

OPTIMIZER UNITARY CONTROLLER

Honeywell 24 VAC/VDC 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, BACnet™ T1L, or BACnet™ MS/TP as their backbone communication protocol and Sylk™, Modbus RTU as embedded integration protocols, flexible universal input/output (UIOs), power relays, and solid-state relays (SSRs).

They offer performance-based engineering with Niagara 4 and enable Single-Tool-Engineering throughout the whole Building Management System with cost-effective installation.

The integrated Bluetooth® Low Energy (BLE) capability enables an easy pairing with mobile apps.



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

FEATURES AND HIGHLIGHTS

SIMPLE AND FLEXIBLE ENGINEERING

- UIOs configurable as analog input, binary input, binary output and analog output.
- High inrush current relays.
- Solid-state relays with increased current support compared to standard Triac outputs.
- Sylk™ two-wire polarity insensitive interface connects to Honeywell Sylk™ wall modules without hardware I/O.
- Modbus RTU for integration.
- Daisy chain ethernet connection ensures reliable data speed over greater distance.
- Engineering tools including function block library and sample application templates ensuring a consistent experience from the room, plant controllers, and supervisor.

EFFICIENCY AND SAFETY ON SITE

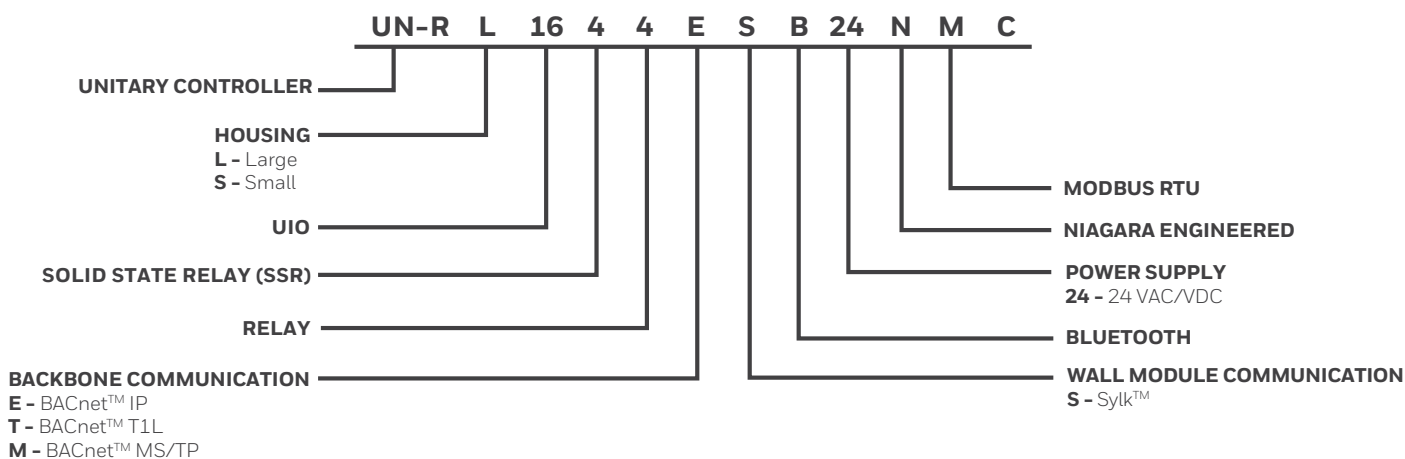
- Easy to install into fuse box (DIN43880) or on DIN rail, surface mount.
- Optional terminal covers for protection.
- Color-coded, removable terminal blocks to simplify wiring and replacement.
- Live debugging and fast differential download for application changes to limit downtime to a minimum.
- Power failure detection and data recovery.
- Easy pairing with mobile apps via integrated Bluetooth® Low Energy (BLE) independent of local IT infrastructure and without needing to open the ceiling for recalibration.

EASY UPGRADE TO IP

- RJ45 and twisted pair T1L available as IP communication standards.
- Increased network speeds compared to traditional building automation systems.
- Support of standard BMS and IT protocols, such as BACnet™, offering an open system for interconnectivity.
- Possibility to reuse installed wiring as T1L uses two-core twisted pair cables with screw terminals.
- Honeywell T1L devices support daisy chains with distances between devices of up to 984 ft. (300 m), way above the 328 ft. (100 m) limit of standard RJ45 ethernet and allowing greater wiring lengths.

