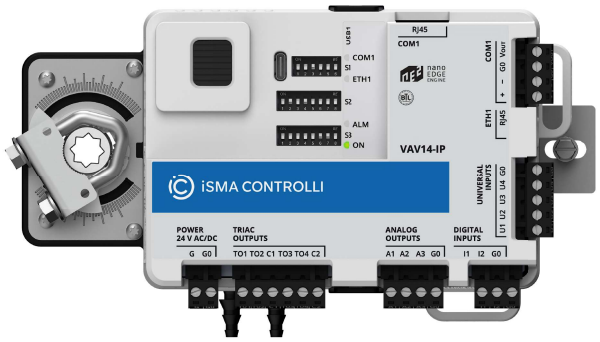
VAV14-IP

Variable Air Volume controller

MODEL	DESCRIPTION
VAV14-IP	Variable Air Volume (VAV) - freely programmable and configurable IP controller with a pre-loaded VAV application, integrated actuator, and differential pressure sensor. Niagara-enabled with nano EDGE ENGINE embedded. Native BACnet and Modbus protocols.



APPLICATION AND USE

VAV14-IP is a configurable and freely programmable controller with BACnet IP, BACnet MS/TP, Modbus TCP/IP, and Modbus RTU protocols. Being equipped with a tailor-made VAV application with the possibility of its further enhancement makes the controller useful not only for typical VAV boxes but for all types, even the most advanced ones.
The VAV14-IP controllers are developed on the nano EDGE ENGINE software platform, which offers cloud connectivity, real-time programming, and automatic exposure of Data Points. It enables seamless integration with BMS. The platform supports remote control, real-timemonitoring, and data analysis, which enable energy consumption tracking, boost system performance, and facilitate meeting maintenance needs.

FEATURES

- Enhanced energy efficiency
- Seamless programming and maintenance
- Built-in powerful application
- 150 Data Points
- 2 fail-safe Ethernet ports with a built-in switch
- 13 I/Os onboard + pressure sensor
- BACnet IP, BACnet MS/TP Modbus TCP/IP, and Modbus RTU
- Built-in real-time clock
- Esthetically structured cabling

TECHNICAL CHARACTERISTICS

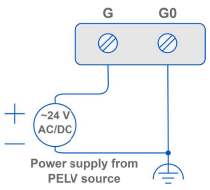
DESCRIPTION		VAV14-IP
Power supply	Voltage	DC: 24 V ± 20%, 7 W; AC: 24 V ± 20%, 18 VA
Universal inputs	Number of inputs	4
	Voltage input	Voltage measurement: 0-10 V DC Input impedance: 100 kΩ Measurement accuracy: ±0.1% Measurement resolution: 3 mV at 12-bit and 1 mV at 16-bit
	Current input	Current measurement: 0-20 mA Required external resistor: 200 Ω Measurement accuracy: ±1.1% Measurement resolution: 15 µA at 12-bit and 5 µA at 16-bit
	Digital input	Output current ~1 mA
	Resistance input	Measurement of resistance: 0-1000 kΩ Measurement resolution for 20 kΩ load: 20 Ω at 12-bit and 1 Ω at 16-bit Measurement resolution for PT1000 and NI1000: 0.1 Ω at 16-bit Resistance measurement method: voltage divider
Universal inputs	Temperature input	Measurement with RTDs (resistance temperature detectors) Accuracy: ±0.1℃ The PT1000 and NI1000 sensors use 16-bit resolution
	Measurement resolution	12-bit (default), 16-bit
	Processing time	10 ms/channel at 12-bit 140 ms/channel at 16-bit

The performances stated in this sheet can be modified without any prior notice.

