

<b>Part No</b>	CN1090		
<b>Description</b>	Demand Ventilation Controller (Proportional Control or Constant Pressure)		
<b>Issue</b>	<b>Date</b>	<b>Bug no</b>	<b>Comments</b>
G draft	17 Jan 2013	1401	Identify Live and SELV parts of circuit
1	5 Feb 2013	1401	First numeric Issue, added CE cert page 1

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© ebm-papst UK Ltd, 2012	Chelmsford Business Park Chelmsford Essex CM2 5EZ Telephone: +44(0)1245468555 Fax: +44(0)1245466336 e-mail <a href="mailto:sales@uk.ebmpapst.com">sales@uk.ebmpapst.com</a>	CN1090

## Introduction

Commercial Demand Ventilation Controller, mains powered with enclosure, fan speed control of one/two fans.

**Proportional Band Control:** Fan Speed varies based on either one or two 0-10V proportional sensor inputs (Temp, RH, CO<sub>2</sub>), Proportional Band set by Variable Resistors, Fan Speed range set by rotary DIP switches.

**Constant Pressure Control:** Pressure maintained at set-point, 0-10V pressure sensor input, PID control.

Pressure set-point(s) set by rotary DIP switch(es) or by second 0-10V Input (BMS or external Potentiometer).

**Options:** set by on-board DIP switches, selection of Stop/Run and Set-points or fan speed by switched 230VAC and volt-free inputs. Timed alternate fan run, with simultaneous run option. With indicators and alarm outputs.

## Specification

		CN1090
Supply Voltage	V AC	207 – 253 VAC
AC line Frequency	Hz	47 – 63 Hz
Supply Current	A	0.05 Amps, plus Fan load if wired via PCB 13A max.
Alarm Relays		Contact rating, 100mA max, 60VDC max
0-10V Inputs		100kOhm impedance, minimum PWM frequency 2kHz
Operating Environment		-30 to 60C, IP66 Enclosure

## Connection Details (see “Terminal Block Use” below)

### Mains Connector J1

Pin	Function
SL1	1 Switched Live 1, Fan Speed / Set-point select input
SL2	2 Switched Live 2, Stop/Run control input (shipped with link to 230VAC Live to Run)
L	3 230VAC, Live (for Stop/Run control link)
L	4 230VAC, Live (Supply to Fan)
L	5 <b>230VAC, Live (Input)</b>
L	6 230VAC, Live (Supply to Fan)
N	7 230VAC, Neutral (spare)
N	8 230VAC, Neutral (Supply to Fan)
N	9 <b>230VAC, Neutral (Input)</b>
N	10 230VAC, Neutral (Supply to Fan)
E	11 Earth (Supply to Fan)
E	12 <b>Earth (Input)</b>
E	13 Earth (Supply to Fan)
E	14 Earth (spare)

### Control Connector One, J2

Pin	Function
1	Alarm Relay, Contact A (Contacts Closed = No Alarm)
2	Alarm Relay, Contact B
3	Fan 1 Speed Control 0-10V Output
4	Fan 1 Tachometer Open Collector / Relay Input
5	Fan 1 GND / 0V
6	Fan 2 Speed Control 0-10V Output
7	Fan 2 Tachometer Open Collector / Relay Input
8	Fan 2 GND / 0V
9	Volt Free Select Input 1
10	0V for Select Input 1
11	Volt Free Stop/Run control input, (shipped with link to 0V to enable fan run)
12	0V for Stop/Run
13	Volt Free Select Input 2
14	0V for Select Input 2

## Control Connector Two, J3

Pin	Function
1	Fan Run Relay, Contact A (Contacts Closed = Fan Running)
2	Fan Run Relay, Contact B
3	0-10V Input, Sensor One / Pressure Sensor
4	3V3 (RESERVED)
5	0-10V Input, Sensor Two / External Pressure Set-point 0-10V
6	0V for Sensor
7	Volt Free Select Input 3 (RESERVED). DO NOT CONNECT.
8	0V for Sensor
9	24VDC Unregulated Output, 25mA maximum, sensor supply
10	Relay 3, Normally Open Contact (Contacts Closed = Fan below Maximum Speed)
11	Relay 3, Common Contact
12	Relay 3, Normally Closed Contact (Contacts Open = Fan below Maximum Speed)
13	3V3 (RESERVED)
14	0-10V Input 3, (RESERVED)

Note: all "0V" terminals on J2 & J3 are commoned.