Honeywell

CONTROLLER PART NUMBERS DESCRIPTION



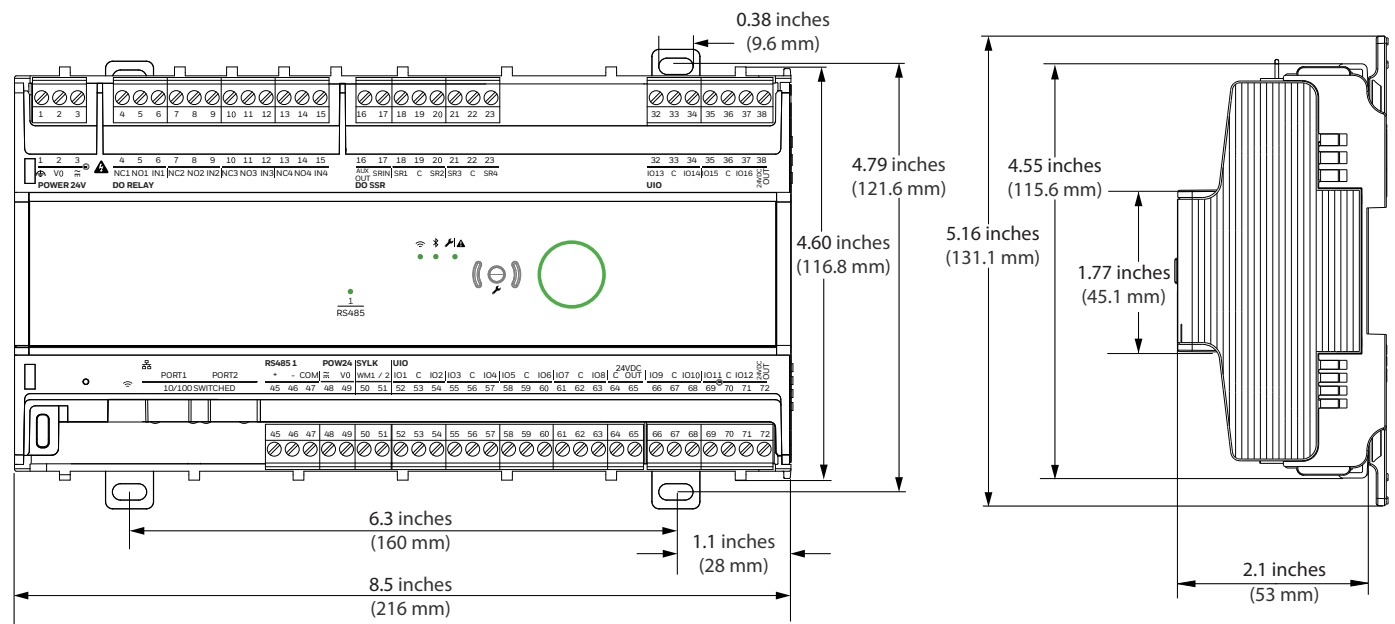
PART NUMBERS

UNITARY CONTROLLER PART NUMBERS							
PART NUMBER	HOUSING	UNIVERSAL IO	SOLID STATE RELAY (SSR)	RELAY	COMMUNICATION	SYLK™ BUS	BLUETOOTH
UN-RS0844ES24NMC	Small	8	4	4	BACnet™ IP	Yes	No
UN-RS0844ESB24NMC	Small	8	4	4	BACnet™ IP	Yes	Yes
UN-RS0844MS24NMC	Small	8	4	4	BACnet™ MS/TP	Yes	No
UN-RS0844MSB24NMC	Small	8	4	4	BACnet™ MS/TP	Yes	Yes
UN-RS0844TS24NMC	Small	8	4	4	BACnet™ T1L	Yes	No
UN-RS0844TSB24NMC	Small	8	4	4	BACnet™ T1L	Yes	Yes
UN-RL1644ES24NMC	Large	16	4	4	BACnet™ IP	Yes	No
UN-RL1644ESB24NMC	Large	16	4	4	BACnet™ IP	Yes	Yes
UN-RL1644MS24NMC	Large	16	4	4	BACnet™ MS/TP	Yes	No
UN-RL1644MSB24NMC	Large	16	4	4	BACnet™ MS/TP	Yes	Yes
UN-RL1644TS24NMC	Large	16	4	4	BACnet™ T1L	Yes	No
UN-RL1644TSB24NMC	Large	16	4	4	BACnet™ T1L	Yes	Yes