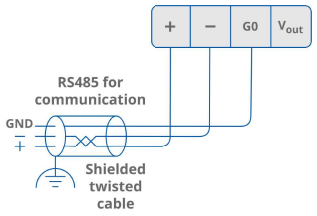
DESCRIPTION		VAV14-IP
Digital inputs	Number of inputs	2
	Type	Dry contact or fast pulse counter (saved on SD card)
	Maximum input frequency	100 Hz
Analog outputs	Number of outputs	3
	Voltage range	0-10 V DC
	Maximum load current	20 mA
	PWM	0.01 Hz, 0.1 Hz, 1 Hz, 10 Hz, 100 Hz
	Resolution	12-bit
	Accuracy	±0.5%
Triac outputs	Number of outputs	4
	Load	0.5 A at 20 V AC up to max. 24 V AC
	Peak load per channel	1.5 A at 20 V AC up to max. 24 V AC (30 s)
	Gate control	Zero crossing turn ON
	Frequency range	47 to 63 Hz
	Snubber	Snubberless triac
Pressure sensor	Pressure range	-500 to 500 Pa (-2 to 2 inWC)
	Accuracy	3% of reading
	Zero point accuracy	0.1 Pa (0.0004 inWC)
	Calibration	Air and N2
	Resolution	16-bit
Damper actuator	Torque	4 Nm (35 in-lb)
	Angle of rotation	95° adjustable
	Rotation time	95º in 95 sec (+/- 5 sec)
	Fits shaft diameter	8.5 to 18.2 mm (5/16 to 3/4 in)
COM1	RS485 interface	Up to 128 devices
		Half- duplex
	Communication protocols	BACnet MS/TP, Modbus RTU
	Ports	RJ45 + screw connector
	Baud rate	2400-115200
	Vout	Max. 2.5 W, max. 40 V DC - depends on the input supply voltage 23 V DC for 24 V DC input supply voltage 33 V DC for 24 V AC input supply voltage
ETH1	Ethernet interface	2 ports, fail-safe protected
	Communication protocols	BACnet IP, Modbus TCP/IP
	Baud rate	10/100 Mb/s
USB1	USB 2.0	USB type C
Ingress protection	IP rating	IP20 for indoor installation
Temperature	Storage	-40°C to +85°C (-40°F to 185°F)
	Operating	0°C to +50°C (32°F to 122°F)
Humidity	Relative	0 to 95% RH (without condensation)
Screw connectors	Type	Removable screw terminals
	Maximum cable size	2.5 mm^2 (18…12 AWG)
Housing	Material	Plastic (PC/ABS)
	Mounting	Directly on an air duct or in a panel
Dimensions	Width	196.89 mm/7.75 in
	Length	112.61 mm/4.43 in
	Height	77.00 mm/3.00 in

