HONEYWELL OPTIMIZER VAV CONTROLLER

The Honeywell Optimizer VAV controller is a programmable room controller with an integrated actuator and airflow sensor for VAV application.

These VAV controllers are fully programmable with universal inputs and outputs, providing configuration flexibility to achieve a variety of specific applications. Smart engineering and commissioning tools with Honeywell Optimizer Workbench and the Honeywell Connect Mobile application for test and balance make installation cost-effective.

This controller offers BACnet® IP, BACnet® IP (T1L) or BACnet® MS/TP, Sylk™ bus technology, Modbus RTU RS-485, flexible universal input/output (UIO) points, and solid-state relays (SSR).



Honeywell Optimizer VAV Controller

FEATURES AND HIGHLIGHTS

COMMUNICATION

- Supports BACnet® IP, BACnet® IP (T1L) or BACnet® MS/TP bus for communication.
- BACnet® IP, BACnet® IP (T1L), BACnet®MS/TP VAV: B-AAC profile
- BACnet® IP and BACnet® IP (T1L) enable faster download, thereby reducing commissioning time, and increased data bandwidth for increased data sharing compared to traditional BACnet® MS/TP communication.
- BACnet® IP and BACnet® IP (T1L) models supports:
  - IPv4 addressing
  - DHCP and Link Local addressing modes
  - Connection speed: 10/100 Mbps (BACnet® IP) and 10 Mbps (BACnet® IP (T1L).
  - MDI T1L ports support polarity detection and correction.
- Modbus RTU RS-485 for integration purposes.
- BACnet® MS/TP Auto baud rate functionality.
- Automatic addressing functionality.
- Sylk™ bus two-wire polarity-insensitive interface connects to Honeywell Sylk™ wall modules without using physical I/O points.
- Integrated BLE (Bluetooth®).
- Controller migration is supported between BACnet® IP and BACnet® IP (T1L) VAV in select models.

ALL-IN-ONE

- Freely programmable in Honeywell Optimizer Workbench.
- Compact design for small enclosures and easy to install on round and square ducts.
- Color-coded, removable terminal blocks to simplify wiring and replacement.
- Real-time clock, a supercapacitor for 24 hours data retention.
- 24 VAC power supply.
- 20 VDC at 75 mA auxiliary supply for field devices.
- 7 universal inputs/outputs usable as analog voltage/current output or as a universal/binary input.
- All UI can be used for pulse input. Maximum frequency 100 Hz, Minimum duty cycle (50 % / 50 %) 5 ms ON / 5 ms OFF.
- RJ45 and twisted pair T1L available as IP Ethernet communication standards.
- Possibility to reuse installed wiring as IP (T1L) uses two-core twisted pair cables with screw terminals.
- Supports fail-safe daisy chains (IP T1L only) 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.
- Five 24 VAC solid state relay outputs with 1.5 A continuous and 3.5 A in-rush for 0.1 seconds (100 ms) per SSR output.
- Features a non-isolated RS-485 interface for Modbus RTU communication. Maximum eight Modbus devices.
- Maximum 155 read or write data points for all the Modbus devices per controller.
- Maximum six high-priority registers per controller.

ACTUATOR

- Integrated 44 in-lbs. (5 Nm) actuator with 90 sec runtime at 60 Hz (108 sec at 50 Hz) with analog position feedback.

PRESSURE SENSOR

- Field replaceable differential pressure sensor (± 500 Pa; span accuracy 3 % of reading).