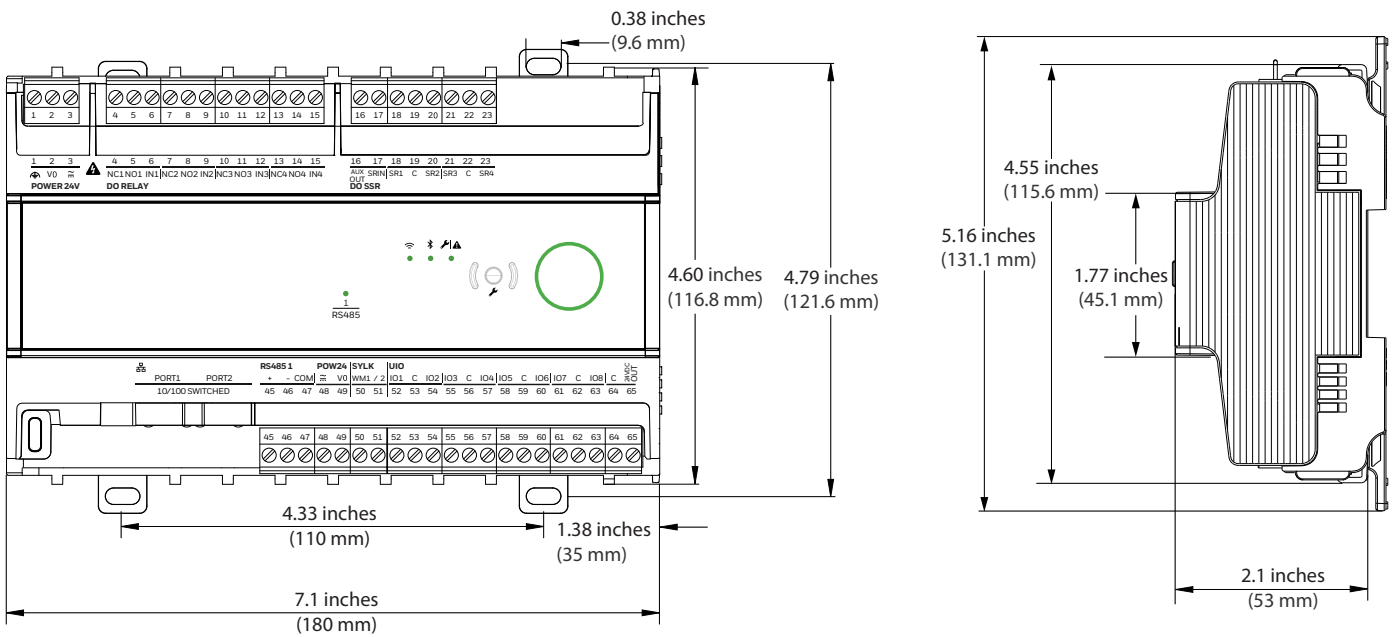
ACCESSORIES/REPLACEMENT PARTS	
PARAMETER	SPECIFICATION
CW-Cov-L-Unitary	Terminal cover for the L-version of the unitary controller (sold in pack of 10)
CW-Cov-S-Unitary	Terminal cover for the S-version of the unitary controller (sold in pack of 10)
10BASE-T1L-ADAPT	IP-T1L single pair media adapter that allows converting 10BASE-T traffic to 10BASE-T1L (with power supply)
10BASE-T1L-ADAPT-0	IP-T1L single pair media adapter that allows converting 10BASE-T traffic to 10BASE-T1L (without power supply)
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)

