

COMFORTPOINT™ OPEN VAV CONTROLLER

The ComfortPoint® Open VAV controllers with integrated actuator and air flow sensor are a part of the Honeywell ComfortPoint™ Open family.

They offer performance-based engineering using either the CPO-Studio tool suite, or Niagara workbench throughout the whole Building Management System with cost-effective installation.

These controllers offer BACnet® IP, BACnet® IP (T1L) or BACnet® MS/TP, Sylk™, Modbus RTU RS-485, flexible universal input/output (UIO) points, and solid-state relays (SSR).

FEATURES AND HIGHLIGHTS

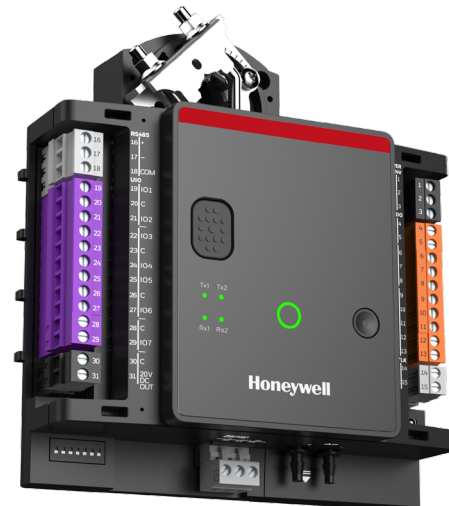
COMMUNICATION

- Supports BACnet® IP, BACnet® IP (T1L) or BACnet® MS/TP bus for communication.
- BACnet® IP, BACnet® IP (T1L) or BACnet® MS/TP VAV models: B-AAC profile.
- BACnet® IP enables faster download, thereby reducing commissioning time, and increased data bandwidth for increased data sharing compared to traditional.
- BACnet® MS/TP communication.
- BACnet® IP models supports:
 - IPv4 addressing
 - DHCP and Link Local addressing modes
 - Connection speed: 10/100 Mbps
- Modbus RTU for integration purposes.
- BACnet® MS/TP Auto baud rate 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 Comfortpoint Open Studio, or Niagara 4 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.
- Accumulator input will be enabled for the BACnet® MS/TP VAV controllers.
- 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 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) 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 communication. Maximum eight Modbus devices.
 - Maximum 155 read or write data



Honeywell CPO-Niagara VAV Controller

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; accuracy $\pm 3\%$ of full range).

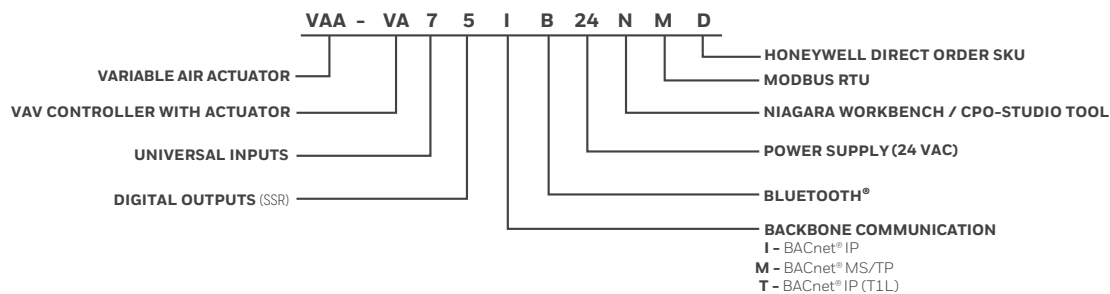
MOBILE APPLICATION

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.

