Omni
VAV Controller

===INNOTECH®===

Models:
OMC8V: 4 x UIO, 4 x TRIAC, 1 x Pressure Transducer
OMC10V: 6 x UIO, 4 x TRIAC, 1 x Pressure Transducer

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Overview

The Innotech Omni generation of Native BACnet VAV Controllers are designed specifically for Variable Air Volume (VAV) box control in industrial and commercial environments.

High speed data processing technology, combined with a fully user configurable input/output interface, which allows for out-of- the-box flexibility.

The Omni VAV Controller features Programmable Points (UI/O), TRIACs, and an on-board differential pressure sensor to track and calculate changes in air velocity pressure and respond as directed in its program.

The OMCxV controller's UI/Os can be independently configured via software to have input or output functionality.

Each controller supports BACnet and Innotech Primary network comms protocols.

The controllers are fully programmable via the Innotech Focus graphical programming interface.

Features

- 4 or 6 Point (UI/O) models with the ability to use any point as an input or output, allowing greater flexibility
- 4 x 24VAC TRIAC terminals
- 1 x RS-485 terminal (OMC8V)
- 2 x RS-485 terminals (OMC10V)
- 1 x RJ45 Ethernet
- 1 x Differential Pressure Sensor
- Dedicated Innotech Smart Sensor (ISS) communications
- Colour coded pluggable terminals for easy identification
- Communication LEDs for all interfaces
- Individual UI/O LEDs for status indication and fault diagnostics
- Easily programmed with Innotech Focus software
- Battery backed Real Time Clock
- On-board storage with large capacity for log data and documentation
- UI/O update rates up to 500Hz (2ms)

Applications

The OMCxV controller is designed for mounting inside an environment free from moisture and dust. It offers programmable points, enabling it to monitor and control all types of external plant and equipment.

Omni BEMS Controllers are ideal for HVAC, Building and Energy Management, automation as well as process control. The small size of the VAV Controller also gives it the advantage of being able to be installed in small places or duct sections.

The creation of control strategies is made simple with the Focus engineering software. With it's powerful graphical programming interface, Focus allows the user to create a project-wide control strategy.

Installation

The controller should be installed in an environment that does not exceed the maximum operating parameters of the device. It should be mounted in a clean and dry environment free of vibration, and properly ventilated.

The controller should be mounted on DIN rail in cabinets approved for switchgear or industrial control equipment.

Wiring should be implemented in accordance with Innotech connection diagrams, Installation Instructions and local bylaws or refer to your local distributor.

Connect the 24VAC supply to the correct terminals on the controller. Maximum terminal cable entry is 1.5mm². Wire the EARTH terminal of all controllers to a DIN rail earth terminal on the same rail, or the nearest earth stud.

All cable screens should connect to the same earth point unless otherwise stated in the Innotech Device Network Cabling Manual.

⚠️ Pressure sensors for VAVs are generally very sensitive electromechanical devices. The pressure sensor is factory calibrated for best performance. Excessive stress will cause irreparable damage to the pressure sensor.

Please observe the following when handling the OMCxV:
- Do NOT apply pressure from sources other than a pitot tube
- Do NOT apply excessive static or differential pressure when connecting or disconnecting air supply
- Do NOT drop the device

Model Specification

Controller Name	Omni C8V	Omni C10V
Processor Speed	800MHz	800MHz
Programmable Points (UI/O)	4	6
UI/O Point Processing Limit	2ms	2ms
TRIAC Outputs	4	4
Non Volatile Memory	8kB	32kB
Real-time Clock	Battery Backed	Battery Backed
RS-485 Ports	1	2
Ethernet - 100Base-T	1	1
Pressure Transducer	1	1
On-board Controller Storage	Yes	Yes
USB-Mini B (PC Link)	Yes	Yes
Innotech Smart Sensor Support	1	1
Protocol Routing	Feature Licence	Feature Licence
BBMD / Foreign Device	Feature Licence	Feature Licence
Max. Power per UI/O	0.5W	0.5W
Max. Current per TRIAC	500mA	500mA
Max. IO System Power	5W	5W

ℹ The on-board controller storage contains PDF documents. For the latest documents, visit www.innotech.com.