DIMENSIONS AND WEIGHTS

LARGE HOUSING



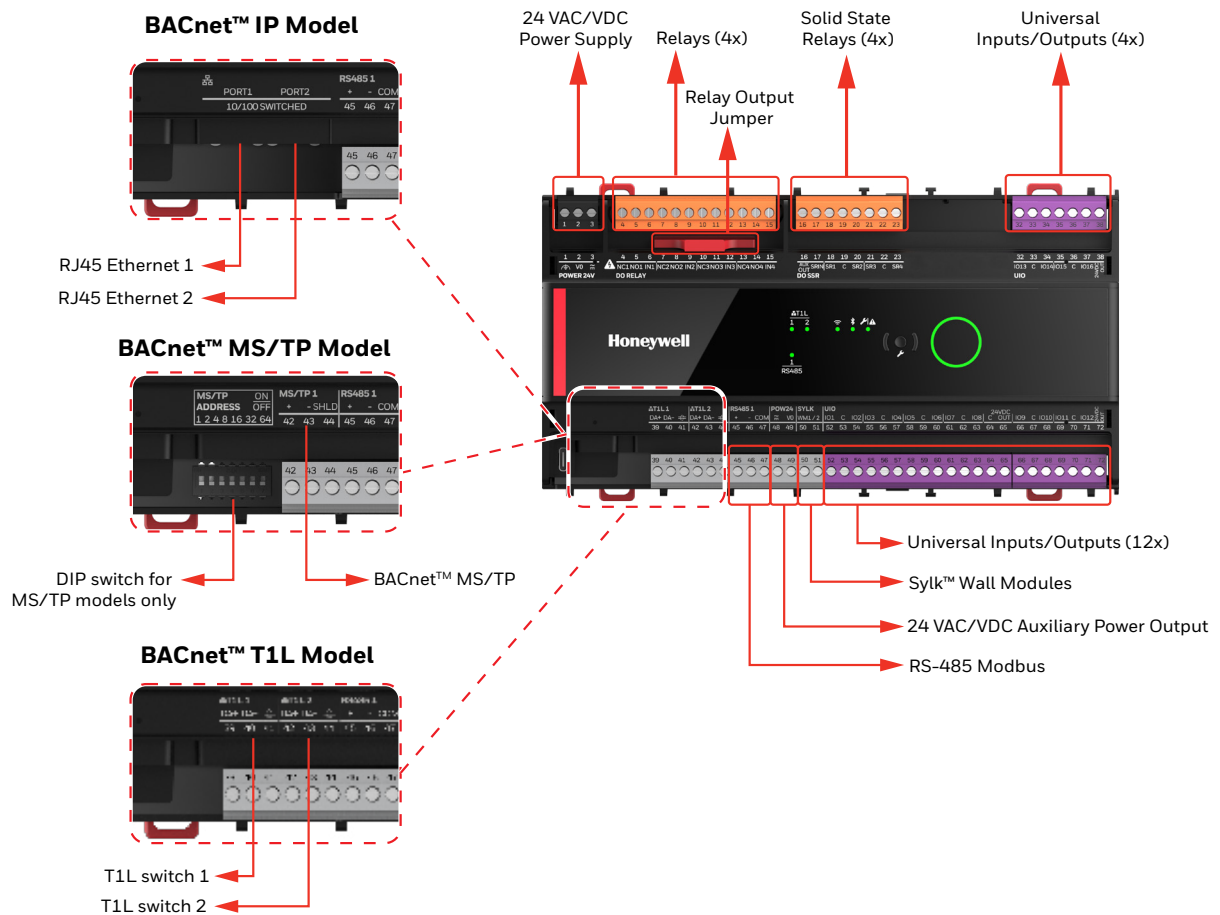
SMALL HOUSING



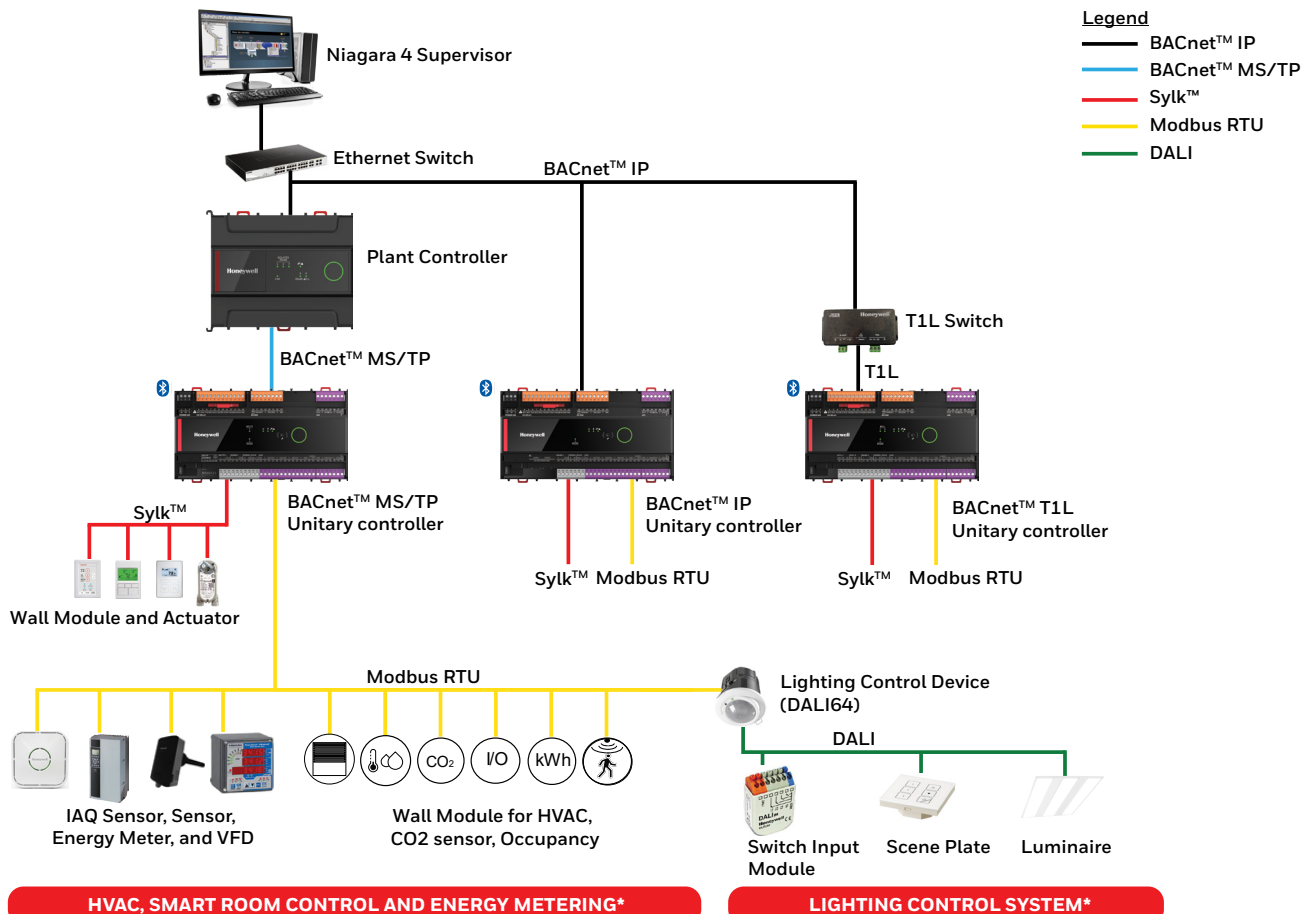
All dimensions are in inches (mm).

WEIGHT AND DIMENSIONS	
PARAMETER	SPECIFICATION
Dimension (L x W x H)	Large - 8.5 x 4.79 x 2.1 inches (216 x 121.6 x 53 mm) Small - 7.1 x 4.79 x 2.1 inches (180 x 121.6 x 53 mm)
Weight	Large - 1.256 lbs. (570 g) Small - 1.064 lbs. (483 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 devices in your region.

