

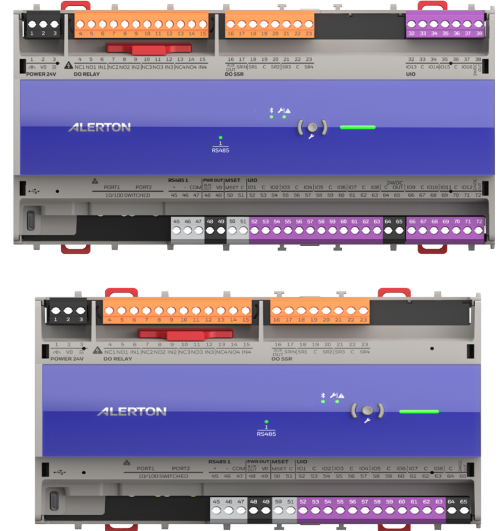
ALERTON UNITARY CONTROLLER

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 through IP CAT5/6 or IP T1L network connectivity 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 through CAT5/6 or T1L 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 Mbps.
- 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 (IP T1L) over distances of up to 3,281 feet (1,000 meters) at a standard speed of 10 Mbps, significantly higher than the standard CAT5/6 distances.
- Features a non-isolated RS-485 interface for Modbus communication.

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.
- Up to 3 Auxiliary power outputs handling 24 VDC @ 75 mA each, in addition to a separate terminal supplying 300 mA.
- Up to 16 Universal Inputs/Outputs (UIO) configurable as analog voltage/current output or as an analog/binary input.
- 4 x relays with SPDT contacts, providing up to 10 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.

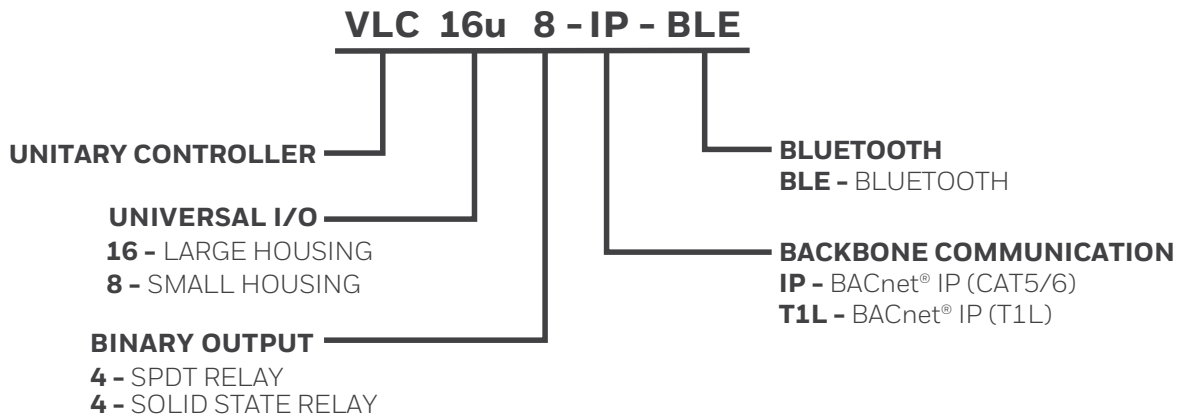
SUPPORTS

- Supports Microtouch, Microset II, and Microset 4 wall modules.
- 50 trendlogs at 60 seconds interval minimum. (This includes 10 COV trendlogs).
- 3 Schedules and 1 Zone (Optimum Start for internal point only).
- 1 Calendar object.
- 25 Alarms (Event Enrollment Objects).
- 5 Notification Class Objects.

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.