### Fan Compatibility

Fan Speed control outputs compatible with EC 0-10V or Open Collector PWM speed controlled fans, 2kHz PWM, maximum of 12 EC Fans per 0-10V output.

Tachometer / Relay monitor input compatible with Open Collector tachometer (1-2 fans) or Relay Alarm fans.

### Mechanical Outline

Enclosure	180(L) x 94(W) x 57(H), transparent lid for LED visibility, fixing centres 165 x 79mm
PCB	157mm x 71mm, Hole centres 146 x 60mm. Height 31mm max.
LED Identification	LED "Fan1" and "Fan2" Run and Alarm, indicated by PCB silk screen legend LED "En" Run Enable and LED "B" Fast, indicated by PCB silk screen legend
Trimmer Identification	Trimmer indicated by PCB silk screen legend, R1, R2, R3 and R4
IP Rating	IP66 with Enclosure.
Cable Glands	Not included. Enclosure supplied, has "knock-outs" to suit 16mm or 20mm glands.

### Safety

- Installation must be by qualified personnel in accordance with local applicable standards.
- This equipment must be Earthed.
- Access is limited to service personnel only. Live parts accessible when cover removed.
- Residual risk of contact with fan. Maintenance personnel should take due care and attention.
- Complies with Low Voltage Directive 37/23/EEC as amended by 93/68/EEC
- Complies with EN60335-1 - Specification for safety of household and similar electrical appliances
- Connector J1 Terminals SL1 and SL2 may be live even with the controller supply disconnected
- EC Fans use Capacitors to store mains voltage. Contact with the mains wiring must be avoided for 5 minutes following supply disconnection.

### EMC Compliance

BS EN61000-6-3:2007 (emissions), BS EN61000-6-2:2005 (immunity)

Radiated Emissions BS EN55022:2006, Class B, Radiated Immunity EN61000-4-3:2002 +A1+A2

Fast Transient Bursts EN61000-4-4:2004, Conducted Immunity EN61000-4-6:2007

### ESD

Many modern electronic components are susceptible to damage from Electro Static Discharge (Static Electricity).

During commissioning, avoid unnecessary contact with electronic components on PCB's.

PCB's which are Static Sensitive should be stored in anti-static packaging until installed.

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## Installation

### General:

See "Safety" information above.

For connections, see Connection Details table above. Route control wiring separately from AC mains wiring.

Remove enclosure knock-outs as required to fit cable glands, taking care not to damage the PCB. Cable entry at enclosure end is recommended.

### Tools:

A 2.5mm flat screwdriver is recommended for the screw terminal block clamps and Variable Resistor adjustment.

A voltmeter is required during commissioning.

### 230VAC Supply:

Controller connection to 230VAC supply must be fused to 13A maximum.

The supply for single phase fans up to 13A total load may be connected via this control PCB, connect Fans to 230VAC output and Earth output terminals. For higher currents or 3-phase fans route supply direct to fans.

### Proportional Band Control:

Connect first sensor to "0-10V Input, Sensor One" (J3 pin 3) and "0V" (J3 pin 6), plus "24VDC Unregulated Output, 25mA max" (J3 pin 9) if required

If used, connect second sensor or Local / Remote BMS 0-10V control to "0-10V Input, Sensor Two / External Pressure Set-point 0-10V input" (J3 pin 5) and "0V" (J3 pin 8), plus "24VDC Unregulated Output, 25mA max" (J3 pin 9) if required.