PRODUCT SPECIFICATION

HARDWARE

PARAMETER	SPECIFICATION
CPU	Crossover processor NXP I.MRT, Cortex M7
Memory capacity	16 MB QSPI Flash, 16 MB SDRAM
Ethernet	BACnet™ IP: 2 x RJ-45 Ethernet ports 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 a BACnet™ Time Sync.
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 : 8 VA - BACnet™ MS/TP : 8 VA - BACnet™ T1L : 8 VA	
Full Load Power Consumption (Maximum load including external devices, Sylk™, 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 : 30 VA - BACnet™ MS/TP : 30 VA - BACnet™ T1L : 30 VA	
Frequency Range	50 - 60 Hz	
Auxiliary Power Output	Large	1 x 24 VAC/VDC at 300 mA 3 x 24 VAC/VDC at 75 mA
	Small	1 x 24 VAC/VDC at 300 mA 1 x 24 VAC/VDC at 75 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*

Sylk™ wall modules	TR42, TR42-H, TR42-CO2, TR42-H-CO2, TR71, TR71-H, TR75, TR75-H, TR75-HE, TR120 (TR75-E), and TR120-H (emulation mode only).
Sylk™ Sensor	TR40, TR40-H, TR40-CO2, TR40-H-CO2, TR50, C7400S
Sylk™ Actuators	MS3103, MS3105, MS3110, and MS3120
Non Sylk™ Actuators	MS4103, MS4105, MS7403, MS7405, MS7503, MS7505, MS8103, and MS8105
Hardwired wall modules	TR21, TR22, TR23, TR24, T7460 A, B, C, D, E, F and T7770 A, B, C, D, E, F, G
Modbus devices	Modbus RTU devices from any manufacturer (including Honeywell Modbus devices, for example DALI64MODPSUF/S, TR50, and TR80) can be used.

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SOLID STATE RELAY (SSR)

SSR works with maximum 24 VAC / VDC.
1.5 A constant; 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, OAGC005.V, OAGW005.VP or BK/AGW-5, and the fuse holder, for example, 150603 or BK/HRK-R.
Type 1

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 RANGE

PARAMETER	SPECIFICATION
SSR output and SRIN	22-18 AWG
Relay	18-14 AWG

PRODUCT SPECIFICATION

RELAYS	
PARAMETER	SPECIFICATION
Contact Rating	Up to 277 VAC / 230 VAC (+20 %).
	3 contacts per relay (normally open (NO), normally closed (NC), common (IN)).
	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.
Output	240/277 VAC, 50/60 Hz, or 24 VDC, 12 A Max. total common (10 A Max. per Relay)
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	

UNIVERSAL IO*	
PARAMETER	SPECIFICATION
AI	16-bit A/D resolution 0(2)...10 VDC direct/reverse or 0(4)...20 mA input. - Sensors: 10K Ohm NTC Type II, 10K Ohm NTC Type III, 10K3A1, 20K Ohm NTC, PT100, PT1000, NI1000TK5000, NI1000 Class B DIN43760, PT3000, 100 Ohm to 100K Ohm resistive (custom characteristic). - Hardwired wall modules: space temperature, space temperature setpoint, fan speed override, occupancy mode override.
BI	- Dry contact binary input with direct/reverse. - Pulse input with maximum frequency 100 Hz, minimum pulse width 5 ms. Compatible with the S0 interface for pulse counters.
AO	- Voltage output with 0(2)...11 VDC direct/reverse with -3 mA ...+20 mA. - Current output with 0(4)...20 mA direct/reverse. - Hardwired wall modules: LED Control.
DO	0...10 VDC at 20 mA binary output with direct/reverse.

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

COMMUNICATION	
PARAMETER	SPECIFICATION
Protocol supported	- BACnet™ IP (RJ45, T1L) - BACnet™ MS/TP* - Modbus RTU (Modbus client) - Bluetooth (Optional)
IP Addressing Modes	- Dynamic: DHCP and Link-local - Static: Assigned
Sylk™	2-wire, polarity-insensitive
*Auto Baud rate detection is provided only for the BACnet™ MS/TP controllers.	

STANDARDS AND APPROVALS	
CE mark	
BACnet™ BTL®-Listed; IP, T1L and MS/TP Unitary models as BACnet™ Advanced Application Controller (B-AAC).	
UL 916	
UL/ULC 60730-1	
FCC/IC Product Class B	
Plenum tested (according to UL 2043)	

T1L COMMUNICATION	
PARAMETER	SPECIFICATION
10BASE-T1L Standard	802.3cg-2019
Connection	Screw terminal, auto MDI-X
Cable type	Single twisted pair, 18AWG, 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

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