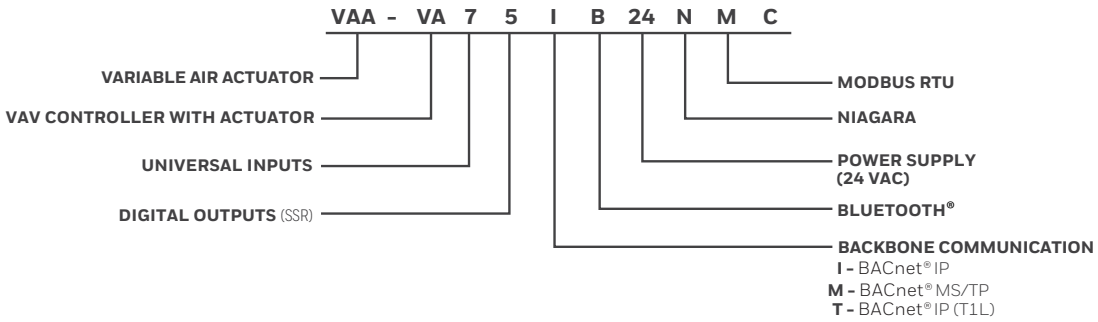
MOBILE APPLICATION

Free to use mobile app for VAV balancing with easy access to the controller via Bluetooth integrated in the controller.

- Easy pairing without the need to open the ceiling.
- Supports Android and iOS.
- Language support: English, French, Spanish, German, Italian.
- Wireless signal strength indication.
- Password protection
- Supports different types of balancing (min/max, set point).
- Command individual/group of VAVs, e.g., open a group of VAV dampers.
- Provides a report on balancing activities.

Honeywell

CONTROLLER PART NUMBERS DESCRIPTION



PART NUMBERS

VAV CONTROLLER PART NUMBERS

PART NUMBER	UNIVERSAL IO	SOLID STATE RELAY (SSR)	TOTAL IO	COMMUNICATION	BLUETOOTH®
VAA-VA75IB24NMC	7	5	12	BACnet® IP	Yes
VAA-VA75I24NMC	7	5	12	BACnet® IP	No
VAA-VA00IB24NMC	0	0	0	BACnet® IP	Yes
VAA-VA75TB24NMC	7	5	12	BACnet® IP (T1L)	Yes
VAA-VA75T24NMC	7	5	12	BACnet® IP (T1L)	No
VAA-VA00TB24NMC	0	0	0	BACnet® IP (T1L)	Yes
VAA-VA75MB24NMC	7	5	12	BACnet® MS/TP	Yes
VAA-VA75M24NMC	7	5	12	BACnet® MS/TP	No
VAA-VA00MB24NMC	0	0	0	BACnet® MS/TP	Yes

ACCESSORIES AND REPLACEMENT PARTS

PART NUMBER	DESCRIPTION
SDPPF500PA	Airflow sensor replacement (Sold in pack of 2).
ANT-REM	Use the remote antenna if the antenna mounted on the controller does not provide reliable communication due to environmental conditions. (Sold in a pack of 4 antennas).
10BASE-T1L-ADAPT-0	IP (T1L) single pair media adapter that allows converting 10BASE-T traffic to 10BASE-T1L without including power supply.

