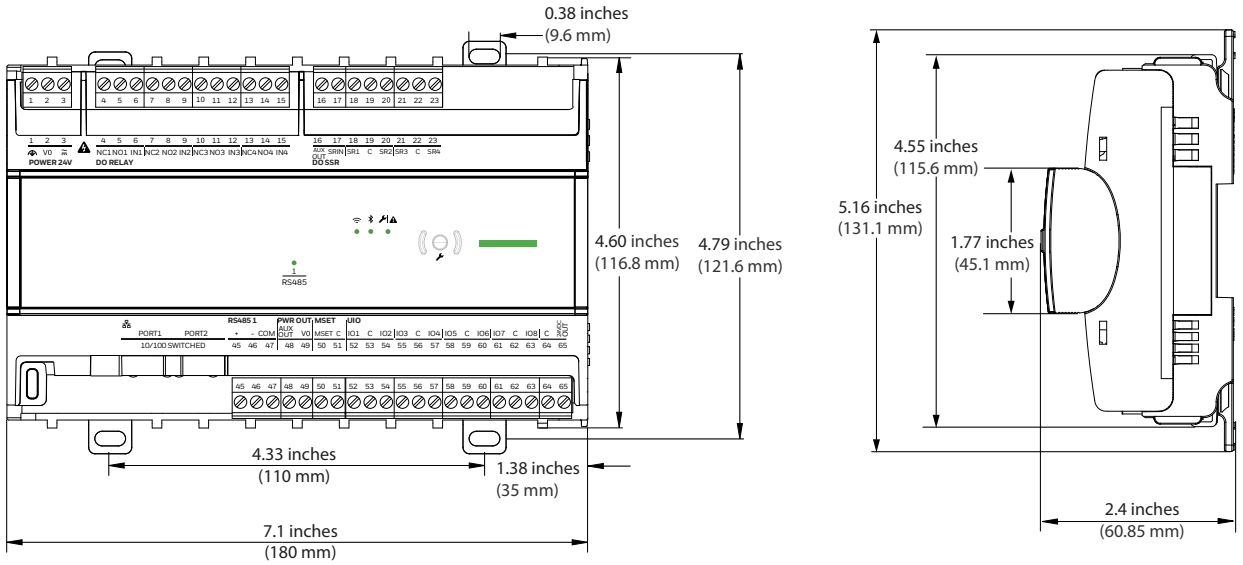
WEIGHTS AND DIMENSIONS

LARGE HOUSING



SMALL HOUSING



All dimensions are in inches (mm)

PARAMETER	SPECIFICATION
DIMENSION (L X W X H)	Large - 8.5 x 4.79 x 2.4 inches (216 x 121.6 x 60.85 mm) Small - 7.1 x 4.79 x 2.4 inches (180 x 121.6 x 60.85 mm)
WEIGHT	Large - 1.278 lbs. (580 g) Small - 1.102 lbs. (500 g)
MOUNTING	Mounting in fuse boxes (DIN43880), on DIN rails or surface mounted with optional protection covers.