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CONTROLLER PART NUMBERS DESCRIPTION



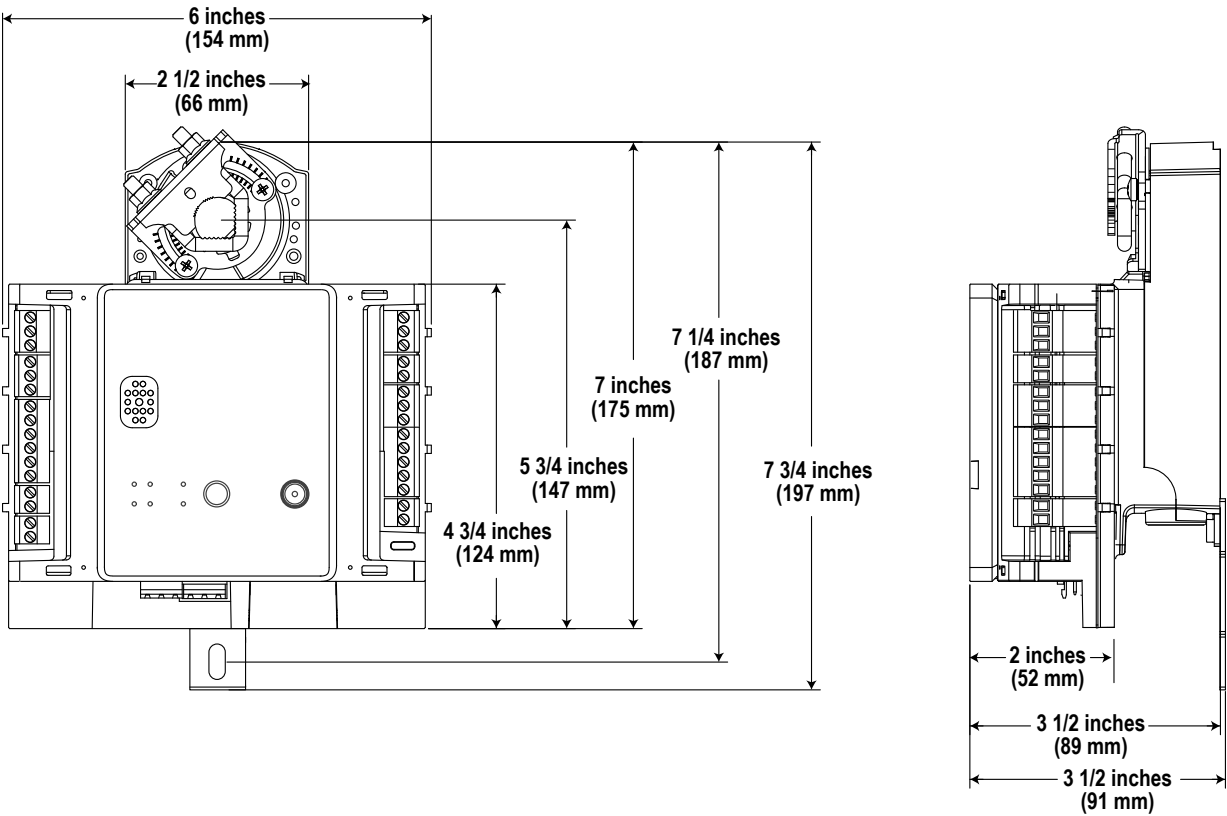
PART NUMBERS

VAV CONTROLLER PART NUMBERS					
PART NUMBER	UNIVERSAL IO	SOLID STATE RELAY (SSR)	TOTAL IO	COMMUNICATION	BLUETOOTH®
VAA-VA75IB24NMD	7	5	12	BACnet® IP	Yes
VAA-VA75I24NMD	7	5	12	BACnet® IP	No
VAA-VA00IB24NMD	0	0	0	BACnet® IP	Yes
VAA-VA75TB24NMD	7	5	12	BACnet® IP (T1L)	Yes
VAA-VA75T24NMD	7	5	12	BACnet® IP (T1L)	No
VAA-VA00TB24NMD	0	0	0	BACnet® IP (T1L)	Yes
VAA-VA75MB24NMD	7	5	12	BACnet® MS/TP	Yes
VAA-VA75M24NMD	7	5	12	BACnet® MS/TP	No
VAA-VA00MB24NMD	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-O	BACnet® IP (T1L) single pair media adapter that allows converting 10BASE-T traffic to 10BASE-T1L without including power supply.
10BASE-T1L-ADAPT	BACnet® IP (T1L) single pair media adapter that allows converting 10BASE-T traffic to 10BASE-T1L including power supply.