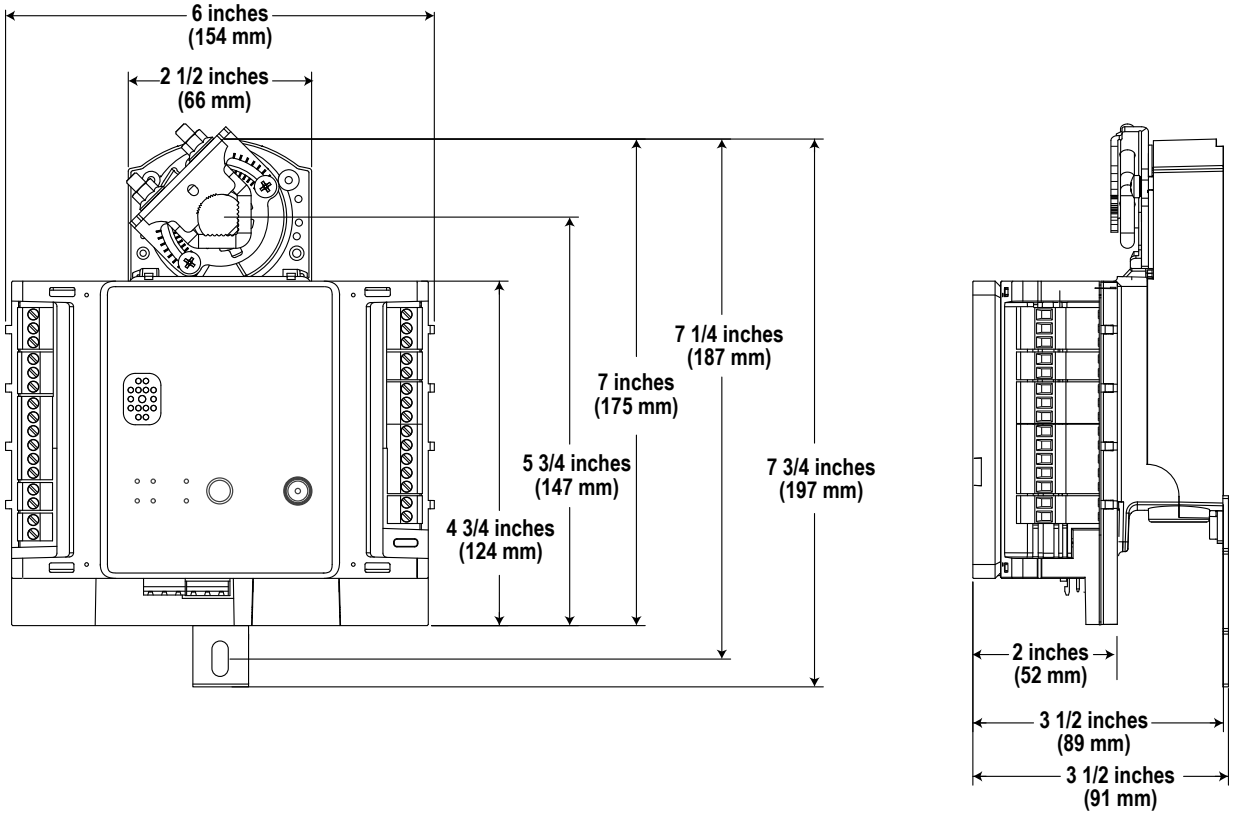
MOBILE APP

Available on the App Store

GET IT ON Google Play

Honeywell Connect Mobile (HCM) app for the VAV balancing can be downloaded from the Google Play Store and Apple App Store. It provides easy access to the Honeywell Optimizer VAV controller via integrated Bluetooth.