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 (CAT5/6)	Yes	No
VLC8u8-IP-BLE	Small	8	4	4	BACnet® IP (CAT5/6)	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 (CAT5/6)	Yes	No
VLC16u8-IP-BLE	Large	16	4	4	BACnet® IP (CAT5/6)	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

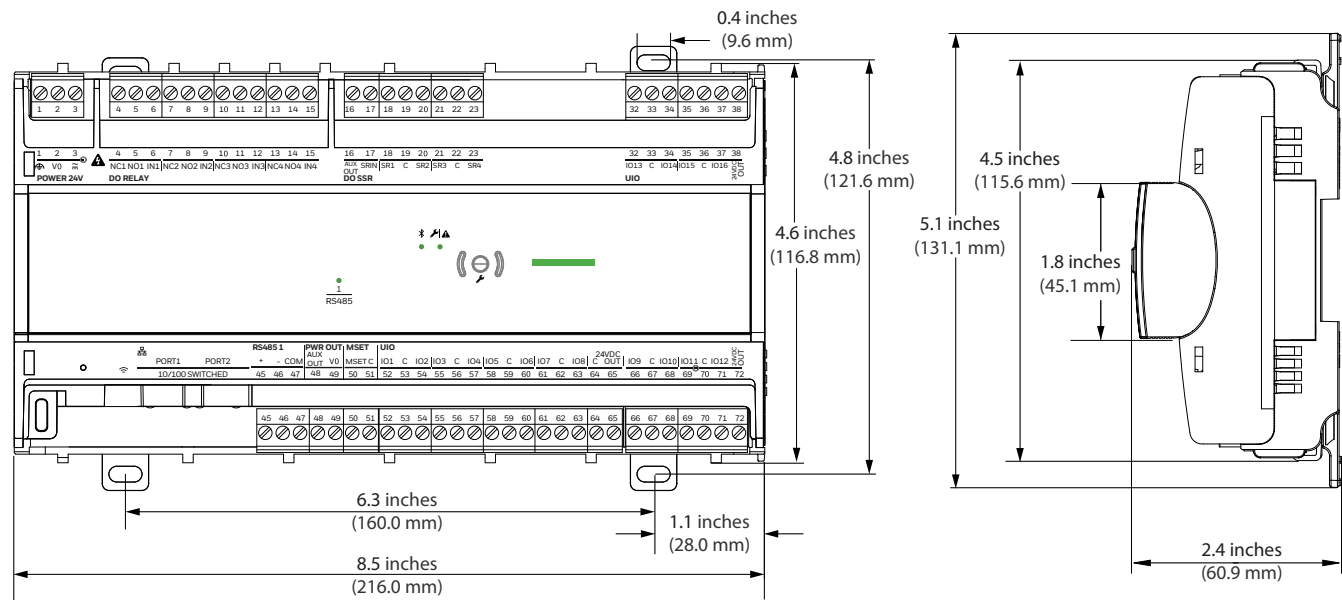
Note: CAT5 cables are used primarily because they offer a connection speed of 100 Mbps while CAT6 cables support up to 10 Gbps. The network infrastructure is designed for 100 Mbps, therefore CAT6's higher capacity would not be fully utilized in the current setup.

