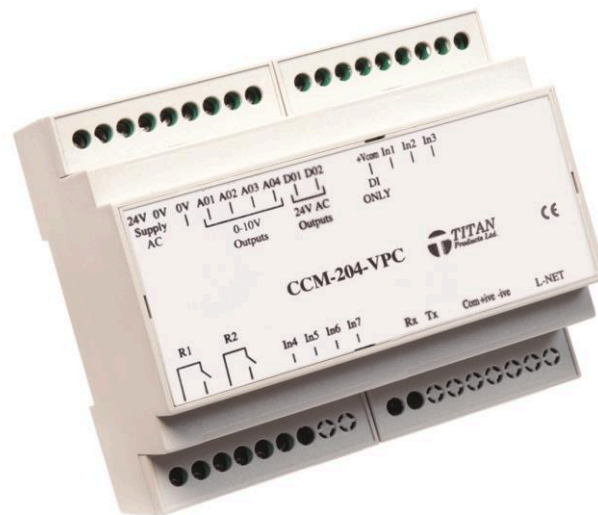


CCM-204 Air Velocity and Air Pressure BACnet Controller



BACnet Enabled

C-041 0714

Description:

The CCM-VPC is designed to offer Air pressure or Air velocity control (selected at commissioning) for up to 4 zones.

The CCM-VPC can control up to 4 zones individually or the 4 outputs in unison or sequenced. The control can be set to prioritise or average from the 4 sensor inputs.

The ability to control the air pressure or velocity makes the CCM-VPC ideal for Variable Air Volume (VAV) applications or it can be applied to control main ventilation system pressure or velocity.

The 0-10V outputs from the CCM-VPC are used to modulate fans or dampers. The control of the outputs are based on the 0-10v sensor inputs from either the Titan Products TPDPT7 pressure or TPAVT7 velocity sensor ranges. The controller input profile is selectable allowing the input to match any sensor from the ranges to be used with the CCM-VPC controller. This profile is also editable to allow the use of the 3rd party sensor products which may have different ranges (up to 10,000PA).

Features:

- > 24V AC/DC supply
- > Native BACnet RS485 communications
- > Individual multi-zone, sequence or Unison control
- > Air Pressure or Velocity control
- > 4 x 0-10V outputs
- > 2 x 24V Triac Outputs
- > 2 x Volt Free relays (240V 5 amp max.)
- > 7 x Analogue or Digital inputs
- > Control from individual inputs priority or averaging
- > Flexible input profiles
- > Din rail mounting
- > UK Designed and Manufactured by Titan Products

Specification:

Supply:	24V AC/DC
Power Consumption:	3.5 VA Max (without RDU) 5 VA Max (with RDU)
Triac Outputs:	350mA max
Sensors:	TPDPT7 Range (Air Pressure) TPVAVT7 Range (Air Velocity)
Analogue Inputs:	0-10V
Digital Inputs:	Voltfree
Relay Output:	240V 5 amp max
Communications:	BACnet MS/TP RS485
Indication:	Tx/Rx comms RDU or Inbuilt Display
Enclosure:	Din Rail Mounting (IP20)
Enclosure rating:	L94-VO
Size:	106mm x 92mm x 62mm
Product Code:	CCM-204-VPC
Country of Origin:	UK

The CCM-VPC can be used as a stand-alone air pressure or air velocity controller that incorporates open systems communications to integrate to a BMS using Native BACnet MS/TP protocol.

The details listed describe a range of the standard settings, options and operational features that are available from the embedded applications library. All settings can be accessed and modified with an optional front display, RDU-4 or FPT-601 field programming tool.

Controller Settings & Options

- Network Native BACnet MS/TP (RS 485) or Stand-alone
- Unit address Sets the controller unit MAC address on MS/TP bus. **Range 1 to 127 for a master.**
- Dev Object ID Allows the setting of the device object ID. **Range 0 to 4194302**
- Baud Rate Sets communication baud rate. **Range Options: - 9,600 19,200 38,400 or 76,800**

Group Control: Allows individual controllers to be set-up as a **Group Master** or **Group Slave**. This sets groups of controllers to take instructions from a common Master (125 Slaves max). Any number of Groups can be set within the limit of 126 controllers on the MS/TP network.