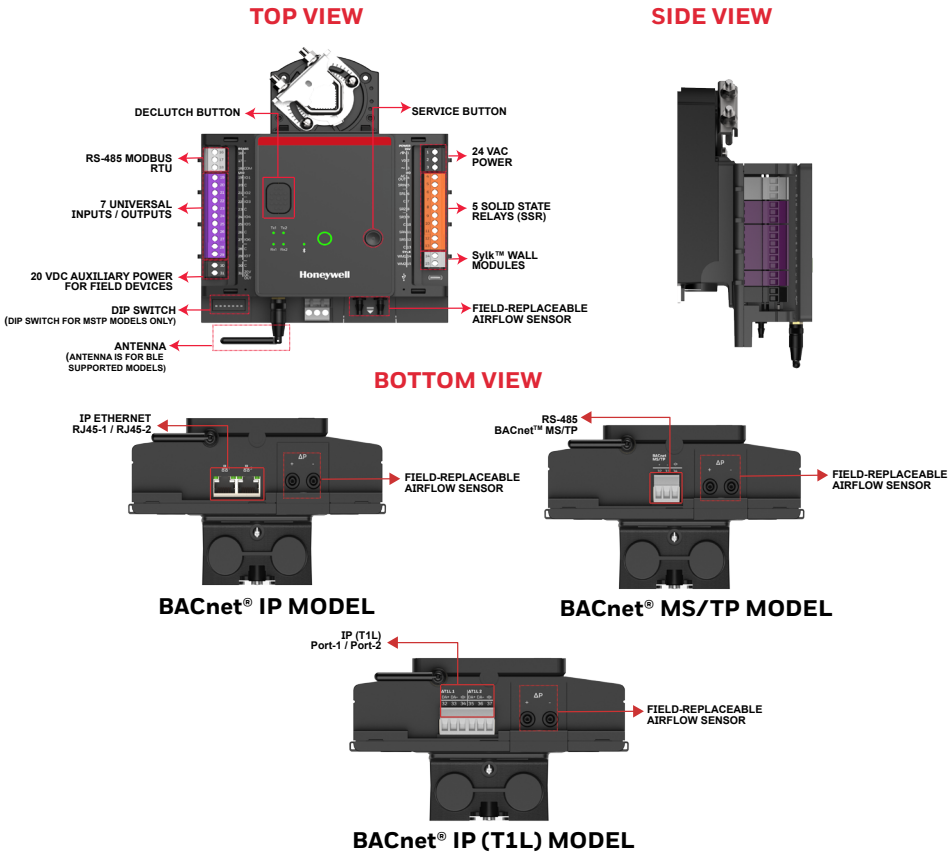
DIMENSIONS AND WEIGHTS



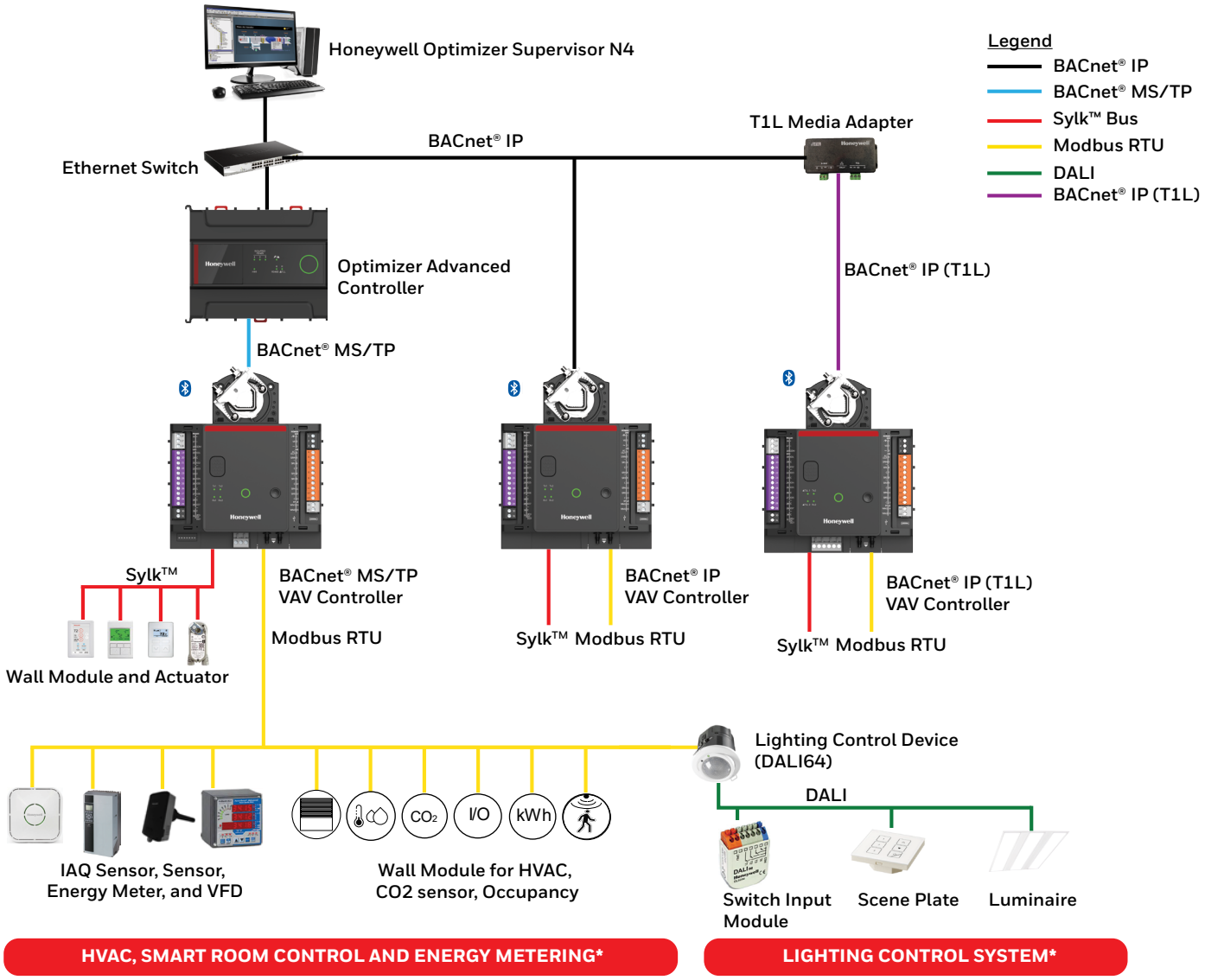
All dimensions are in inches (mm).