ACCESSORIES/REPLACEMENT PARTS

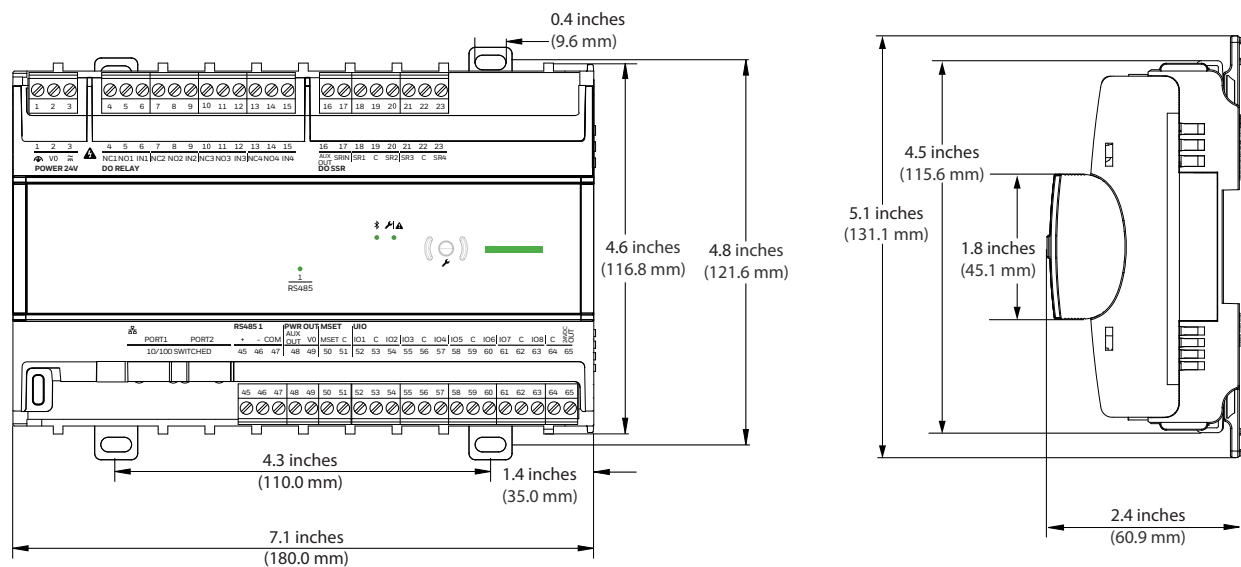
PARAMETER	SPECIFICATION
CW-COV-L-UNITARY	Terminal cover for the Large Unitary Controllers (sold in pack of 10)
CW-COV-S-UNITARY	Terminal cover for the Small Unitary Controllers (sold in pack of 10)
SCRW-TB-UNI-L	Set of removable terminal blocks covering all models of Unitary Controllers
IO-JUMPER-4-10	4-pin relay output Jumper Bar to connect 4 relays IN terminals (sold in pack of 10)
10BASE-T1L-ADAPT-0	BACnet® IP (T1L) single pair media adapter that allows converting 10BASE-T traffic to 10BASE-T1L without including power supply.