### Constant Pressure Control:

Connect pressure sensor to "0-10V Input, Sensor One"(J3 pin 3) and "0V" (J3 pin 6), plus "24VDC Unregulated Output, 25mA max"(J3 pin 9) if required.

If used, connect External Pressure Set-point 0-10V to "0-10V Input, Sensor Two / External Pressure Set-point 0-10V input"(J3 pin 5) and "0V"(J3 pin 8).

### Fans:

Connect fan supply, speed control and tachometer leads, see table above for connections. If fan has a 10V output wire cut back & insulate. If fans are Alarm Relay type (not Tachometer), connect fan relay between 0V and tachometer Input. If fan monitoring is not required, then link tachometer Input to 0V to prevent alarms.

### Select Inputs:

Connect Run/Stop and Speed/Set-point select inputs as required for the application, see Tables below.

### PCB Switches and Variable Resistors:

Set DIP Switches and Variable Resistors as required, see tables and procedures below.

DIP Switch 1 Position	OFF	ON
1	<b>Proportional Band Control mode</b>	<b>Constant Pressure PID Control mode</b>
2	Two Fans	Single Fan, Fan1 only
3,4	Simultaneous / Alternate Fan Run Changeover Period Run, see table	
5, 6	See tables below	
7	Fan 1 PWM, Open Collector	Fan 1 PWM, 0-10V
8	Fan 2 PWM, Open Collector	Fan 2 PWM, 0-10V

DIP Switch 1 Position		Simultaneous / Alternate Fan Run Changeover Period (Hours)	Fan Fail action
3	4	Simultaneous Fan Run (Alternate run at low airflow)	Remaining fan runs faster
Off	Off		
ON	Off	6	Swap to standby fan
Off	ON	12	
ON	ON	24	

See **Proportional Control Band** or **Constant Pressure Control** sections below for additional settings.

## Proportional Band Control, Operation

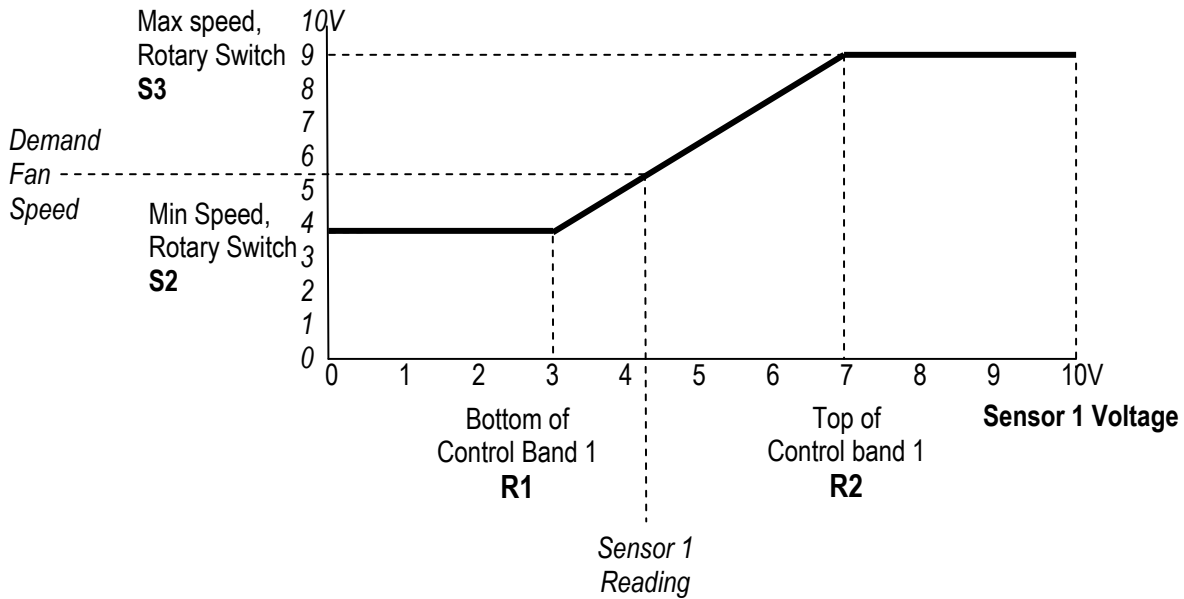
The controller varies the fan speed to the level required, based on the sensor measurement (“airflow demand”), as shown in the Proportional Band Control Profile drawings below.