WEIGHT AND DIMENSIONS	
PARAMETER	**SPECIFICATION**
Dimension (L x W x H)	3 1/2 x 6 x 7 3/4 inches (89 x 154 x 197 mm)
Weight	3.3 lbs. (1.5 kg)
Mounting	Fixation with bracket and shaft

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	16MB QSPI Flash, 16MB SDRAM
BACnet® IP[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.
BACnet® 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. The controller includes a supercapacitor to power the built-in real time clock for 24-Hours. In case of power failure, the super capacitor retains the time set in controller for 24-Hours. After 24-Hours, the time will reset to default factory time until user perform BACnet® Time Sync.
Small LED	Transmission or Reception for both Modbus and BACnet® of communication Signal (green).
Ring LED	Controller status such as normal operation, firmware download, broken sensor, e.g. green, yellow or red.
Note: [1)] applicable for IP models only. [2)] applicable for IP T1L models only.	

ELECTRICAL	
PARAMETER	**SPECIFICATION**
Rated Input Voltage	20 - 30 VAC; class 2 transformer
Nominal Power Consumption	
BACnet® IP (CAT5/6):	14.53 VA with actuator at nominal load and 20 V output (no Analog Outputs or SSRs being used).
BACnet® MS/TP:	15.33 VA; controller and actuator load (nothing connected to IO and COM).
BACnet® IP (T1L) :	8 VA (For VAA-VA75T24NM, VAA-VA75TB24NM) 6.5 VA (For VAA-VA00TB24NM)
Maximum Power Consumption	
BACnet® IP (CAT5/6):	30 VA; maximum load including external loads, Sylk™, communication, BLE, universal IO, and 20 VDC output (excluding the load on the solid-state relays).
BACnet® MS/TP:	22 VA; maximum load including external loads, Sylk™, communication, BLE, universal IO output, and 20 VDC output (excluding the load on the solid-state relays).
BACnet® IP (T1L):	25 VA (For VAA-VA75T24NM, VAA-VA75TB24NM) 14 VA (For VAA-VA00TB24NM)
Frequency Range	50/60 Hz
Internal Power Supply	Half-wave rectifier

IMPORTANT NOTE: This device is UL listed and limited to 100 VA maximum. Binary output loads are restricted by this maximum VA rating. If all 5 SSR binary outputs are connected and fully loaded (@24 VA each) the total VA of the device will exceed the UL listed and limited maximum rating. DO NOT EXCEED 100 VA MAXIMUM RATING!

SYLK™ SUPPORTED DEVICES*	
Sylk™ wall modules	TR42, TR42-H, TR42-CO2, TR42-H-CO2, TR71, TR71-H, TR75, TR75-H, TR120 (TR75-E), and TR100 (TR75/TR42 emulation mode only), and TR120-H (TR75-HE emulation mode only).
Sylk™ sensor	TR40, TR40-H, TR40-CO2, TR40-H-CO2, TR50 (emulation mode only), and C7400S sensor
Sylk™ actuator	MS3103, MS3105, MS3110 (5 Nm), and MS3120 (10 Nm)
Non Sylk™ actuators	MS4103, MS4105, MS7403, MS7405, MS7503, MS7505, MS8103, MS8105

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

INTEGRATED ACTUATOR	
PARAMETER	**SPECIFICATION**
Torque	44 in-lbs. (5 Nm)
Run Time	• Floating 108 sec at 50 Hz • Floating 90 sec at 60 Hz
Mounting Shaft	• Round 5/16 – 5/8 inches (8-16 mm) • Square 15/64 – 33/64 inches (6-13 mm)
Shaft Length	≥ 1 5/8 inches (41 mm)
Position feedback via integrated potentiometer	

PRODUCT SPECIFICATION

SOLID STATE RELAY (SSR)

SSR switches supply voltage and works with VAC and VDC. VDC switching does not support synchronous motor.

