

DPC200 PRESSURE - VOLUME CONTROL

For External Pressure or Volume Sensors

- Ultra fine pressure or volume control
- Controls fan speed invertors and actuators
- Hand - Auto and BMS change over control
- Local or external BMS actual sensor display
- Local or external BMS position sensor display
- Internal or remote BMS set point adjustment
- Door switch control freeze with timer
- Low and High alarm thresholds and alarms
- Volt free alarm contact for remote BMS.
- Excellent repeatability
- After Sales Service is provided by CMR
- 24 month warranty
- 20 Years field application experience



DPC200 Controller with Type 'J' display, hand-auto and Alarms

GENERAL

The DPC200 was designed to provide accurate air volume and room pressure control especially in clean room environments but over the years it has found a multitude of uses in all kinds of control systems. The principle of the control is simple and easily adopted by any controls engineer. It consists of one control loop with a number of options such as auto or manual control and remote BMS interface. The DPC200 can be connected to any CMR external sensor, damper motor or fan speed inverter. It provides constant air volume control in ventilation systems or accurate room pressure control especially in pharmaceutical production and research areas. It has an option for local and remote alarm outputs and has BMS and Scada monitoring systems connectivity. Full calibration certificates traceable to National Standards can be supplied to make the CMR control system conform to validation procedures.

REMOTE MEASUREMENT SENSORS

The Controller can read in a 0...10V signal from any CMR sensor. The sensor actual value is displayed on an LCD Display on the front operators panel of the DPC200. The LCD Display is normally scaled 0...100% of the 0...10V but can be scaled to different engineering units i.e. Pa, mBar, m/s etc.

AUTO CONTROL SET POINT

A set point adjustment dial is provided for the user to select an operating set point. The dial is available either as 0...100% or -100%...0...+100% depending on type ordered.

CONTROL OUTPUT OPEN-OFF-CLOSE OR 0...10V/4...20mA

The DPC can drive all fast acting CMR motors which have a 24VAC synchronous motor to drive open or close. Because of the high speeds, the controller has all built in facilities to control in all applications without hunting.

The DPC is also available with 0...10V output normally used for fast acting Inverter Fan Speed Controls or specialist damper actuators.

MANUAL HAND CONTROL

A Hand-Auto switch is provided. When selecting the Hand option, the manual set point dial is made active and the user can select a manual operating set point to drive the inverter or damper into any position. This is ideal for commissioning or emergency actions. The dial is scaled to 0...100% as standard.

The actual speed of the Fan Inverter i.e. 0...100% of the Hz output or the position of the actuator i.e. 0...100% of the damper angle is continuously monitored. This value is available as 0...10V signal to the BMS and the LCD display.

POWER SUPPLY

The DPC200 can be supplied for various power supplies such as 24V AC, 110V AC and 230V AC.

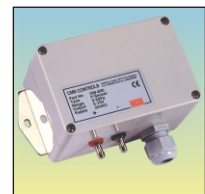
REMOTE CMR SENSORS

The DPC200 was designed to function with all CMR measurement sensors for which data sheets are available separately. The most popular sensors are the DPM50 Pressure and the DPM55 air velocity or volume instruments. The units are normally built into a central control panel together with the DPC200 s.

The DPMs have the advantage to provide additional alarm contacts and a separate 4...20mA signal to independent pressure monitoring systems. Another feature is the large LED display which indicates the pressures or velocities on the front panel for the operator convenience. Calibration is also made easy as all the controls are under the front lense of the DPM.



DPM50/55 Sensor



P-Sensor

OTHER REMOTE CMR SENSORS

The sensors can also be mounted in the field at any distance and the CMR P-Sensors either in ABS or Aluminium Enclosures are ideal for pressure control. The V-Sensors, F-Sensors and VT-Sensors are used for air volume control either for constant or variable air volume applications.



V- F- VT- Sensors

CMR DAMPERS AND ACTUATORS

CMR provides a large range of dampers either circular or rectangular with a variety of actuators from 4 up to 150 seconds rotation speed for 0...90°. The DPC200 can control all these actuators accurately and without hunting. It is recommended to use CMR dampers and actuators as the mechanical strength and torque of the actuator is critical when operating at very high speeds.



CMR Extract Valve

FAN SPEED INVERTOR CONTROL

The DPC200 is ideal to control any Fan Speed Inverter from small to large applications either on static pressures or fan volumes using the CMR fan inlet ring measuring probes. It is of great advantage where an independent control loop is required to provide fail safe operation. The DPC200 can run the fan in auto or manual mode and provides override capability for the BMS.