If two sensors are in use the fan speed will be set to the higher of the two fan speed demand levels.

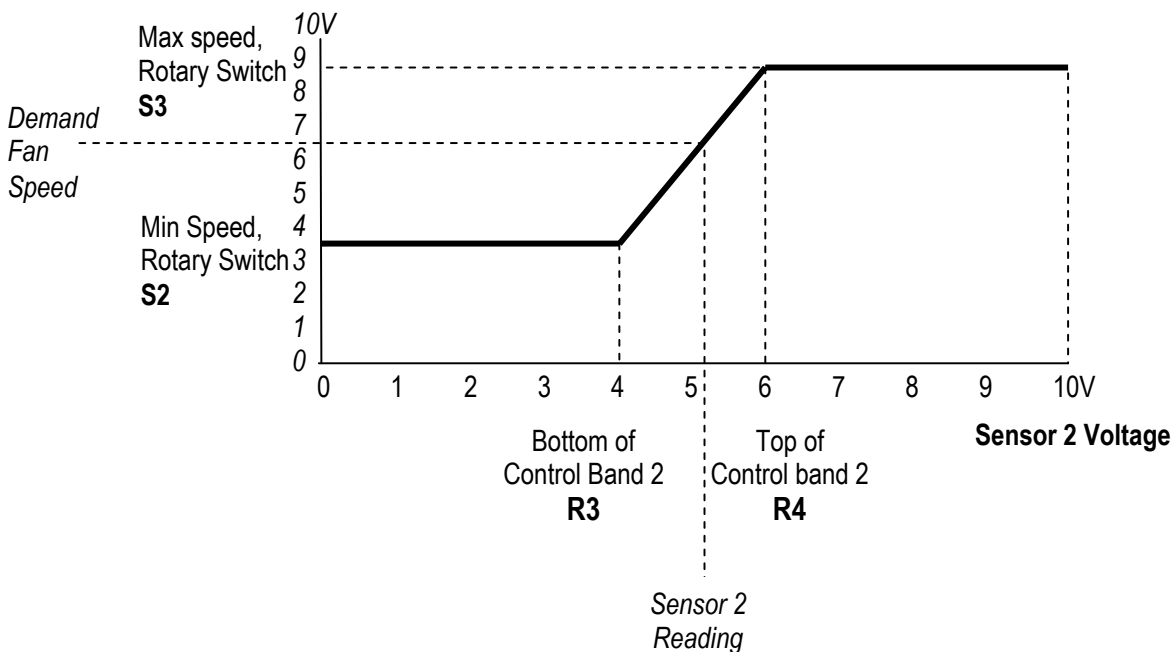
Select inputs can be used to force the Fan Speed to Minimum, Maximum, or set to the Proportional Band Demand Speed.

The Variable Resistors and rotary DIP switches configure the operation as shown below:

**Example Proportional Band Control Profile, Sensor 1**



**Example Proportional Band Control Profile, Sensor 2**



Fan Speed Select Inputs J1, J2	Proportional Band Control, Fan Speed						
	FAN STOP		Minimum Speed, S2 setting	Proportional Band Control, Sensor Demand		Maximum Speed, S3 setting	
SL2, Switched Live Input 2 Stop/Run (J1 pin 2)	Open	-	Linked to 230VAC	Linked to 230VAC		Linked to 230VAC	
Volt Free Stop/Run (J2 pin 11)	-	Open	Linked to 0V	Linked to 0V		Linked to 0V	
SL1, Switched Live Input 1 (J1 pin 1)	-	-	Open	-	Linked to 230VAC, and DIP SW 6 OFF	-	Linked to 230VAC, and DIP SW 6 ON
Volt Free Select Input 1 (J2 pin 9)	-	-	Open	Linked to 0V	-	-	-
Volt Free Select Input 2 (J2 pin 13)	-	-	Open	Open	Open	Linked to 0V	-