General Specifications

PROCESSOR

CPU	ARM Cortex A8

POWER SUPPLY REQUIREMENTS

Power Input	24VAC ±20%
Recommended Transformer Ratings	20VA min. (plus I/O load)
Power Consumption	7W (plus I/O load)

ℹ The controller's earth terminal must be connected at all times.

The operating voltage must meet the requirements of Safety Extra Low Voltage (SELV) to EN60730. The transformer used must be a class 2 safety transformer in compliance with EN60742 and be designed for 100% duty. It must also be sized and fused in compliance with local safety regulations.

ENVIRONMENTAL

Operating Temperature	-10° to 50°C non-condensing
	14° to 122°F non-condensing
Storage Temperature	-20° to 60°C non-condensing
	-4° to 140°F non-condensing

INSTALLATION ORIENTATION

Horizontally mounted DIN rail on a vertical surface.

Allow a minimum 20mm (40mm recommended) gap between the end of the terminal plug and cable ducts.

ENCLOSURE

Housed in a rectangular case suitable for DIN rail mounting. Housing moulded from flame retardant plastics recognised by UL as UL94-V0.

Colour	Blue/Black

DIMENSIONS

Omni C8V & Omni C10V	W 124.6mm x H 113.4mm x D 52.8mm (4.90" x 4.46" x 2.07")

APPROVALS AND LISTINGS

EN61326:2013 Class A for CE & RCM Labelling

Title 47 CFR, Part 15 Class A for FCC Marking

UL Listed to UL916, File Numbers PAZX.E242628, PAZX7.E242628

IP Rating (IP3x)

RoHS2

Listed by BTL

BATTERY

- Type: CR-2032 Lithium
- Nominal voltage: 3 Volts
- Shelf life: 5 Years, dependent on ambient temperature

⚠ Caution: Risk of explosion if battery is replaced by an incorrect type. The real-time clock battery is not user replaceable and must be replaced by qualified Innotech service technicians.

COMMUNICATIONS

Ethernet	100Base-T
RS-485 Comms	Up to 115kbps (with EOL)
ISS Comms	Innotech Smart Sensor Comms

DEFAULT SETTINGS FOR COMMS CHANNELS

Comms 1	RS-485	BACnet MS/TP
Comms 2	RS-485	No Default Set
Ethernet	IP Address	192.168.2.100

DEFAULT ADDRESSES

Innotech	1
BACnet	2100

CONFIGURING / MONITORING / COMMUNICATIONS

USB Device (Mini-B Type) or OTG with adaptor cable	High Speed 480Mbps → Computer Connection Virtual IP Address: 169.254.2.100
Data Logging	
On-Board Controller Storage	

TRIAC OUTPUTS

4 TRIAC outputs switch 24VAC Power Supply through to the outputs

Current Rating

TRIACS are internally fused in pairs T1 & T2   T3 & T4

500mA is the maximum continuous triac channel current @ 25º C ambient.
410mA is the maximum continuous triac channel current @ 40º C ambient.
350mA is the maximum continuous triac channel current @ 50º C ambient.
700mA is the total maximum current per **triac pair** @ 50º C ambient.

Modes ℹ	Modulated PWM or Digital ON/OFF

ℹ Always Zero-Crossing Pulse Packet or Digital On/Off Switching

PRESSURE INPUT

1 differential pressure input (Non corrosive gases only)	
Max. static pressure	10000Pa
Max. rated differential pressure	500 Pa
Accuracy	±4Pa ±1.5%FS

PROTOCOLS	OMC8V	OMC10V
• BACnet MS/TP & BACnet/IP	Yes	Yes
• Innotech Global	Yes	Yes
• Innotech TCP	Yes	Yes
• Innotech Smart Sensor (ISS)	Yes	Yes
Portions of the software copyright Cimetrics Inc.		