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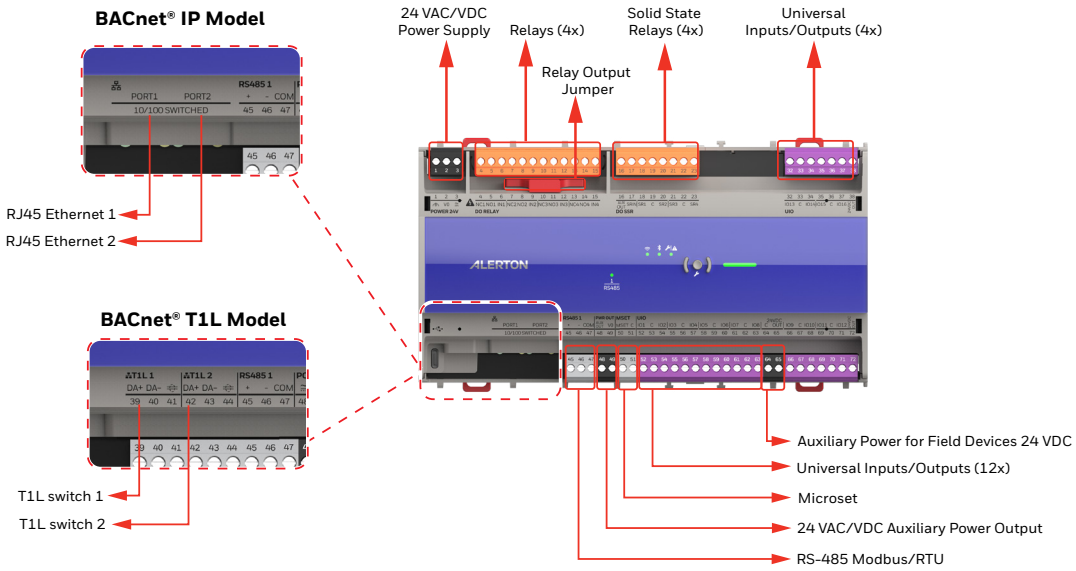
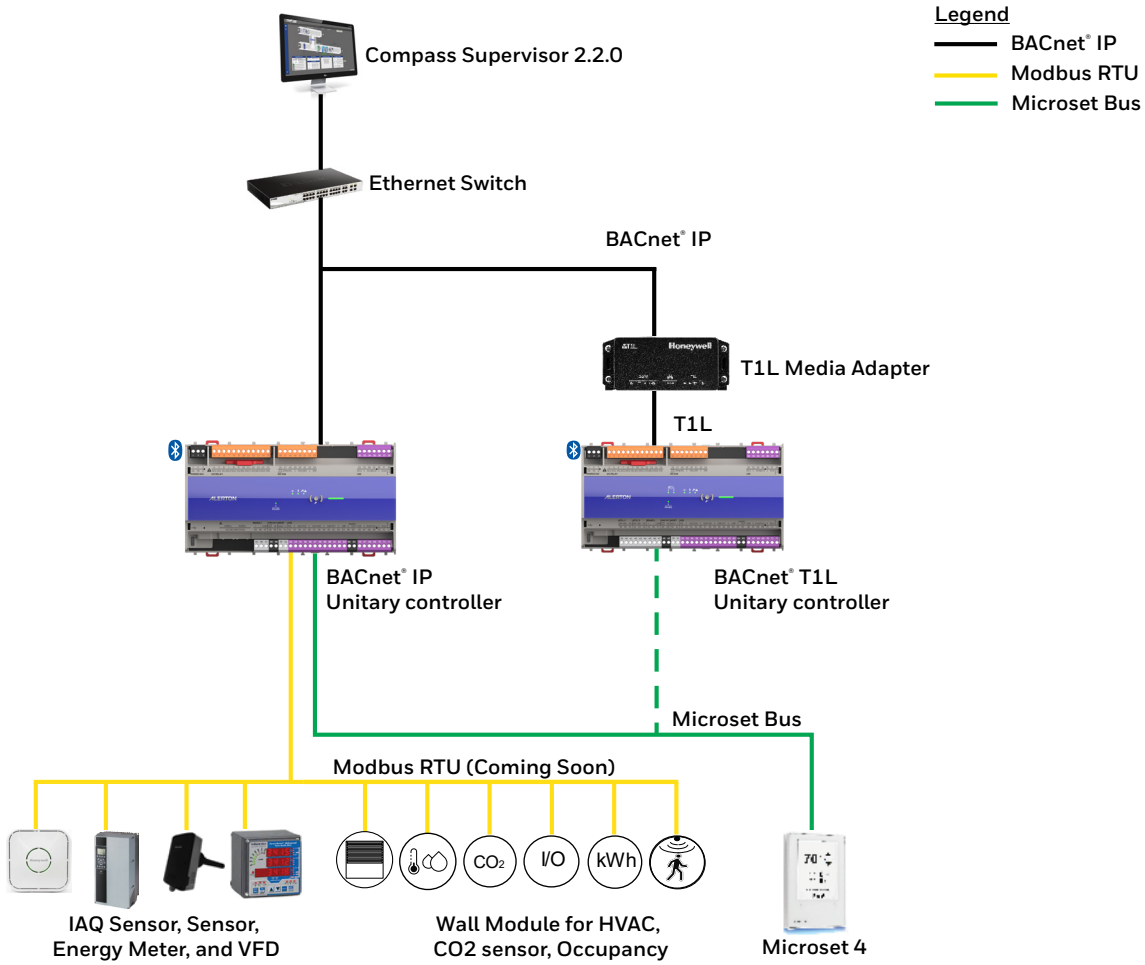
HARDWARE OVERVIEW