In the above table “-” indicates “Input state ignored”

DIP Switch 1 Position	Proportional Band Control, Options	
	OFF	ON
5	Normal Operation	Commissioning, see table below
6	SL1 selects Sensor Demand Fan Speed	SL1 selects Maximum Fan Speed, S3 setting.

DIP Switch 1 Position		Proportional Band Control, Commissioning	
5	6	PWM Outputs	Indicator LED
ON	Off	Fan 1 Speed Control PWM Output = R1 Setting Fan 2 Speed Control PWM Output = R2 Setting	NTC1 Red LED Pulse
ON	ON	Fan 1 Speed Control PWM Output = R3 Setting Fan 2 Speed Control PWM Output = R4 Setting	NTC2 Red LED Pulse
Off	-	Normal Operation, Fan 1 Speed Control PWM Output = Fan 1 speed control Fan 2 Speed Control PWM Output = Fan 2 speed control	NTC1 & NTC2 Red LED Off

Variable Resistors	Proportional Band Control, Set-points
R1	Sensor 1, input voltage at bottom of proportional band 1
R2	Sensor 1, input voltage at top of proportional band 1
R3	Sensor 2, input voltage at bottom of proportional band 2
R4	Sensor 2, input voltage at top of proportional band 2

Rotary DIP Switch	Proportional Band Control, normal profile, Fan Speed Range	Invert Speed Control Output (Heating Profile), Fan Speed Range
S2	Fan Minimum Speed	Fan Maximum Speed
S3	Fan Maximum Speed	Fan Minimum Speed

To invert Speed Control Output (Heating Profile), make S2 setting higher than S3 setting.

## Proportional Band Control, Commissioning

Note - during this procedure the Control Band Set-points (sensor output voltage set-points) will be temporarily connected to the Fan Speed control outputs to allow their values to be simply measured with a voltmeter. The commissioning procedure has two parts;

- 1) Set the Proportional Band Set-points
- 2) Set the Fan Minimum and Maximum speeds.

*Caution – during this procedure the Fan Speed Control voltage outputs will not be limited by the S2 & S3 setting. Both outputs may be active.*

### Set the Proportional Band set-points:

- 1) Determine the Proportional Band set-point voltages required for the installed system (see sensor data sheets).
- 2) Set SW1 position 1 OFF to select Proportional Band control mode
- 3) Set SW1 position 5 ON to select Proportional Band Commissioning mode
- 4) Set SW1 position 6 OFF to connect Sensor 1 set-points to the controller Fan Speed outputs. NTC1 Red LED pulses.
- 5) Connect a Voltmeter to Fan 1 Speed Control PWM Output, J2 pin 3.
- 6) Adjust R1 for a voltmeter reading equal to the Sensor 1 Bottom of proportional control band voltage.
- 7) Move the Voltmeter to Fan 2 Speed Control PWM Output, J2 pin 6.
- 8) Adjust R2 for a voltmeter reading equal to the Sensor 1 Top of proportional control band voltage.
- 9) If Sensor 2 is not in use, set R3 and R4 to minimum and omit the next five steps (go to step 15).
- 10) Set SW1 position 6 ON to connect Sensor 2 set-points to the controller Fan Speed outputs. NTC2 Red LED pulses.
- 11) Connect a Voltmeter to Fan 1 Speed Control PWM Output, J2 pin 3.
- 12) Adjust R3 for a voltmeter reading equal to the Sensor 2 Bottom of proportional control band voltage.
- 13) Move the Voltmeter to Fan 2 Speed Control PWM Output, J2 pin 6.
- 14) Adjust R4 for a voltmeter reading equal to the Sensor 2 Top of proportional control band voltage.
- 15) Commissioning complete - set SW1 position 5 OFF to select Proportional Band normal operation. Set SW1 position 6 for required SL1 Select Input operation, see table above.