- 1.5 A constant; 3.5 A inrush for 0.1 sec per SSR output.
- Optional jumper between 24 VAC supply and SSR input shared by all SSRs.

UNIVERSAL IO (CONFIGURABLE AS ANALOG OUTPUT OR UNIVERSAL INPUT)

PARAMETER	SPECIFICATION
AO	0(2) to 10 VDC direct/reverse with -3 mA to 20 mA or current output with 0(4) to 20 mA.
UI	• 0(2) to 10 VDC direct/reverse or 0(4) to 20 mA input. • Sensors: 10 K Ohm NTC Type II, 10K-3 NTC, 10K3A1, 20 K ohm NTC, PT100, PT1000, NI1000TK5000, NI1000 Class B DIN43760, PT3000, 100 Ohm to 100 k Ohm resistive (custom characteristic). • Hardwired wall modules: set point, fan speed, override. • Dry contact binary input with direct/reverse. • All UI can be used for pulse input. Maximum frequency 100 Hz, Minimum duty cycle (50 % / 50 %) 5 ms ON / 5 ms OFF.

The Honeywell Optimizer VAV Controller has a single common terminal for every two Universal IOs, which protects them against 24 VAC mis-wiring and short circuits.

COMMUNICATION

PARAMETER	SPECIFICATION
Protocol supported	BACnet® IP, BACnet® IP (T1L) and BACnet® MS/TP, Sylk™, Modbus RTU (Modbus client only), and BLE
Ethernet Connection Speed	BACnet® IP: 10/100 Mbps BACnet® IP (T1L): 10 Mbps
Internet Protocol version	IPv4
IP Addressing Modes	• Dynamic : DHCP and Link Local • Static
Sylk™ Bus	2-wire, polarity-insensitive
Bluetooth	BLE, optional external antenna

DIFFERENTIAL PRESSURE SENSOR

PARAMETER	SPECIFICATION
Range	±2.0 inches WC (±500 Pa), bi-directional
Span accuracy	±3 % of reading
Field replaceable differential pressure sensor.	

STANDARDS AND APPROVALS

SPECIFICATION
CE
IP, IP (T1L) and MS/TP VAV models as BACnet® Advanced Application Controller (B-AAC).
UL916, Energy Management Equipment
FCC Part 15, Class A
EN 55022. Class A
EN 61000-3-2, 61000
Plenum Tested (according to UL2043)

OPERATIONAL ENVIRONMENT

PARAMETER	SPECIFICATION
Storage Temperature	-40 °F to 150 °F (-40 °C to 66 °C)
Operating Temperature	32 °F to 122 °F (0 °C to 50 °C)
Humidity	5 % to 95 % RH., non-condensing
Protection	IP20, NEMA 1
Pollution degree	2

IP (T1L) COMMUNICATION

PARAMETER	SPECIFICATION
10BASE-T1L Standard	802.3cg-2019
Connection	Screw terminal, auto MDI-X T1L polarity detection and correction.
Cable type	Single twisted pair balanced, 18AWG, shielded or unshielded. An Ethernet CAT 5/6 UTP cable can be supported, use only 1 twisted pair form the 4 pairs. Belden 74040NH, 9841NH or equivalent. 18 AWG, 1 twisted pair (2 conductors, solid or stranded together), Nominal Voltage/Voltage Rating: 300 V, Characteristic Impedance: 100 Ohm ± 20 %, Max. conductor resistance: 6.7 Ohms per 1000 ft ± 10 % (22 Ohms/km ± 10 %), Max. Capacitance core-to-core: 12-18 pF/ft + 5 % (40-60 nF/km + 5 %.
Distance	Maximum distance support upto 3281 ft. (1000 m) based on cables characteristics.
Transmission rate	10 Mbps

CONFORMANCE STATEMENT

FCC NOTICE:

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation.

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