Inverter 0-100Hz

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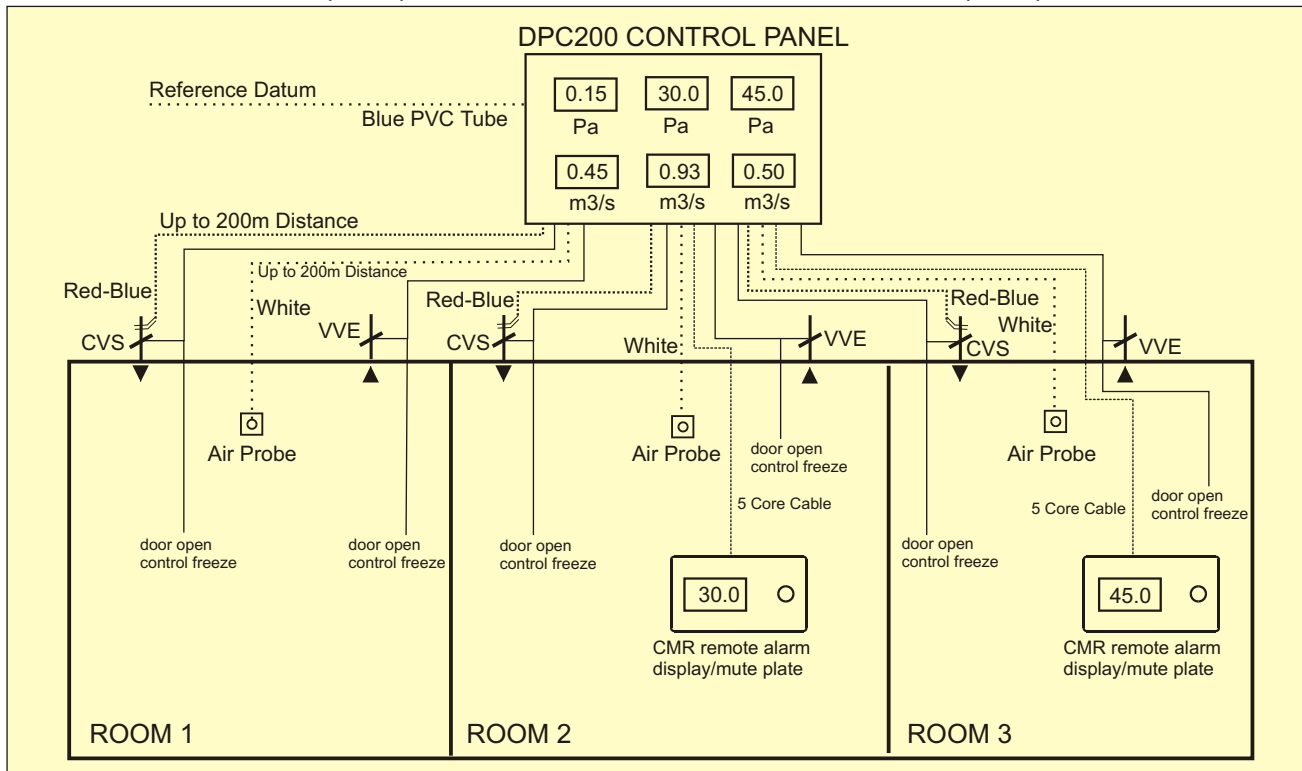
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DPC200 CLEAN ROOM CONTROLLER

CONSTANT SUPPLY (CVS) AND VARIABLE VOLUME EXTRACT (VVE) CONTROL



The above CMR Control Panel has three DPM55 air volume sensors fitted into the front door. The air volume is measured at the venturi mounted into the CMR Valve providing an accurate air volume measurement. The DPC200 reads the air volume and controls the constant volume supply (CVS) valves to provide constant air-change rate into the rooms. Three DPM50 room pressure sensors are also fitted into the front door.

Each room pressure is measured against a reference datum i.e. plant room and is controlled by driving the CMR motorised Variable Volume Extract Valves (VVE) to the pressure set point at an adjustable speed to provide stable room pressure at any time. Remote display and alarm plates are provided for the operator's safety. Door open interlock switches can be connected to freeze the controls. When the door is closed again a timer is provided to re-activate the controls.

TYPICAL ROOM PRESSURE AND VOLUME CONTROL PANEL FITTED WITH DPM50/55s AND DPC200s



CMR Control Panel with DPM50 and DPM55 instruments built into the front door for remote measurement.