MOBILE APP	
  	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 VAV controller via integrated Bluetooth.

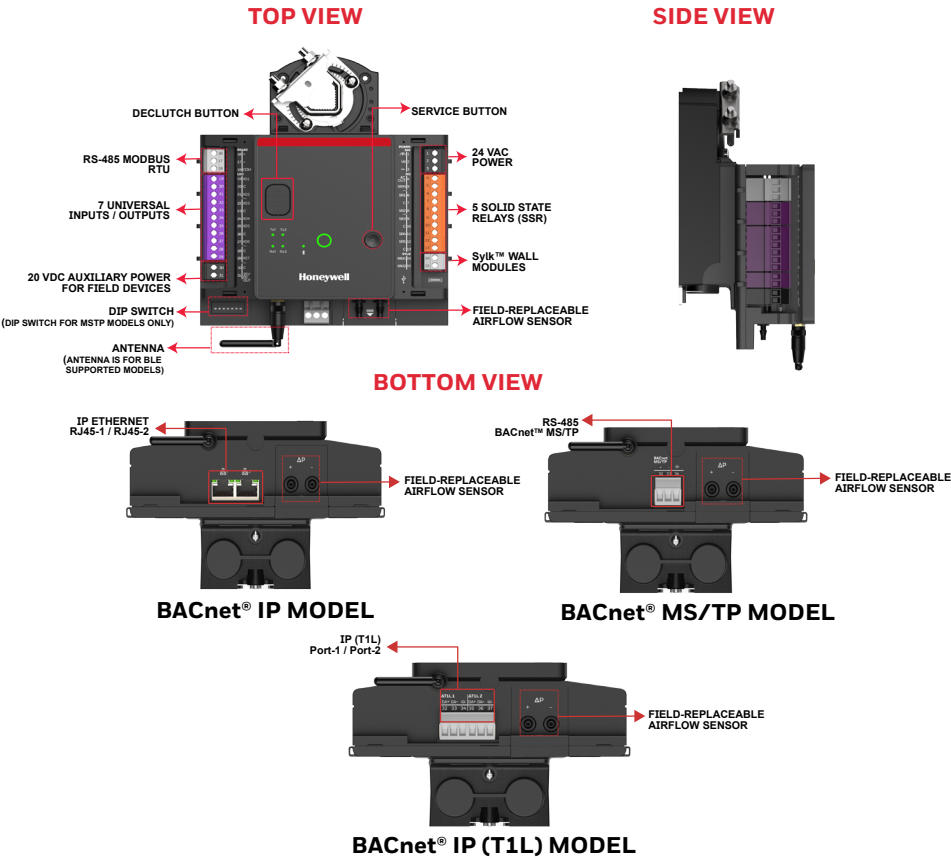
DIMENSIONS AND WEIGHTS



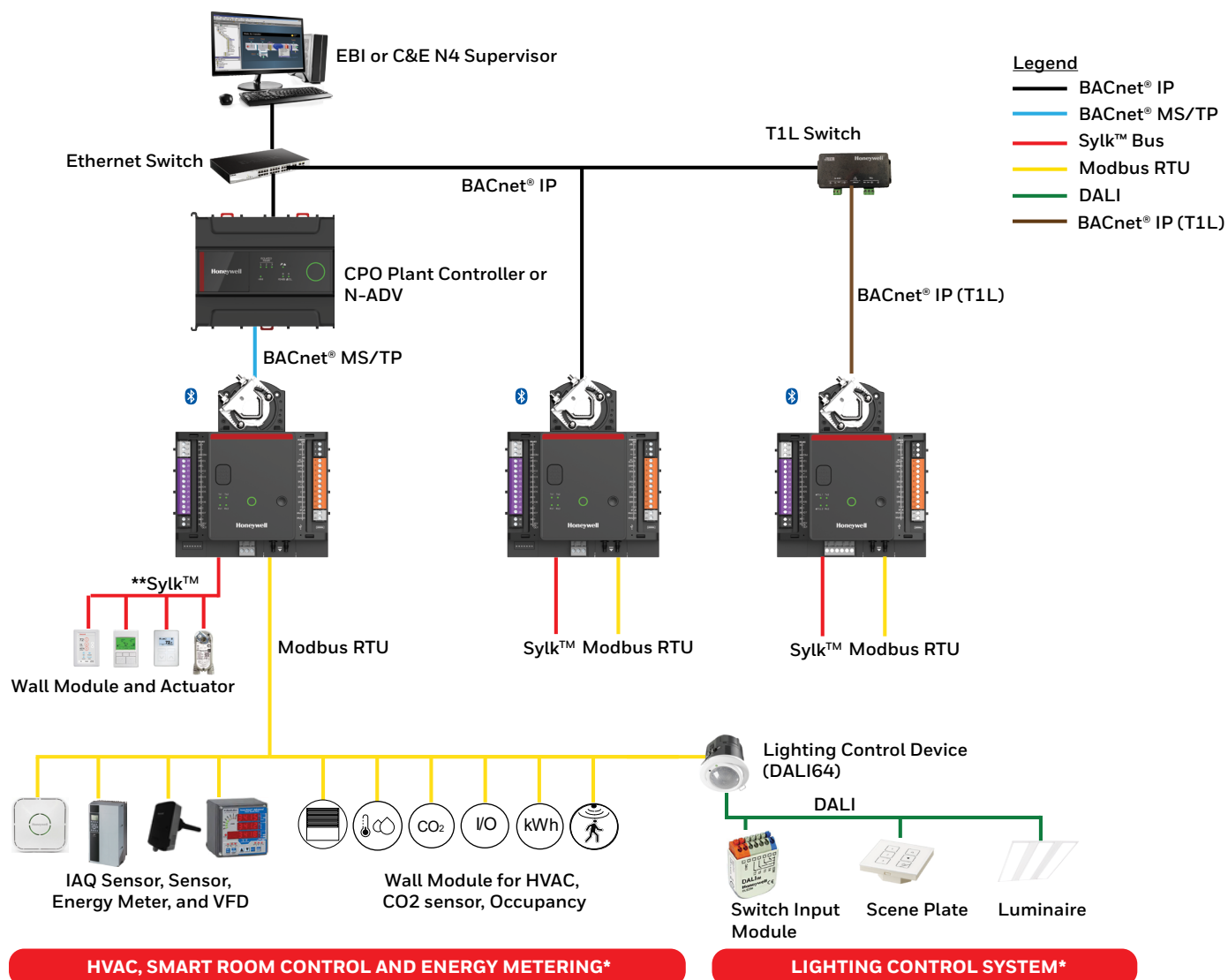
All dimensions are in inches (mm).

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.

** Sylk device support shown may differ between CPO Studio and the Niagara 4 Workbench implementation.

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 variant only. ²⁾ applicable for IP T1L variant only.	

ELECTRICAL

PARAMETER	SPECIFICATION
Voltage Range	20-30 VAC; Class 2 transformer.
Nominal Power Consumption	6.24 VA (For IP CAT5/6, MS/TP); Controller and actuator load (nothing connected to IO's and COM). 8 VA (For IP T1L: VAA-VA75T24NM, VAA-VA75TB24NM) 6.5 VA (For IP T1L: VAA-VA00TB24NM)
Full Load Power Consumption	30 VA (For IP CAT5/6, MS/TP); Maximum load including external loads, Sylk™, communication, BLE, Universal IO output, and 20 VDC output excluding the load on the SSRs. 25 VA (For IP T1L: VAA-VA75T24NM, VAA-VA75TB24NM) 14 VA (For IP T1L: VAA-VA00TB24NM)
Frequency Range	50 to 60 Hz
Auxiliary Output	20 VDC @ 75 mA