SYSTEM OVERVIEW



HVAC, SMART ROOM CONTROL AND ENERGY METERING*

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PRODUCT SPECIFICATIONS

HARDWARE

PARAMETER	SPECIFICATION
CPU	Crossover processor NXP I.MRT, Cortex M7
MEMORY CAPACITY	64 MB QSPI Flash, 16 MB SDRAM
ETHERNET	2 x RJ-45 ports, 10/100 Mbps with a protection that allows loop topology to continue the communication with other controllers even if one node fails, when used with an RSTP supporting device.
REAL TIME CLOCK	24 hours backup after power failure After 24 hours, the time will reset to factory default time until the user performs time sync via BACnet® or Network Time Protocol (NTP)
SMALL LEDS	Transmission or reception of communication signal (green).
LARGE LEDS	Controller status (green, yellow and red).

ELECTRICAL

PARAMETER	SPECIFICATION
RATED INPUT VOLTAGE	20 - 30 VAC / 24 - 30 VDC
NOMINAL POWER CONSUMPTION	• BACnet® IP : 11 VA • BACnet® T1L : 10 VA
FULL LOAD POWER CONSUMPTION (Maximum load including external devices, Communication, Bluetooth Universal IO output, and 24 VDC output, excluding the load on the SSRs and Relays). **NOTE:** For the current consumption of SSR, refer SSR section table below.	• BACnet® IP : 33 VA • BACnet® T1L : 31 VA
FREQUENCY RANGE	50 - 60 Hz
AUXILIARY POWER OUTPUT FOR 24VAC/VDC (3 for large and 1 for small controller)	3 x 24 VAC/VDC at 75 mA 1 x 24 VAC/VDC at 75 mA
AUXILIARY POWER OUTPUT FOR 24VAC/VDC (Pin 48, 49)	1 x 24 VAC/VDC at 300 mA 1 x 24 VAC/VDC at 300 mA
IMPULSE VOLTAGE	330 VAC
TYPE OF LOADS	Resistive or inductive loads
MATERIAL GROUP	IIIb
CLASSES OF CONTROL FUNCTION	Class A control
TYPE OF OUTPUT WAVEFORM	Sine wave or DC voltage

SUPPORTED DEVICES

PARAMETER	SPECIFICATION
MICROSET WALL MODULES	Microset 4: MS4-TH, MS4-TH-NL, MS4-THC Microset II: MS-2000-BT, MS-2000-BT-NL, MS-2000H-BT
MICROTOUCH WALL MODULES	TS-1050-BT, TS-1050-BT-NL
MODBUS DEVICES	Modbus RTU devices from any manufacturer including Alerton Modbus devices, for example DALI64MODPSUF/S, TR50, and TC300 can be used.

SOLID STATE RELAY

SPECIFICATION
SSR does switch supply voltage, works with AC and DC, however in case of DC no support for synchronous motor.
1.5 A constant current across all 4 outputs, 3.5 A inrush for 0.1 seconds per SSR output.
Factory installed jumper between 24 VAC or 24 VDC supply and SSR input shared by all SSRs.
The fuse should be 5 A, for example, 0AGC005.V, OAGW005.VP or BK/AGW-5, and the fuse folder, for example, 150603 or BK/HRK-R.