Internal view of the CMR Panel. An isolator, fuses, power supply, computer interface terminals and six DPC200 Controllers are fitted on the back plate. All factory tested.



Top of the CMR panel with all tube nipple connections, cable glands and identification engraving.



CMR panel door showing the rear of the DPMs. Designed for easy access during calibration in future.

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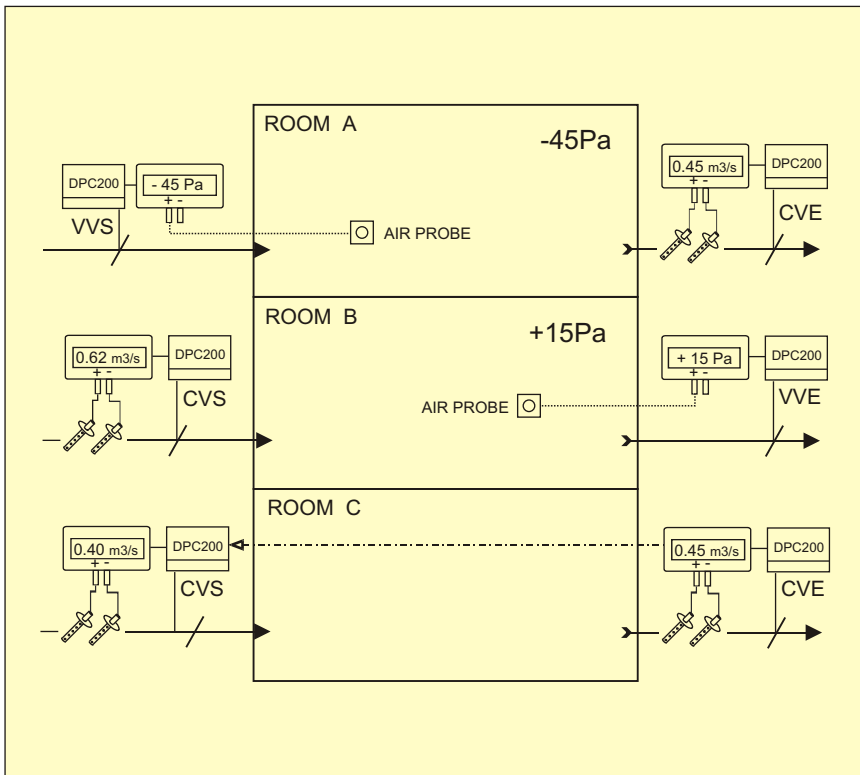
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DPC200 AIR CONTROL APPLICATIONS

TYPICAL ROOM PRESSURE CONTROL AND VOLUME TRACKING



CLEAN ROOM AIR CONTROLS

ROOM A

The extract is set up as constant volume extract (CVE) to maintain 0.45m³/s. The supply air is set up to be variable volume supply (VVS). The room pressure is measured via the air probe and the supply air is controlled to maintain -45Pa in the room.

ROOM B

The supply air is set up to be a constant volume supply (CVS) to maintain 0.62m³/s.

The extract is set up as variable volume extract (VVE). The room pressure is measured via the air probe and the extract air is controlled to maintain +15Pa in the room.

ROOM C

The supply is set up as constant volume supply (CVS) and the extract is set up as constant volume extract (CVE). The volume can be offset by external means i.e. BMS and both CVE or CVS can track each other. The DPC is adjustable to achieve either over or under pressure in the controlled space. The schematic shows the extract volume sets the supply volume.

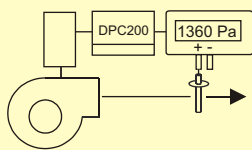
In most cases, the DPM instruments and DPCs are built into a central panel located in the plant room. PVC tubing is installed up to 200m in length to the constant volume valves and the room pressure air probe plates. The advantage of a central panel is easy commissioning, final calibration and validation.

The DPC200 is a standard controller which can be configured to provide constant supply, constant extract, variable volume supply or variable volume extract. It has the necessary interfaces to be set up as a tracking controller which means the extract DPM gives a signal to the supply DPC to follow and provide the same volume as the extract. An offset can be adjusted to either have more or less extract to suit the application.