SUPPORTED DEVICES

Sylk™ wall modules	TR40, TR40-H, TR40-CO2, TR40-H-CO2, TR42, TR42-H, TR42-CO2, TR42-H-CO2, TR50-3D, TR50-3N, TR50-5D, TR50-5N, TR100-THC-G, TR100-TH-G, TR100-T-G .
Modbus devices	Modbus RTU devices from any manufacturer (including Honeywell Modbus devices, for example, TR50, TR100, TR80 as third party) can be used.

OPERATIONAL ENVIRONMENT

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

INTEGRATED ACTUATOR

PARAMETER	SPECIFICATION
Torque	44 in-lbs (5 Nm)
Run Time	Floating 108 s at 50 Hz; Floating 90 s at 60 Hz
Mounting Shaft	Round 8-16 mm (5/16 – 5/8"); Square 6-13 mm (15/64 – 33/64")
Shaft Length	≥ 1 5/8 in (41 mm)
Position feedback via integrated position potentiometer : - Periodic synchronization not required - Additional diagnostic for example, command to change the actuator position does not provide a corresponding sensor reading - actuator stuck or potentiometer damaged	

SOLID STATE RELAY

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 bridge between 24 VAC supply and SSR input shared by all SSRs.	

PRODUCT SPECIFICATION

UIO (CONFIGURABLE AS ANALOG OUTPUT OR UNIVERSAL INPUT)

PARAMETER	SPECIFICATION
AO	0-10 V direct/reverse, and current output with 4-20 mA - Floating and PWM Actuator
UI	0-10 V direct/reverse, and 4-20 mA input, Setpoint Absolute, Setpoint Relative and Bypass Fan. - Sensors: NTC20k, PT1000, NI1000TK5000 - Dry contact binary input with direct/reverse
BO	Dry contact binary output with direct/reverse

Note: Common terminal shared by 2 UIO, protected against 24 VAC mis-wiring and short circuit

COMMUNICATION

PARAMETER	SPECIFICATION
Protocol supported	BACnet® IP, BACnet® IP (T1L), BACnet® MS/TP, Sylk™, Modbus RTU (Modbus Master only) and BLE
Ethernet Connection Speed	BACnet® IP: 10/100 Mbps BACnet® IP (T1L): 10 Mbps
Internet Protocol version	IPv4
IP Addressing Modes	1. Dynamic : DHCP and LinkLocal 2. Static
Sylk™ Bus	2-wire, polarity-insensitive
Bluetooth	BLE, optional external antenna

IP (T1L) COMMUNICATION

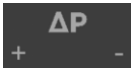
PARAMETER	SPECIFICATION
10BASE-T1L Standard	802.3cg-2019
Connection	Screw terminal, auto MDI-X
Cable type	Single twisted pair, 18AWG, shielded or unshielded. Belden 74040NH, 9841NH or equivalent.
Distance	Maximum distance supports upto 3281 ft. (1000 m) based on cables characteristics..
Transmission rate	10 Mbps

STANDARDS AND COMPLIANCE

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

CONTROLLER TERMINALS

LEGEND	PRINTING	DESCRIPTION
POWER		
1		Earth Ground (Connected to power earth ground)
2	V0	Ground
3	~	Power supply voltage (Connected to 24 VAC~)
4	AC OUT	24 VAC~ output
5	SRIN	SSR POWER input (Connected to terminal 4 (AC OUT) by a jumper wire)
SSR		
6	SR1	SSR1 output (if SSR1 is ON, this pin should be connected to 24 VAC~)
7	C	Ground
8	SR2	SSR2 output (if SSR2 is ON, this pin should be connected to 24 VAC~)
9	SR3	SSR3 output (if SSR3 is ON, this pin should be connected to 24 VAC~)
10	C	Ground
11	SR4	SSR4 output (if SSR4 is ON, this pin should be connected to 24 VAC~)
12	SR5	SSR5 output (if SSR5 is ON, this pin should be connected to 24 VAC~)
13	C	Ground