WIRING DIAGRAMS

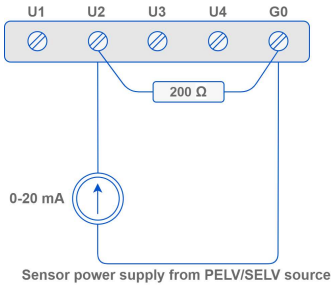
Power Supply

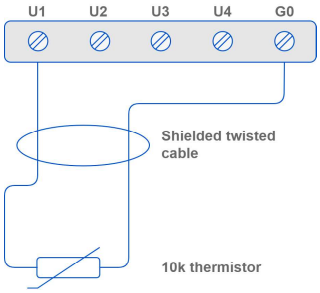


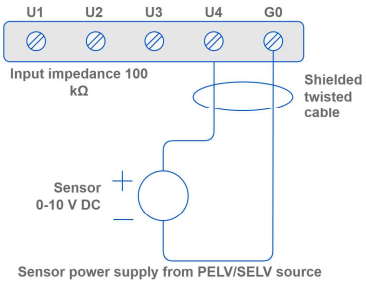
Communication

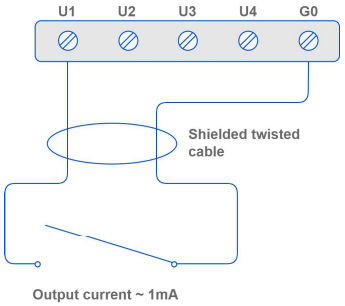


Universal Inputs

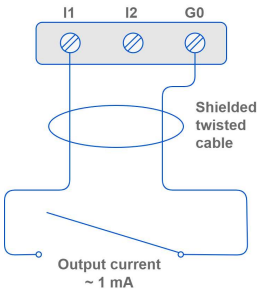




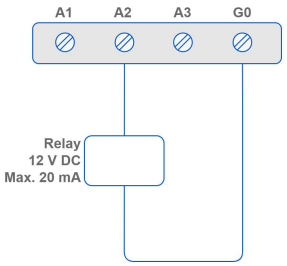


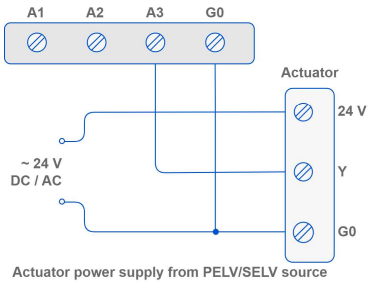


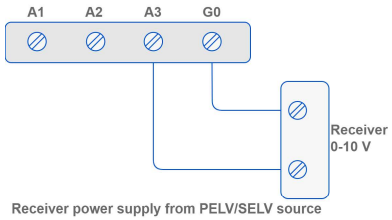
Digital Inputs



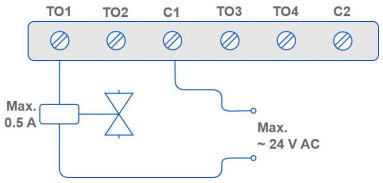
Analog Outputs







Triac Outputs

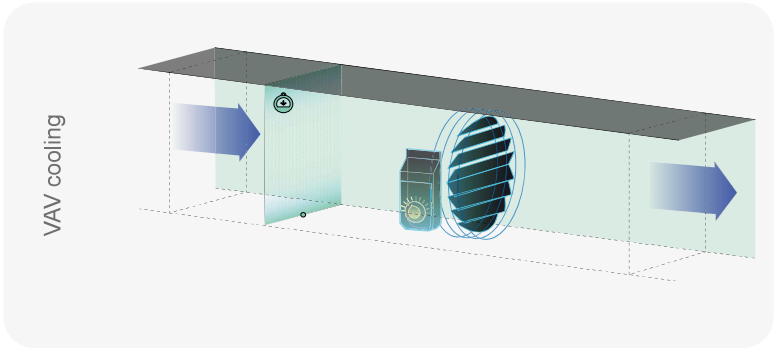


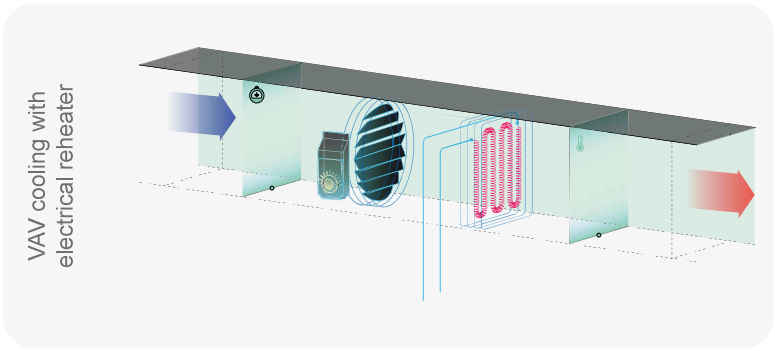
APPLICATION EXAMPLE

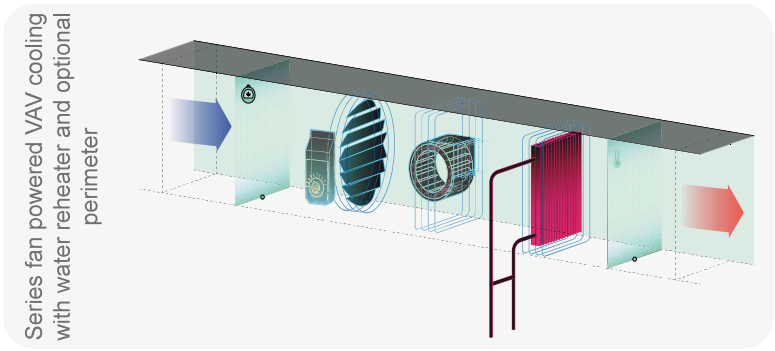
Configuration options

- VAV cooling
- VAV cooling/heating
- VAV cooling with electric reheater
- VAV cooling with water reheater and optional perimeter
- VAV cooling with 2-stage electric reheater with optional perimeter
- Series fan powered VAV cooling with water reheater and optional perimeter
- Series fan powered VAV cooling with 2-stage electric reheater with optional perimeter
- Parallel fan powered VAV cooling with water reheater and optional perimeter
- Parallel fan powered VAV cooling with 2-stage electric reheater with optional perimeter