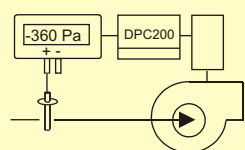
It can also be set up to measure the supply air and let the extract follow. It is recommended to use the CMR dampers and valves with CMR actuators, as the mechanical connections and the gearboxes have been designed for continuous high speed action all year round. All DPCs and DPMs can be connected to remote MPCs, BMS or Scada computers systems to read in the pressures, volumes and set points. The DPC can also receive remote set points and be controlled to be in automatic or manual mode. In case of computer failure, the DPC reverts back to its default set points, a vital advantage in critical manufacturing processes. Any CMR Sensors can be connected and supplied with traceable calibration certificates to National Standards and site certification can be carried out on request.

TYPICAL STATIC PRESSURE AND CONSTANT VOLUME FAN SPEED AND DAMPER CONTROL APPLICATIONS

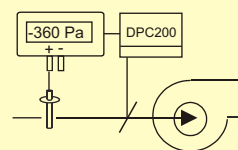
STATIC PRESSURE CONTROL



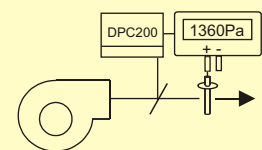
Supply Fan Speed Control



Extract Fan Speed Control

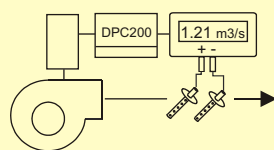


Extract Damper Control

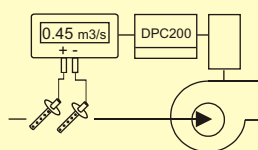


Supply Damper Control

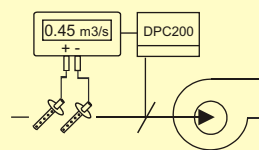
CONSTANT VOLUME CONTROL



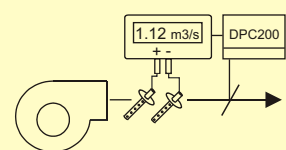
Supply Volume Fan Control



Extract Volume Fan Control



Extract Volume Damper Control



Supply Volume Damper Control

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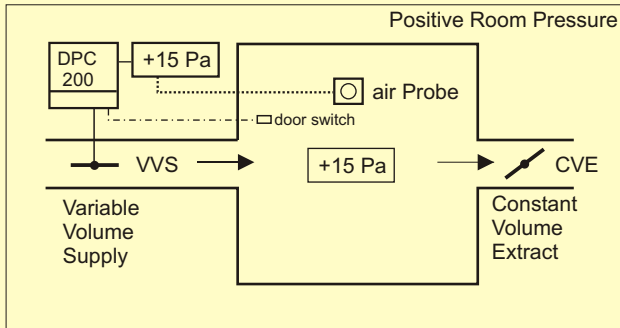


DPC200 DAMPER CONTROL METHODS

TYPICAL AIR PRESSURE OR AIR VOLUME DAMPER CONTROLS USING DPC200 CONTROLLERS.

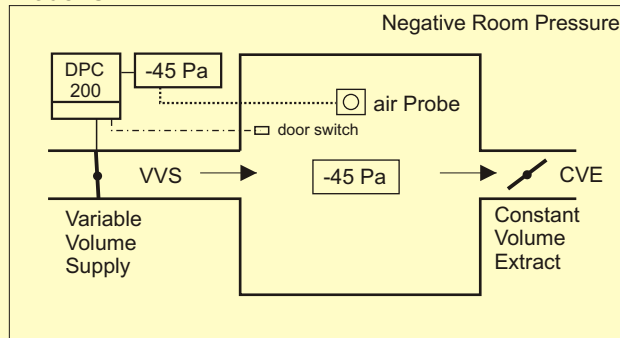
Damper Actuators can either be the OPEN-OFF-CLOSE or the 0-10V Type

Mode 'A'



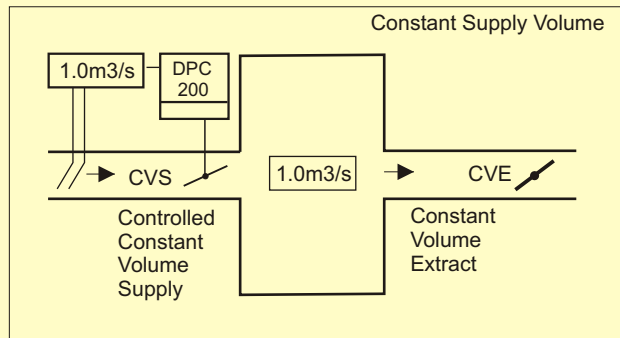
The room must be controlled at 15Pa positive pressure using variable volume supply and manual constant extract. On start up, the supply damper must be open and starts closing if the room pressure is greater than 15Pa. The damper motor stops when a door is opened and re-starts after a time out when closed again.