LED INDICATORS

Comms LEDs for RS-485	Red - Tx
	Green - Rx
ISS Traffic LED	Green
TRIAC LED	Orange
UI/O - Digital Output	Orange
UI/O - Fault	Orange Flash

Heartbeat LED

Status OK	Green Flash
Fault	Red Flash
Request	Orange Flash
Power Fail	Slow Orange Flash

ⓘ Request LED shown when upgrading, config transfer, initialising etc.

PROGRAMMABLE POINT (UI/O) SPECIFICATIONS

Current Loop Input

Range	0mA to 20mA
Resolution	12bit @ 4096 steps
Accuracy	±1.5% of reading @ 20°C (68°F)
Drift	±150ppm/°C

Current/Voltage Input

Current/Voltage Input (CVT)

• 333mVAC RMS type with internal burden resistor ONLY

⚠ CONNECTION OF STANDARD CURRENT TRANSFORMERS INSTEAD OF CVTs TO ANY UIO TERMINAL WILL CAUSE IRREPAIRABLE DAMAGE TO THE OMNI VAV CONTROLLER AND PRESENT RISK OF ELECTROCUTION.

Digital Input And Pulse Counter

Max Pulse Count Frequency @ 2V Amplitude	100kHz
Max Digital Input Response Rate	½ block cycle rate
Max Digital Input Voltage	12VDC

ⓘ Contact pulse counting mode is suitable for electronic switches only, unless adequately de-bounced.

Sensor Input

Supports	Thermistor NTC, Thermistor PTC
Ranges	Selectable
Resolution	12bit @ 4096 steps
Accuracy	±1.5% of reading @ 20°C (68°F)
Drift	±150ppm/°C

Voltage Input

Ranges - 0 to 10VDC	Selectable
Resolution	12bit @ 4096 steps
Limits	-0.5V to 12.5VDC
Accuracy	±1.5% of reading @ 20°C (68°F)
Drift	±150ppm/°C

Current Loop Output

Range	0mA to 20mA
Resolution	12bit @ 4096 steps
Maximum Output Voltage	9VDC @ 20mA
Accuracy	±1.5% of reading @ 20°C (68°F)
Drift	±150ppm/°C

Digital Duty Cycle Output

Frequency Range	60mHz to 976Hz
Duty Cycle Resolution	14bit (16383 steps)
Duty Cycle Range	0 to 100%
Switch Modes	As per Digital Output specifications

Digital Pulse Output

Pulse Width Range	10μs to 268s
Pulse Resolution	16bit (65535 steps)
Switch Modes	As per Digital Output specifications

Digital Output

Switch Modes

Toggle Switching (Auto)	On = 12VDC	Off = 0V
High Side Switching	On = 12VDC	Off = Open
Low Side Switching	On = 0V	Off = Open
Switch Current	Refer to note	