WEIGHTS AND DIMENSIONS

LARGE HOUSING



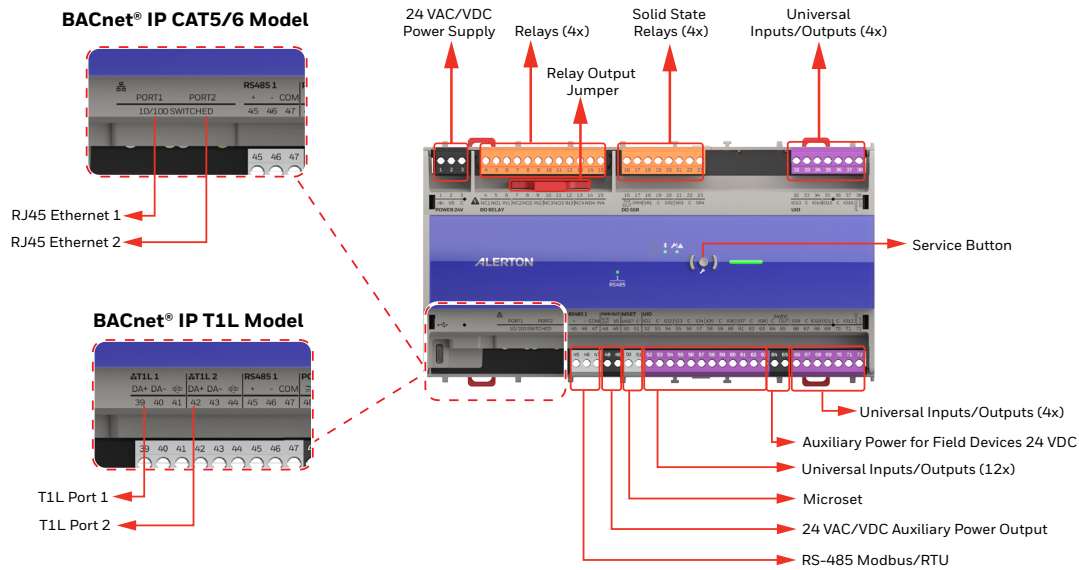
SMALL HOUSING



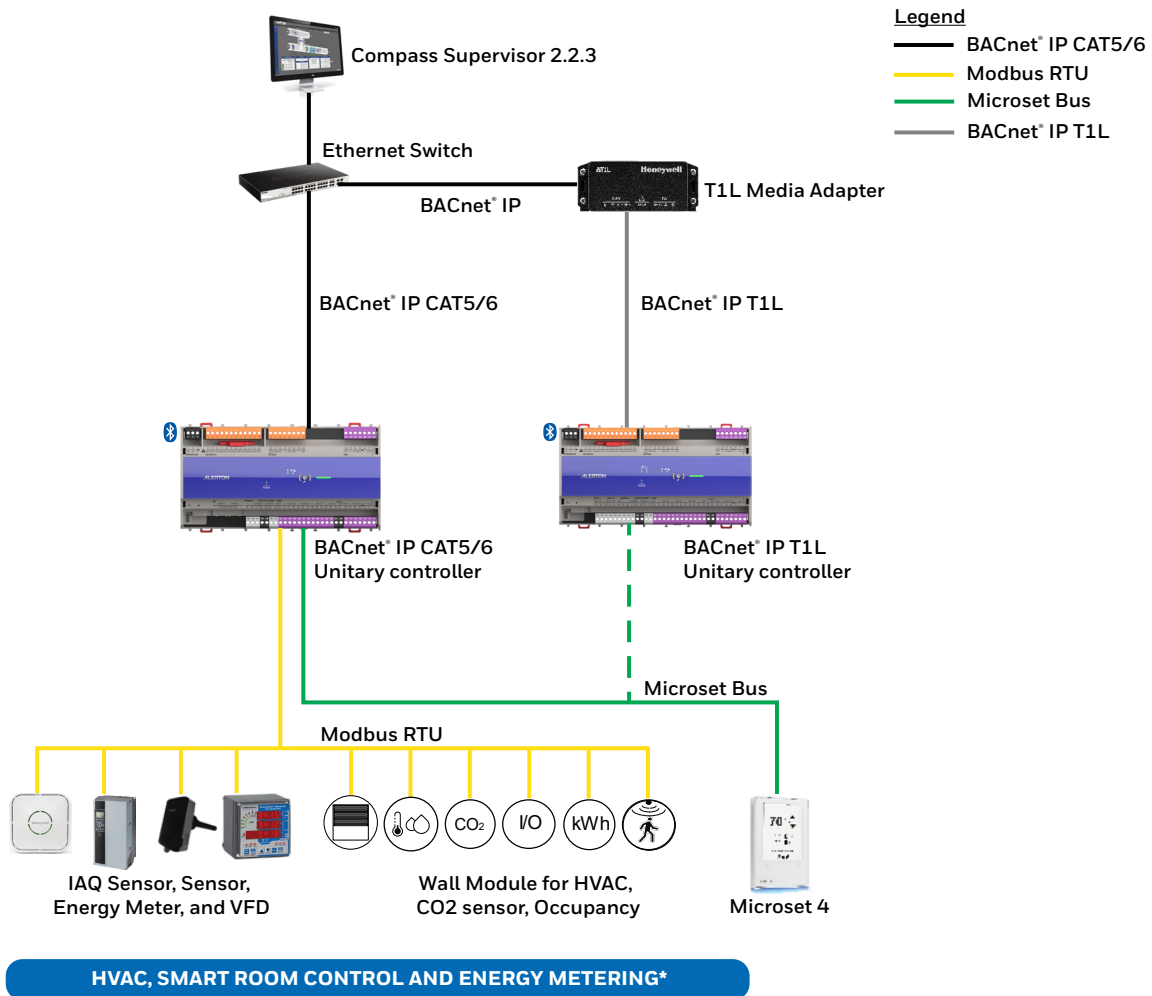
All dimensions are in inches (mm)

PARAMETER	SPECIFICATION
DIMENSION (L X W X H)	Large - 8.5 x 4.8 x 2.4 inches (216.0 x 121.6 x 60.9 mm) Small - 7.1 x 4.8 x 2.4 inches (180.0 x 121.6 x 60.9 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.

HARDWARE OVERVIEW



SYSTEM OVERVIEW



*Devices subject to local availability, Contact your local sales representative for information on available device on your region.

