

CBT12iVAV

The **Product Name** is a programmable VAV controller with integrated airflow sensor and actuator. It has point support for single duct and fan assisted VAV applications.



- Supports the following configurable BACnet objects: AI/BI/AO/BO/AV/BV, Alarms, Trend Logs, and Schedules
- Integrated Actuator
Points 9 and 10 are dedicated to controlling the on board actuator.
- Integrated Pressure Sensor
can measure differential pressure directly without need for a separate sensor. The measured value is converted to airflow rate by the controller's strategy.
- 4 Universal Inputs
can be configured as analog or digital inputs
- Up to 3 Triac Outputs
can switch up to 24VAC
- Up to 2 Analog 0 to 10VDC Outputs
- 500 strategy blocks
- Data Security
Strategy and setpoints backed up in Flash
- No Jumpers
Hardware points are automatically configured by the downloaded strategy

The BACnet Controller of Choice

This native BACnet controller is a truly open solution for the most demanding of applications. Cylon BACnet controllers offer unparalleled flexibility and performance on an open platform. The system can easily be extended by adding other BACnet devices on the same MS/TP network.

Advanced Zone Solution

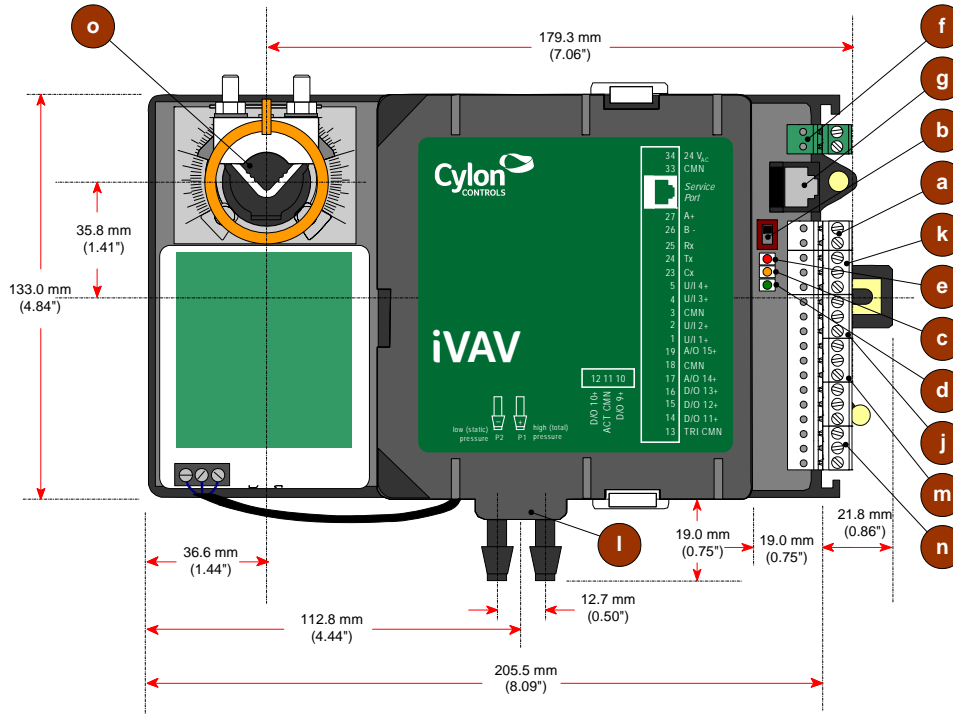
The Cylon **Product Name** can be used to control zones individually and is easily installed and simple to use. With the ability to control single and multi zones, its versatility is a major attribute. Each Cylon VAV airflow sensor is factory calibrated at multiple pressure points.

Highly Flexible

The **Product Name** is fully programmable to meet the most demanding zone control applications. Unlike others, the controller can be re-engineered for specific applications over BACnet. The controller strategy can be easily adapted for single speed or variable speed fan applications. The Cylon VAV has setpoints available for easy testing and balancing of the terminal unit from the controller or the wall sensor.

Smart Energy Control

The enhanced flexibility of Cylon controllers delivers more energy efficient solutions for buildings. With smart energy optimisation built-in your clients can successfully drive down energy costs. With the **Product Name** you can add user setpoint adjust, room occupancy sensors or window contacts to further enhance energy savings.