Protection

Inrush and short circuit protected	Response time: 64μs

ⓘ For High Side and Toggle Switching modes, maximum available power is limited (45mA).
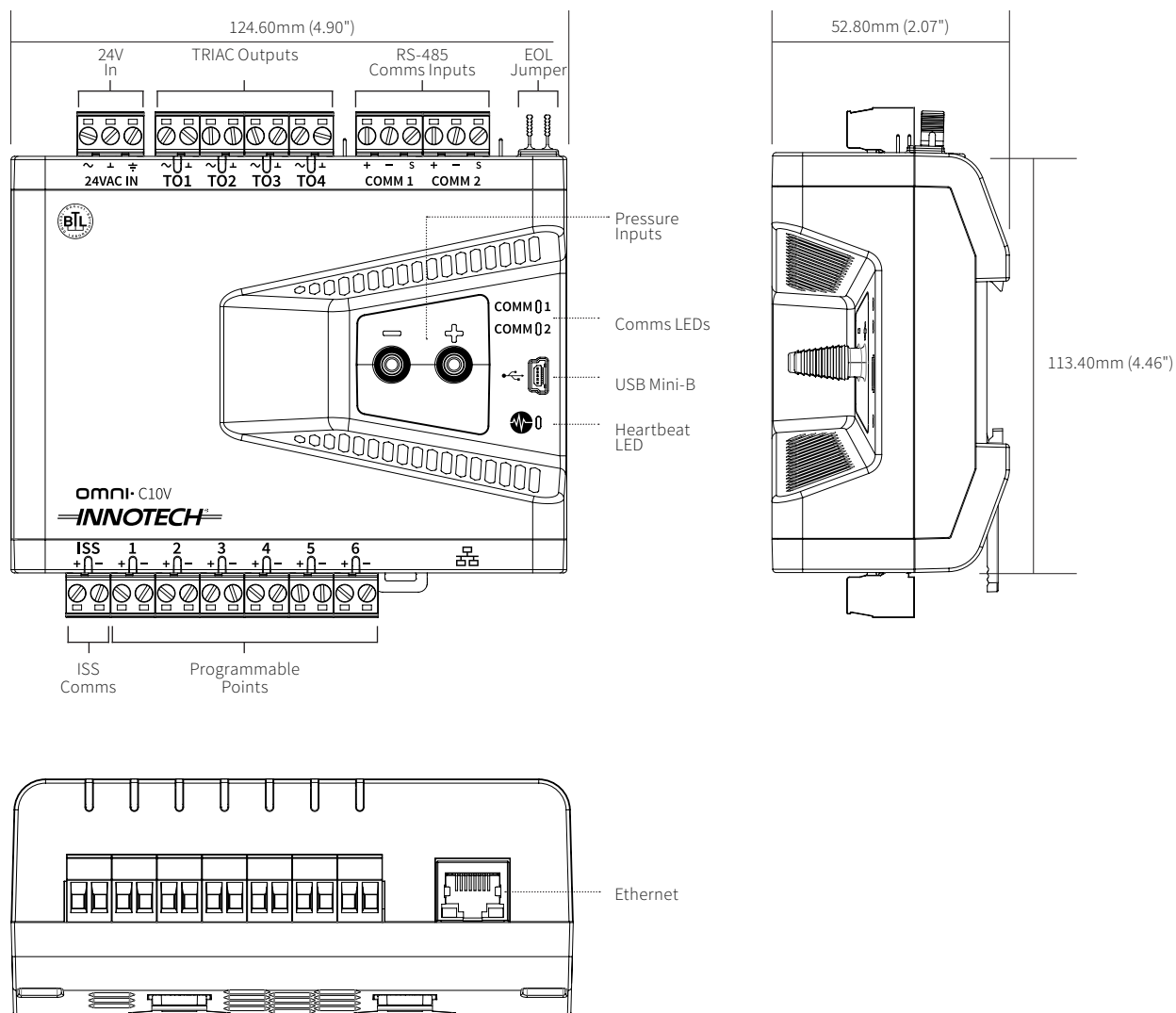
For Low Side Switching, each channel can switch 200mA.

⚠ Caution must be used when using Low Side Switching. For more information, contact your Innotech representative.

Voltage Output

Range	0V to 10VDC
Resolution	12bit @ 4096 steps
Impedance	~80Ω
Maximum Current	10mA
Accuracy	±1.5% of reading @ 20°C (68°F) & R_{load} >10kΩ
Drift	±150ppm/°C

Omni C8V & Omni C10V VAV Controller Dimensions & Parts Identification

124.60mm (4.90")

52.80mm (2.07")

24V In
TRIAC Outputs
RS-485 Comms Inputs
EOL Jumper

~ ⊥ ⏚
24VAC IN

~ ⊥ ~ ⊥ ~ ⊥ ~ ⊥
TO1 TO2 TO3 TO4

+ − S + − S
COMM 1 COMM 2

113.40mm (4.46")

Pressure Inputs

COMM 1
COMM 2
Comms LEDs

− +

USB Mini-B

Heartbeat LED

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ISS 1 2 3 4 5 6
+ − + − + − + − + − + − + −

ISS Comms
Programmable Points

Ethernet

ℹ️ *Omni C10V model shown*

FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note – *This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.*
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Modifications to this device, may void the authority granted to the user by the FCC to operate this equipment.

INNOTECH®

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by Mass Electronics Brisbane

📞 +61 7 3421 9100   🖨️ +61 7 3421 9101
@ sales@innotech.com   🌐 www.innotech.com