PRODUCT SPECIFICATIONS

HARDWARE

PARAMETER	SPECIFICATION
CPU	Crossover processor NXP I.MRT, Cortex M7
MEMORY CAPACITY	64 MB QSPI Flash, 16 MB SDRAM
IP CAT5/6 ¹⁾	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.
IP T1L ²⁾	2 x T1L ports with fail-safe, up to 10 Mbps with a protection that allows loop (when used with an RSTP supporting device) and daisy-chain topology to continue the communication with other controllers even if one node fails.
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 LED	Transmission or reception of T1L/Modbus/Bluetooth signal (green) and service pin status.
LARGE LED	Controller status (green, yellow and red).
NOTE: ¹⁾ applicable for IP CAT5/6 variant only. ²⁾ applicable for IP T1L variant only.	

ELECTRICAL

PARAMETER	SPECIFICATION
RATED INPUT VOLTAGE	20 - 30 VAC / 24 - 30 VDC
NOMINAL POWER CONSUMPTION	- BACnet® IP CAT5/6 (VLC8u8-IP-BLE) : 12 VA - BACnet® IP CAT5/6 (VLC16u8-IP-BLE) : 15 VA - BACnet® IP T1L (VLC8u8-T1L-BLE) : 10 VA - BACnet® IP T1L (VLC16u8-T1L-BLE) : 12 VA
FULL LOAD POWER CONSUMPTION (Communication, Bluetooth, Universal IO, and 24 VDC, excluding the load on the SSRs and Relays). NOTE: For the current consumption of SSR, refer SSR section table below.	- BACnet® IP CAT5/6 (VLC8u8-IP-BLE) : 40 VA - BACnet® IP CAT5/6 (VLC16u8-IP-BLE) : 62 VA - BACnet® IP T1L (VLC8u8-T1L-BLE) : 40 VA - BACnet® IP T1L (VLC16u8-T1L-BLE) : 58 VA
FREQUENCY RANGE	50 - 60 Hz
AUXILIARY POWER OUTPUT FOR 24 VDC (3 for large and 1 for small controller)	3 x 24 VDC at 75 mA each 1 x 24 VDC at 75 mA
AUXILIARY POWER OUTPUT FOR 24 VAC/VDC (Pin 48, 49)	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.

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

PRODUCT SPECIFICATIONS

SPDT 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 10 A if all commons are connected via a relay jumper.	
	Motor Load Rating: 120 VAC, 1 HP (10 FLA), 240 VAC, 2 HP (10 FLA), 277 VAC, 3/4 HP (6.9 FLA).	General Purpose Rating: 120 VAC @10 A, 240/277 VAC @10 A.
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).		

SOLID STATE RELAY

SPECIFICATION
SSR works with maximum 24 VAC / VDC.
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.

WIRE GAUGE

PARAMETER	SPECIFICATION
POWER INPUT	12-14 AWG
SSR OUTPUT AND SRIN	22-18 AWG
RELAY	18-14 AWG
IP T1L	18 - 23 AWG, Twisted Pair, Shielded Al-Foil and Cubraid tinned

UNIVERSAL IO

PARAMETER	SPECIFICATION
AI	16-bit universal inputs accept 10 k thermistor (type II and III), 3k thermistor, 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 5 ms ON / 5 ms OFF. Sensors: 10K Ohm NTC Type II, 10K Ohm NTC Type III, PT1000, 100 Ohm to 100K Ohm resistive (custom characteristic).
BI	- Dry contact binary input. - Pulse input with maximum frequency 100 Hz, minimum pulse width 5 ms.
AO	- Voltage output with 0-10 VDC - Current output with 4-20 mA 16-bit analog output
DO	0...11 VDC at 20 mA binary output with direct/reverse.
NOTE: Some 4-20 mA input sensors may need an external resistor to function properly. Please refer to the sensor's documentation.	

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

IP T1L COMMUNICATION

PARAMETER	SPECIFICATION
10BASE-T1L STANDARD	802.3cg-2019
CONNECTION	Screw terminal, auto MDI-X
CABLE TYPE	18-23 AWG, Twisted Pair, Shielded AI-Foil and Cubraid tinned
DISTANCE	Maximum distance between controllers support upto 3281 ft. (1000 m) based on cables characteristics. For more details about cable type and characteristics refer to the T1L Network Specification Guide.
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
IP CAT5/6 and IP T1L Unitary models as BACnet® Advanced Application Controller (B-AAC); (BTL certification is pending)



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