Out-of-the-box support for 216 VAV box types







APPLICATION CONFIGURATION

The VAV application can be configured using a number of convenient methods suited for variuos user requirements:

- DIP switches
- iSMA Configurator
- Control Point VAV panel
- iC Device Manager service for Niagara
- BACnet objects/Modbus registers

Configuration and balancing tools

iSMA Configurator:

- free of charge
- portable
- communication over BACnet IP

Supported VAV14-IP features:

- VAV application
- Airflow settings
- Balancing

powered by niagara framework®

iC Device Manager service for Niagara 4:

- free of charge service
- communicates over BACnet IP
- works with iC Workbench and 3rd party Workbench tools

Supported VAV14-IP features:

- VAV application
- Airflow settings
- Balancing

PROGRAMMING SOFTWARE

Real-time programming - program from scratch or customize the VAV14-IP controller application instantly, in real time, using block programming on a wire sheet.

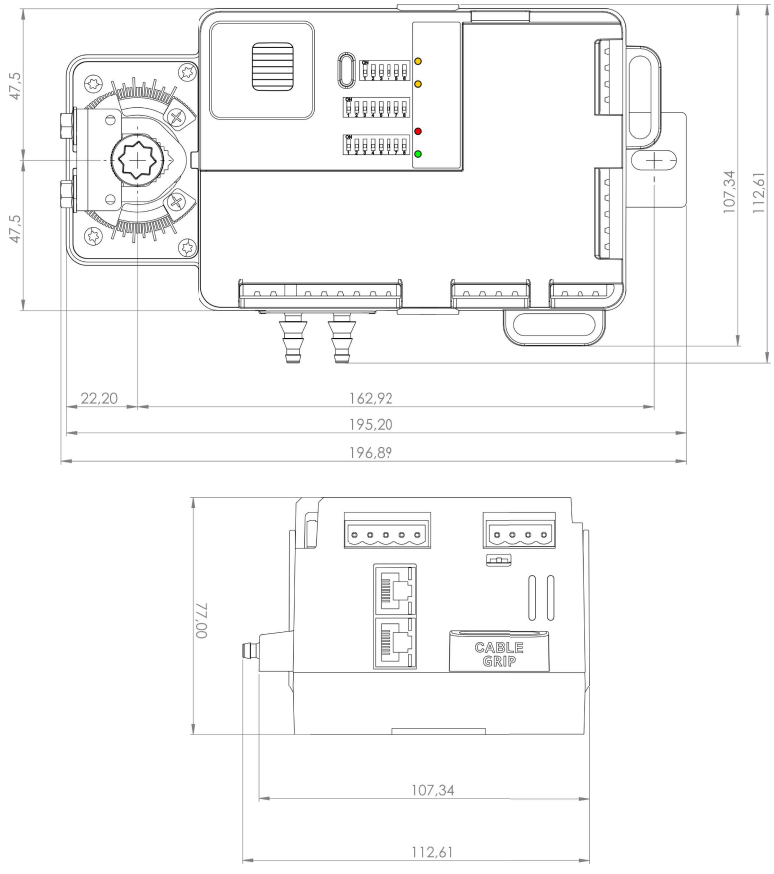
iC Tool:
- free of charge
- easy deployment of large projects using IP manager and Multi Device Manager views

nE2 Link for Niagara 4:
- license-free
- Device extension for BACnet and Modbus protocols
- real-time block programming using wire sheet
- complete device management
- supported in Niagara 4.11 and up

DEDICATED ROOM PANEL - CONTROL POINT VAV

The Control Point VAV is a multiprotocol wall-mounted multisensor with a built-in LCD screen and control buttons for effective comfort management. Together with VAV Controller it allows for optimal operation and plug-and-play installation enabling both commissioning and maintenance savings.

DIMENSIONS [mm, in]



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