### Alternative Commissioning Procedure for Proportional Band set-points:

For this method the voltage at each Variable Resistor Test point is monitored, instead of at the Fan Speed Outputs.

- 1) Set SW1 for Proportional Band control mode and Normal Operation (not commissioning mode)
- 2) Determine the Proportional Band set-point voltages required for the installed system (see sensor data sheets).
- 3) Adjust R1 to R4 for the required set-points, monitoring the R1-R4 test point voltages with the voltmeter. The test point voltage is scaled 0-3.3V instead of 0-10V, so the indicated voltage must be multiplied by 3 to determine the true 0-10V set-point value. The test point location is shown in "PCB Component Location" below.

### Local / Remote 0-10V control mode (including BMS linear control)

Set R2 fully clockwise.

Set R1, R3 and R4 fully anti-clockwise.

Set rotary Switch S2 to minimum required fan speed, see table below.

Set rotary switch S3 to maximum required fan speed, see table below.

Connect the Local / Remote / BMS 0-10V control to "0-10V Input, Sensor One" (J3 pin 3) and "0V" (J3 pin 6).

The external signal 0-10V signal will then control the fan speed over the 0-10V fan speed control voltage range.

For local manual control an ebmpapst RM-ECv is recommended.

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## Set the Proportional Band Control Fan Minimum and Maximum speeds:

Adjust Rotary DIP Switch S2 to set the fan Minimum speed control voltage.

Adjust Rotary DIP Switch S3 to set the fan Maximum speed control voltage.

See table below

Rotary DIP Switch Position	Fan Speed Voltage
0	0
1	2.0
2	2.6
3	3.1
4	3.7
5	4.2
6	4.8
7	5.3
8	5.9
9	6.4
A	7.0
B	7.5
C	8.1
D	8.6
E	9.2
F	10.0

To invert Speed Control Output (Heating Profile), make S2 setting higher than S3 setting, set S2 to the maximum speed and S3 to the minimum speed.

## Constant Pressure Control, Operation

For use with ebm-papst EC products with 0-10V control input in HVAC constant pressure systems. Can also be used with a pressure tapped inlet ring to provide a constant air volume system

The controller uses an external pressure sensor. The controller is suitable for use with the DS85 Series Differential Pressure Sensor, or compatible 0-10V output pressure sensor.

The user should select a pressure sensor which covers the pressure range required (0-500Pa is typical). The controller uses a PID control program to vary the fan speed as required to maintain the pressure at the set value.

The pressure set-point(s) are set by rotary DIP switch(es) or by a second 0-10V input which allows the Set-point to be adjusted by an external Potentiometer or 0-10V BMS signal. Selection between the Set-points is by means of Switched Live or Volt Free select inputs, see table below.

The maximum fan speed can be limited if desired, see below.

## Constant Pressure Control, Commissioning

### Low / Single Pressure Set-point (Default setting if SL1 and Volt Free Select Inputs not connected)

Refer to the datasheet for the pressure sensor used, to determine the sensor output voltage at the required pressure set-point, then adjust rotary switch **S2** to select the value closest to the required point, see table below.

### High / Second Pressure Set-point, if used (See table for select input use)

Refer to the datasheet for the pressure sensor used, to determine the sensor output voltage at the required pressure set-point, then adjust rotary switch **S3** to select the value closest to the required point, see table below.

### BMS / External Potentiometer Set-point, if used (See table for select input use)

If selected, the Set-point voltage will be the voltage present on 0-10V Input 2 (min/max not limited by S2/S3). For local manual control an ebm-papst RM-ECv is recommended. This can provide min/max limits if required.

### Set the Maximum Fan Speed:

Set the Maximum Fan Speed control voltage using variable resistor R2. Normally the setting will be fully clockwise to allow full fan speed. If reduced maximum fan speed is required, adjust R2 for the required maximum fan speed control voltage which will be three times the voltage measured on test point R2, see "PCB Component Location" below.