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PRODUCT SPECIFICATIONS

OPERATIONAL ENVIRONMENT

PARAMETER	SPECIFICATION
STORAGE TEMPERATURE	-40 °F to 150 °F (-40 °C to 66 °C)
OPERATING TEMPERATURE	-40 °F to 122 °F (-40 °C to 50 °C)
HUMIDITY	5 % to 95 % RH., non-condensing
PROTECTION	IP20, NEMA 1
POLLUTION LEVEL	2

WIRE GAUGE

PARAMETER	SPECIFICATION
SSR OUTPUT AND SRIN	22-18 AWG
RELAY	18-14 AWG

RELAYS

PARAMETER	SPECIFICATION
CONTACT RATING	Up to 277 VAC / 230 VAC (+20 %).
	SPDT relay with terminals designated IN (common), NO (normally open), and NC (normally closed)
	10 A constant current on normally open (NO) contact and 100 A inrush for 100 ms.
	Total current across all relays is limited to 12 A if all commons are connected via a relay jumper.
	240/277 VAC, 50/60 Hz, or 24 VDC, 12 A Max. total common (10 A Max. per Relay)
OUTPUT	40000 cycles for contact A (NO) 6000 cycles for contact C (CO)
NUMBER OF AUTOMATIC CYCLES	40000 cycles for contact A (NO) 6000 cycles for contact C (CO)
Type of disconnection or interruption provided by each circuit.	
Relay outputs can be used as dry contact output.	
Type 1.C, also known as Form C or SPDT (Single Pole Double Throw).	

UNIVERSAL IO

PARAMETER	SPECIFICATION
AI	16-bit universal inputs accept 10 k thermistor (type II and III), dry contact, 1k platinum RTD, 0-20 mA, 0-10 V, or dry-contact pulse. Pulse input maximum frequency of 100 Hz. Pulse input minimum duty cycle 5ms ON / 5ms OFF. NOTE: Some 4-20 mA input sensors may need an external resistor to function properly. Please refer to the sensor's documentation.
BI	• Dry contact binary input. • Pulse input with maximum frequency 100 Hz, minimum pulse width 5 ms.
AO	• Voltage output with 0-10 VDC with -3 mA …+20 mA. • Current output with 0-20 mA direct/reverse. • 16-bit analog output.
DO	11 VDC at 20 mA binary output.

PRODUCT SPECIFICATIONS

COMMUNICATION

PARAMETER	SPECIFICATION
PROTOCOL SUPPORTED	• BACnet®/Ethernet, BACnet®/IPv4, BACnet®/IPv6. • Modbus RTU (Master) • Rapid Spanning Tree Protocol (RSTP) • Network Time Protocol (NTPv4) • Bluetooth (Optional)
IP ADDRESSING MODES	• Dynamic: Full duplex (IPv4 and IPv6) addressing, DHCP, SLAAC, Link-Local addressing • Static: Assigned

T1L COMMUNICATION

PARAMETER	SPECIFICATION
10BASE-T1L STANDARD	802.3cg-2019
CONNECTION	Screw terminal, auto MDI-X
CABLE TYPE	Single twisted pair, 18 AWG, shielded or unshielded. Belden 74040NH, 9841NH or equivalent.
DISTANCE	Maximum 984 ft. (300 m) to Honeywell T1L controller in daisy chain. Maximum 2,952 ft. (900 m) to any other T1L device without a daisy chain.
TRANSMISSION RATE	10 Mbps

STANDARDS AND APPROVALS

SPECIFICATION
CE mark
UL 916
UL/ULC 60730-1
FCC/IC Product Class B
Plenum tested (according to UL 2043)
RoHS
BACnet® BTL®-Listed; IP and T1L Unitary models as BACnet® Advanced Application Controller (B-AAC); (BTL certification is pending)

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