User Display & Settings

The optional inbuilt display or the remote room display (RDU) allows the setup and configuration of the control options as well as showing controller information of the input sensor values, the status and mode of operation.

The TITAN field programming tool FPT601 can also be used for the controller setup as well as for up copying and loading new control configurations if required.

Control Options:

The CCM-VPC can be set up to control as per the below options:

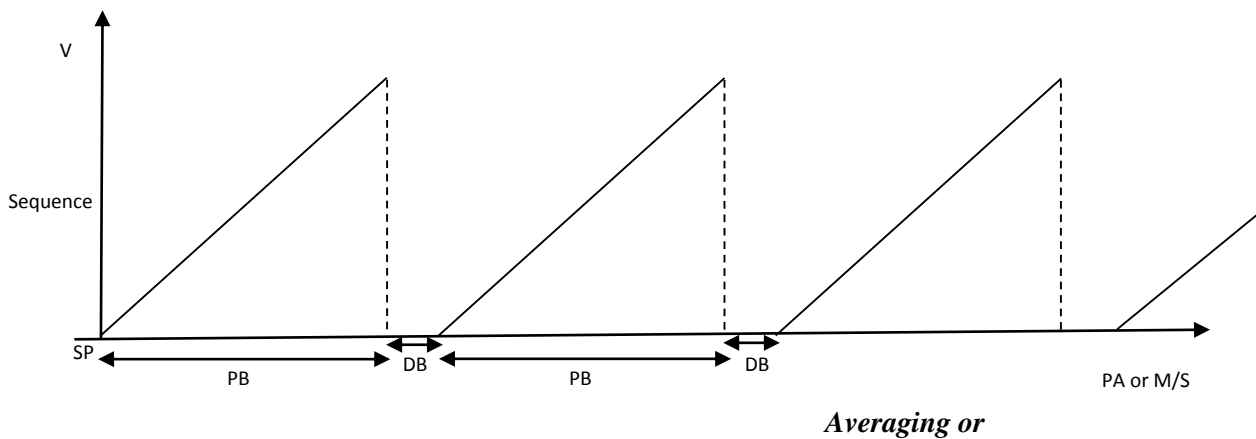
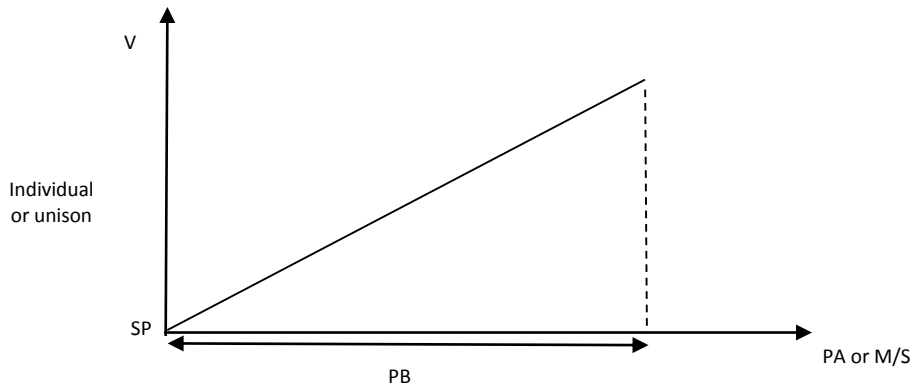
- 1 to 4 zone fan speed control
- 1 to 4 zone damper control
- Averaging control from up to 4 x sensor inputs
- Sequence control of up to 4 x 0-10v outputs

Control Outputs.

Analogue Outputs:

AO1 to AO4 can be configured to give 0-10V or 2-10V outputs (with positive or reverse action). These control strategies are configured in the controller setup menu and provide PI control. These outputs are designed to modulate fans or dampers to increase / decrease air velocity or air pressure.

AO1-AO4 can be controlled in unison, in sequence or individually from 4 separate sensor inputs providing 4 control loops with individual settings for up to 4 zones.



Priority control (for single zone applications):

The controller output can be:

- a) Scaled from 1 x 0-10V input
- b) Controlled on the summation (average) of a number of measured sensor inputs
- c) Controlled from the highest / lowest signal demand giving a priority control. A maximum of 4 sensor inputs can be used and in this application all sensor inputs must be the same range.