SYLK™		
14	WM1	Removable interface for Syk™ bus
15	WM2	Removable interface for Syk™ bus
RS485 MODBUS RTU		
16	+	Signal for 485 bus +
17	-	Signal for 485 bus -
18	COM	Ground
UIO		
19	IO1	Universal signal input/output 4 (Input = Binary input dry contact (Polarity = Normal/reverse) can be configured <"4-20 mA" "0-10 V" NTC20K" PT1000, NI1000TK5000, Setpoint Absolute, Setpoint Relative and Bypass Fan >; Output = Binary Output dry contact (Polarity = Normal/reverse) can be configured <"0-10 V" "4-20 mA">
20	C	Ground
21	IO2	Universal signal input/output 4 (Input = Binary input dry contact (Polarity = Normal/reverse) can be configured <"4-20 mA" "0-10 V" NTC20K" PT1000, NI1000TK5000, Setpoint Absolute, Setpoint Relative and Bypass Fan >; Output = Binary Output dry contact (Polarity = Normal/reverse) can be configured <"0-10 V" "4-20 mA">
22	IO3	Universal signal input/output 4 (Input = Binary input dry contact (Polarity = Normal/reverse) can be configured <"4-20 mA" "0-10 V" NTC20K" PT1000, NI1000TK5000, Setpoint Absolute, Setpoint Relative and Bypass Fan >; Output = Binary Output dry contact (Polarity = Normal/reverse) can be configured <"0-10 V" "4-20 mA">
23	C	Ground
24	IO4	Universal signal input/output 4 (Input = Binary input dry contact (Polarity = Normal/reverse) can be configured <"4-20 mA" "0-10 V" NTC20K" PT1000, NI1000TK5000, Setpoint Absolute, Setpoint Relative and Bypass Fan >; Output = Binary Output dry contact (Polarity = Normal/reverse) can be configured <"0-10 V" "4-20 mA">
25	IO5	Universal signal input/output 4 (Input = Binary input dry contact (Polarity = Normal/reverse) can be configured <"4-20 mA" "0-10 V" NTC20K" PT1000, NI1000TK5000, Setpoint Absolute, Setpoint Relative and Bypass Fan >; Output = Binary Output dry contact (Polarity = Normal/reverse) can be configured <"0-10 V" "4-20 mA">
26	C	Ground
27	IO6	Universal signal input/output 4 (Input = Binary input dry contact (Polarity = Normal/reverse) can be configured <"4-20 mA" "0-10 V" NTC20K" PT1000, NI1000TK5000, Setpoint Absolute, Setpoint Relative and Bypass Fan >; Output = Binary Output dry contact (Polarity = Normal/reverse) can be configured <"0-10 V" "4-20 mA">
28	C	Ground
29	IO7	Universal signal input/output 4 (Input = Binary input dry contact (Polarity = Normal/reverse) can be configured <"4-20 mA" "0-10 V" NTC20K" PT1000, NI1000TK5000, Setpoint Absolute, Setpoint Relative and Bypass Fan >; Output = Binary Output dry contact (Polarity = Normal/reverse) can be configured <"0-10 V" "4-20 mA">
20VDC		
30	C	Ground
31	20 VDC OUT	20 VDC power output
		Field-replacable airflow sensor
		IP ethernet RJ45-1/RJ45-2
COMMUNICATION BACKBONE		
Port 1		Etheret IP 1, 10/100 Switched
Port 2		Etheret IP 2, 10/100 Switched
		IP (T1L) Port 1
		IP (T1L) Port 2

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EN0b0794-IE67 | Rev. 03-25



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