Note: There is no minimum fan speed setting for Constant Pressure operation.

### Constant Pressure Control PID Program Response Speed

Set R1 to mid position and monitor the operation of the system.

If the fan speed repeatedly overshoots (hunts), adjust R1 anti-clockwise.

If the fan speed is too slow to vary in response to changes in airflow demand, adjust R1 clockwise.

### Constant Volume Operation (single fan operation only)

By measuring the difference between the ambient inlet pressure and the pressure at a fan inlet ring, it is possible to calculate air flow volume. If the pressure difference is kept constant, a constant volume system is established.

**Inlet Rings:** A special inlet ring is required which has hose connections to measure the pressure inside the inlet ring. They also have a known K-factor, a constant relative to the airflow through the inlet ring, which is needed to calculate the air volume. Contact ebm-papst for further information.

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Pressure Set-point Select Inputs	FAN STOP		Constant Pressure Set-point				
			Low / Single Pressure Set-point (S2)	External Pressure Set-point (0-10V Input 2)		High Pressure Set-point (S3)	
SL2, Switched Live Input 2 Stop/Run (J1 pin 2)	Open	-	Linked to 230VAC	Linked to 230VAC		Linked to 230VAC	
Volt Free Stop/Run (J1 pin 11)	-	Open	Linked to 0V	Linked to 0V		Linked to 0V	
SL1, Switched Live Input 1 (J1 pin 1)	-	-	Open	-	Linked to 230VAC, and DIP SW 6 OFF	-	Linked to 230VAC, and DIP SW 6 ON
Volt Free Select Input 1 (J2 pin 9)	-	-	Open	Linked to 0V	-	-	-
Volt Free Select Input 2 (J2 pin 13)	-	-	Open	Open	Open	Linked to 0V	-

In the above table “-” indicates “Input state ignored”

DIP Switch 1 Position	Constant Pressure Control operation	
	OFF	ON
5	Normal (Cooling Profile)	Invert Speed Control Output (Heating Profile)
6	SL1 selects 0-10V set-point	SL1 selects Rotary Switch S3 set-point

Constant Pressure Control Set-points	
Rotary DIP Switch S2	Low Pressure Set-point
0-10V Input 2 (J3 pin 5)	External Pressure Set-point
Rotary DIP Switch S3	High Pressure Set-point

Variable Resistor	Constant Pressure Control
R1	PID Gain (response speed)
R2	Fan Maximum Speed
R3	(reserved)
R4	(reserved)

# Operating and Maintenance Instructions

## Constant Pressure Control, Low and High Set-points:

Adjust Rotary DIP Switch S2 to set the Low / Single Pressure Set-point voltage.

Adjust Rotary DIP Switch S3 to set the High / Second Pressure Set-point voltage.

See table below

### Rotary DIP Switch S2 & S3

Position	Pressure Set-point Voltage
0	0.6
1	1.2
2	1.9
3	2.5
4	3.1
5	3.7
6	4.3
7	5.0
8	5.6
9	6.2
A	6.8
B	7.4
C	8.1
D	8.7
E	9.3
F	10.0

## Controller Operation, General: Run Enable Inputs, LED's, Relays, Power-up Check

### Fan Run Control:

**Run Enable:** Fans will not run unless **both** run enable signals (Switched Live **and** Volt Free) are active. LED "En" will be illuminated if Run enabled, LED will flash mostly off if not. Unit is shipped with both enables linked.

### Fan Monitor:

"FAN1" and "FAN2" LEDS, Green LED = Fan Running at 20% speed or above, Red LED = Fan Alarm

### Alarm Relay:

Alarm Relay output: Contacts closed = No Alarm, Contacts Open = Fan Alarm or Power Fail.

### Fan Run Relay:

Fan Run Relay output: Contacts closed = Fan Running at 20% speed or above, Contacts Open = Not Running.