Triac Outputs (24AC supply):

The 24V AC Triac Outputs can be used for enabling associated plant, alarming, and to operate ventilation shut off dampers.

The 2 x voltfree relay outputs can be used for starting associated plant such as Fan Control Enable, and operating shut off dampers.

The controller offers an optional delay to energise the relays (range 0 to 200 seconds) to allow any shut off damper outputs to open before the fan is started.

Inputs:

Sensor Inputs:

The CCM-VPC can accept up to 4 x 0-10V Air Pressure (TPDPT7 range) or Air Velocity (TPAVT7 range) Sensors. The sensors can be used for individual control or the control can be set to operate from the average (summation value) of the measured values or from a priority value of the highest or lowest sensor measurement.

Digital Inputs:

The CCM-VPC offers up to 7 x digital inputs which can be used for features such as fan proving, filter monitoring, fire shut down, alarm mute and remote ON/OFF.

Fault Indication:

The RDU screen or inbuilt display will indicate 'High Alarm' or 'Low Alarm' in the event a zone has exceeded the minimum or maximum alarm values set for pressure or velocity.

Settings:

All controllers are pre-set by Titan Products to the customer and application requirements prior to shipping. All settings can be viewed and altered through the optional inbuilt display, RDU interface or FPT field programming tool.

Global Settings:

Zone Number:

Number of zones can be selected from 1-4.

Sensor Type:

Titan Products or 3rd party. The user can select whether the controller is to be used with a Titan Products TPDPT7 or TPAVT7 range sensor or a 3rd party device.

Range:

The pressure or velocity range can be selected to match Titan Products TPDPT7 or TPAVT7 sensors. If using a 3rd party sensors the range can be set to a max of 10,000 PA or 0-50m/s.

A +/- range can be selected. When using a +/- sensor range the zero pressure input from the sensor is balanced where 0 pressure = 5V.

The +/- selection is available for sensor ranges up to 250Pa. The setpoint range will be +/- the selected input range allowing for the control of negative or low pressure systems.

Control Type:

The user can select whether to control the system Air Velocity or Air Pressure.

Control Units:

The user can select metric or US settings:

This will allow the Air Pressure to be displayed in PA (metric) or Water Gauge (US) and for Air Velocity units in m/s (metres per second) or fpm (feet per minute).

Integral Time:

The integral time can be set from 0 to 10 minutes with 0.5 minute increments.

Slew Rate:

The slew rate is used to obtain a smooth output control on fast acting systems and can be set from 0 to 120 seconds.

Analogue Output Configuration:

The AO configuration can be selected from Zone / Unison / Sequence

Inputs Configuration (Summation or Priority control only):

When used for Summation or Priority control the user can select which zones to use. Options are Zone 1+Zone 2 / Zone 1 + Zone 2 + Zone 3 or All Zones.

Sequential Dead Band (Sequence control only)

The dead band can be set between each sequenced output at the below values depending on the sensor range selected.

Velocity = 0 – 50 m/s

Pressure = 0-10,000 PA

Analogue Min / Max V values:

The Minimum and Maximum voltages can be set here for all 4 zones from 0-10V

Relay Delay Off:

If the relay is configured to energise when powered ON there is an optional time delay setting before it de-energises.

Unoccupied Control:

Off or SP2. If SP2 is selected this allows a second setpoint to be selected in the zone settings for unoccupied periods.

Fan ON Delay:

If a relay output is used there is an optional time delay period before it energises.

Fire Action:

Open / Close. If the fire input is detected the controller will open or close the associated damper or switch off the fans

Remote Alarm:

Yes / No. This can be used to trigger a local alarm from the Triac or Relay outputs on the controller for when associated plant equipment experiences a fault.

The Triac or Relay outputs within the controller can be written to over BACnet to energise when YES is selected or de-energise when NO is selected. *Note: the output status of the relevant output must be set to REMOTE.*

Zone Control:

Each zone has the below settings:

Setpoint: This can be selected as any value from the selected pressure or velocity range. An option to limit the user setpoint range is available within the global settings.

Setpoint Offset:

Through the setup menu the setpoint Offset can be adjusted up to +/- 20% of the set sensor range. Each zone sensor input can be adjusted individually.