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|--|---|---|
| a BACnet MS/TP fieldbus port | c Manual Override LED
<i>(yellow)</i> | k Service Port
<i>(screw terminals)</i> |
| b Fieldbus terminator | d "Watchdog" LED
<i>(green)</i> | l Airflow Sensor
<i>(Integrated Differential Pressure Sensor)</i> |
| <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>OFF
<i>(fieldbus not terminated at this controller)</i></p> <p>ON
<i>(fieldbus terminated at this controller)</i></p> </div> | e Power On LED
<i>(red)</i> | m Analog Outputs |
| | f Power Input
<i>(24 Vac)</i> | n Triac Outputs |
| | g Service Port
<i>(RJ-45)</i> | o Rotary Actuator |
| | j Universal Inputs | |

CBT LED Signals

- **Red LED**
 Permanently on : Battery present and OK
 Flash once a second : Indicates no battery/battery low
- **Green LED**
 On permanently : Strategy is servicing
 Flash rapidly : Strategy not servicing
 Flash once a second : MSTP comms, and Strategy is servicing
Note: when the Service Port is in use, the Green LED indicates Service Port comms.
- **Yellow LED**
 Off : Normal operation
 On : Overridden by external BACnet Client, or by the UEC
- ● ● **Cycle left to right (Yellow - Green - Red):**
 Controller is in terminal mode.
- ● ● **Cycle right to left (Red - Green - Yellow):**
 Upgrade in progress while Controller is in terminal mode
Note: The strategy is not serviced while in upgrade mode.

Specifications:

MECHANICAL

Size (excluding terminal plugs)	210 x 130 x 60 mm (8.3 x 5.12 x 2.36")
Enclosure	Injection moulded ABS
Mounting	DIN rail
Airflow Sensor Connection	Use rubber hose suitable for a 5.1 mm (0.2") O.D. nozzle.

ENVIRONMENT

Note: This equipment is intended for field installation within another enclosure.

Ambient Temperature	0° - 50°C (32°-122°F) ambient.
Ambient Humidity	0% - 90% RH non-condensing
EMC Immunity	EN 50082-1
EMC Emission	EN 55011 Class B
Approvals	UL Listed (CDN & US) UL916 Energy Management Equipment - File No. E176435

WIRING

Note: Use Copper or Copper Clad Aluminium conductors only.

Termination	I/O : PCB mounted screw terminal connections. Power and Fieldbus : PCB mounted plug terminal connections.
Conductor Area	Max: AWG 12 (3.09 mm ²) Min: AWG 22 (0.355 mm ²)

ELECTRICAL




Supply Requirements	24 V AC \pm 15% 50/60 Hz
Transformer Rating	up to 55 VA (up to 12 VA internal power plus up to 43 VA supplied to Triac loads)

PROCESSOR

Type	STM32F105ZTE6 32bit processor
Clock Speed	8 MHz crystal, 72 MHz internal processor clock rate
System Memory (soldered to PCB not removable)	512k flash, 64k SRAM internal to processor 1024k SRAM external

INPUTS/OUTPUTS

Note: Screened cable is recommended for all input connections.

4 Universal Inputs (Points 1 to 4) 	Active voltage input 0-10 V @ 130 K. 12 bit resolution. Passive Input for a large range of temperature sensors, 10K3A1 sensors are recommended. Temperature input range: 0 °C to 50 °C (32 °F to 122 °F) Active current input 0-20 mA @ 390 Ω (screened cable). Digital Volt Free Contact (Dry Contact). Note: UCU Universal inputs do not support pulse counting.
1 Airflow Sensor (Point 5) 	0-650 sccm (0 – 0.023 cfm) airflow measurement using internal microbridge type airflow sensor.
1 Actuator (Points 9 and 10)	One integrated Actuator (Belemio LMB24-3-T) Points 9 and 10 are dedicated to operating the actuator and are not user accessible.
3 Digital Outputs (Points 11 to 13) 	24 V AC Triac @ 500 mA maximum. Switch Live or Switch neutral

2 Analog Outputs
(Points 14 and 15) Analog 0-10 V 10ma Max current



24 V AC output terminals Total current drawn from 24 V AC terminals is limited to 0.9 A.

COMMUNICATIONS

Local RS232 TTL port	@ 9600 Baud Max cable length 4m
BACnet MS/TP Fieldbus port	RS485 @ 38400 Baud Max cable length 1.2 km

INTERFACE

Engineering Software	Unitron Engineering Centre (BACnet edition) NetLink (portable operator interface tool)
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CONFIGURATION OPTIONS

With Internal RTC	for standalone operation with local time schedules
Room Keypad	Can be set up to operate with the Cylon UCU Room Keypad

SOFTWARE FEATURES

Data Security	Strategy and Setpoints backed up in Flash
Maximum number of Strategy Blocks	500
Maximum Controllers per Fieldbus	99*

**It is recommended for typical conditions that the number of controllers on a unitary fieldbus be limited to 32. MSTP devices with a fractional (¼ or smaller) unit load will be required in order to extend a single fieldbus trunk beyond 32 devices. Both CBM and CBT controllers are ¼ unit load devices. Please refer to MAN0106 for recommendations on configuring a specific network for optimal comms speed.*