### Fan Maximum Speed Relay (Change-over contacts):

Fan Maximum Speed Relay: Relay Energised = fan below maximum speed setting, Relay De-energised = fan at maximum speed setting (may indicate Filter Block on a filtered system).

### Power-up Check

At power-up all LED's will illuminate and Relays energise for a few seconds. The fan run will be checked unless "Fan Stop" is selected.

## Maintenance and Servicing

The PCB has no replaceable parts, if a fault develops return the PCB to the manufacturer.

## Use of ebm-papst RM-ECv Controller for local manual control



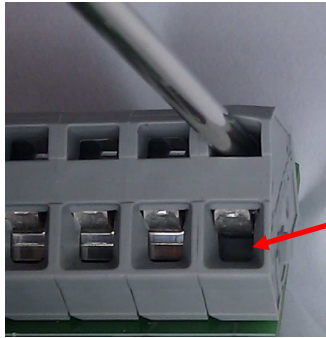
The ebm-papst RM-ECv Controller can be used to provide a 0-10V manually adjustable control voltage, when supplied from the CN1090 controller "24VDC Unregulated Output, 25mA maximum, sensor supply". This is achieved by adjusting the RM-ECv "High" trimmer to give an RM-ECv output of 10V when the main potentiometer is set fully Clockwise, and adjusting the RM-ECv "Low" trimmer to give an RM-ECv output of 0V when the main potentiometer is set fully Counter-Clockwise. The RM-ECv trimmers can also be adjusted to limit the control range if required. For details see the RM-ECv Controller instructions 210-OMI11358, available from the em-papst web site, [www.ebmpapst.co.uk/instructions](http://www.ebmpapst.co.uk/instructions)

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## Terminal Block Use

The terminal blocks fitted are operated as follows:

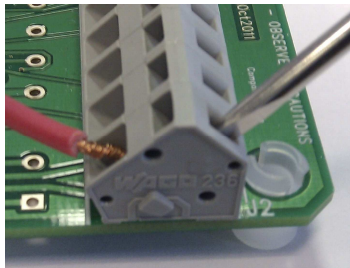
Insert a 2.5mm or 3mm flat blade screwdriver **fully** into the upper hole as shown, to open the terminal wire entry. Insert the wire into the lower hole then remove the screwdriver to leave the wire clamped in the terminal.



Check wire clamp has moved clear to allow wire entry

**Alternatively**, open the wire entry by inserting the screwdriver **fully** from the opposite side of the connector as shown

Insert the wire into the lower hole then remove the screwdriver to leave the wire clamped in the terminal.





## Declaration of Conformity

Certificate No - CN1090CE

CE DECLARATION OF CONFORMITY		
<b>Declaration</b>		
We, ebm-papst UK Ltd, Chelmsford Business Park, Chelmsford, Essex CM2 5EZ certify that the product(s) listed are in conformity with;		
Low Voltage Directive 2006/95/EC Electromagnetic Compatibility Directive 2004/108/EC		
	Declaration Approved	Technical File Compiled
Name	G. M. Lockwood	Jeff Elkins
Position	Technical Director	Electronics Design Engineer
Signature		
Date of Declaration	08-Feb-2013	08-Feb-2013
Issue / Bug No	Issue 1	Bug no 1401
Part number:	CN1090	
Description:	Demand Ventilation Controller, speed control of two EC type fans	
<p>The product(s) have been assessed by the application of the following Standards;</p> <p>BS EN 60335-1 - Household and similar electrical appliances. Safety. General requirements. NOTE: This unit CN1090 is the same Hardware as existing product CN1083, with different programming.</p> <p>BS EN61000-6-3:2007 (emissions), BS EN61000-6-2:2005 (immunity), Radiated Emissions BS EN55022:2006, Class B, Radiated Immunity EN61000-4-3:2002 +A1+A2, Fast Transient Bursts EN61000-4-4:2004, Conducted Immunity EN61000-4-6:2007</p>		

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