Setpoint 2 (Unoccupied SP): SP2 is used to maintain a minimum condition during the unoccupied periods and can be selected as any value from the selected pressure or velocity range.

Proportional Band: This can be selected as any value from the selected pressure or velocity range.

Dead Bands: Used in sequence control applications with ranges of up to 0-10,000 PA for pressure control or 0-50 m/s for velocity control.

Mode: Off / Manual / Auto. When Manual is selected the controller can be set to give a constant output value. Auto will automatically control the outputs from the input.

Max Setpoint: This can be selected as any value from the selected pressure or velocity range.

Min Setpoint: This can be selected as any value from the selected pressure or velocity range.

Min Alarm: This can be selected as any value from the selected pressure or velocity range.

Max Alarm: This can be selected as any value from the selected pressure or velocity range.

Zero Calibration:

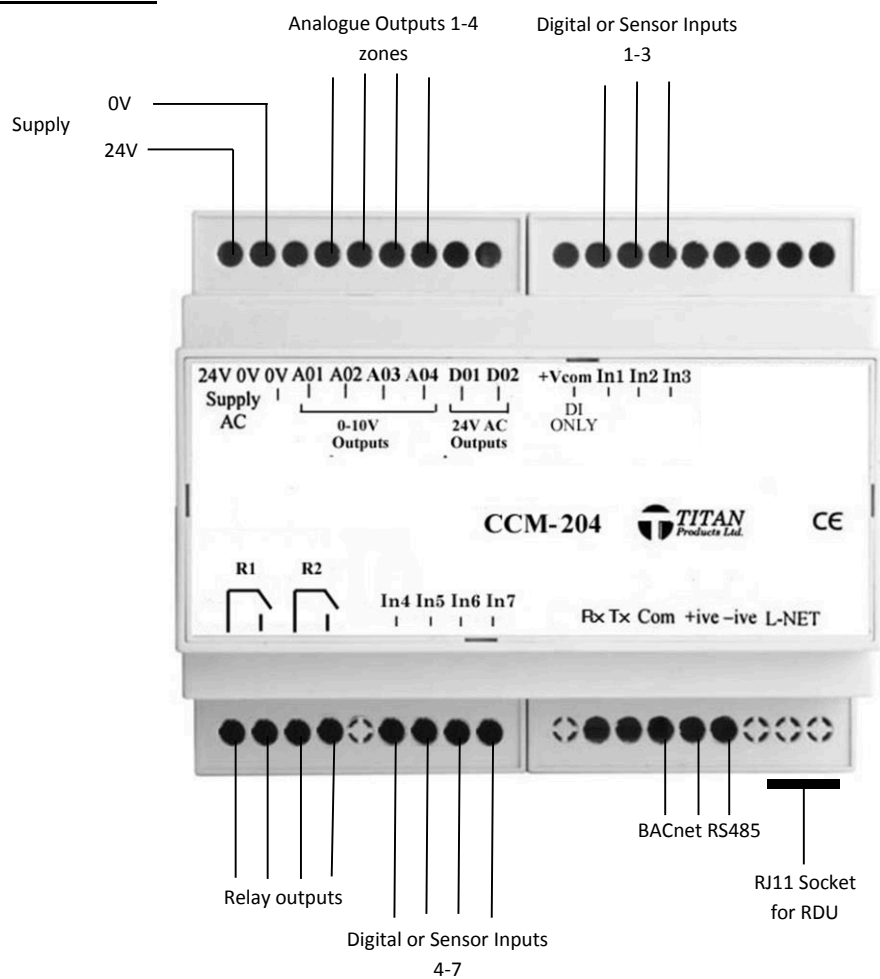
Each sensor input can be zero calibrated when no pressure is applied to the actual sensor input, selecting the zone via the inbuilt display or RDU and holding the mute button for 5 seconds. An audible click will notify the user that zero calibration is complete.

Display Functions:

The CCM-VPC can be controlled via an inbuilt top display or RDU-4 user interface for setpoint adjust, zone selection and alarm mute.

The inbuilt display or RDU-4 will also show any zone faults and the output status.

Connections:





Tel: +44 (0161) 406 6480
Fax: +44 (0161) 494 8309

Email: admin@titanproducts.com
Website: www.titanproducts.com

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