Mode 'C'



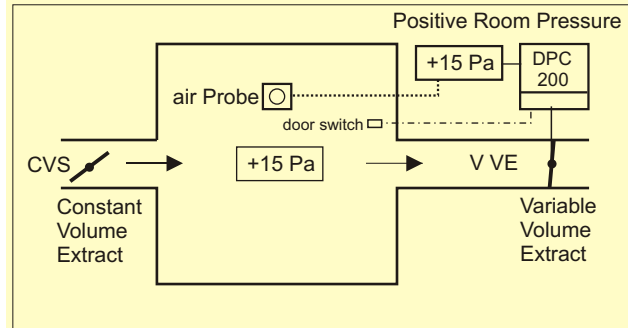
The room must be controlled at -45Pa negative pressure using variable volume supply and manual constant extract. On start up, the supply damper must be closed and starts opening if the room pressure is more negative than -45Pa. The damper motor stops when a door is opened and re-starts after a time out when closed.

Mode 'E'



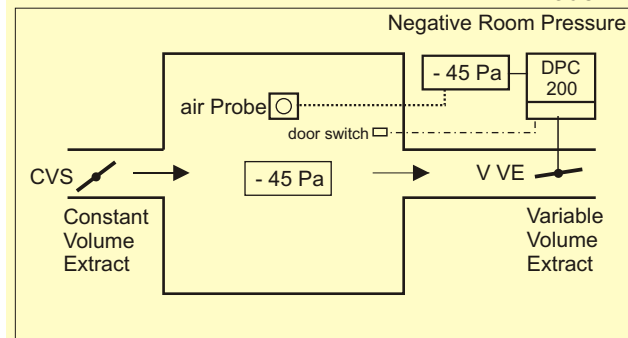
The room must be controlled at 1.0m3/s constant supply volume. On start up, the supply damper must be open and if the volume is more than the set point the damper starts closing to achieve the required constant volume. The controller has an adjustable set point to vary the supply volume if required. The DPC can be linked to an extract DPC controller if fitted to provide supply to extract tracking.

Mode 'B'



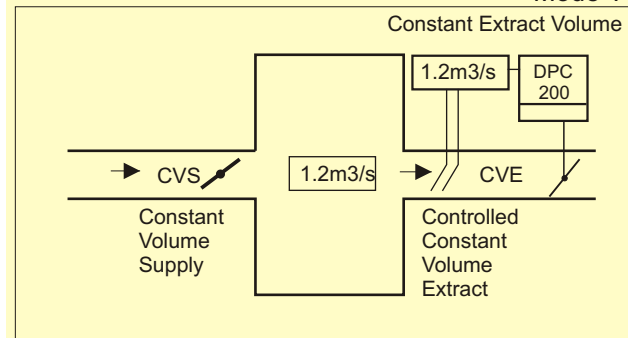
The room must be controlled at 15Pa positive pressure using variable volume extract and manual constant supply. On start up, the extract damper must be closed and starts opening up if the room pressure is greater than 15Pa. The damper motor stops when a door is opened and re-starts after a time out when closed again.

Mode 'D'



The room must be controlled at -45Pa negative pressure using variable volume extract and manual constant supply. On start up, the extract damper must be open and starts closing if the room pressure is more negative than -45Pa. The damper motor stops when a door is opened and re-starts after a time out when closed.

Mode 'F'



The room must be controlled at 1.2m3/s constant extract volume. On start up, the extract damper must be open and if the volume is more than the set point the damper starts closing to achieve the required constant volume. The controller has an adjustable set point to vary the extract volume at any time. The DPC can be linked to a supply DPC controller if fitted to provide extract to supply tracking.

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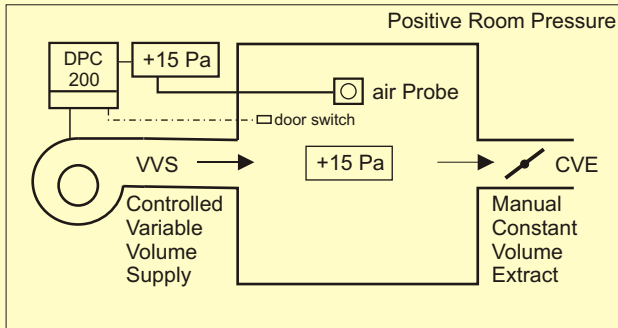
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DPC200 FAN SPEED CONTROL METHODS

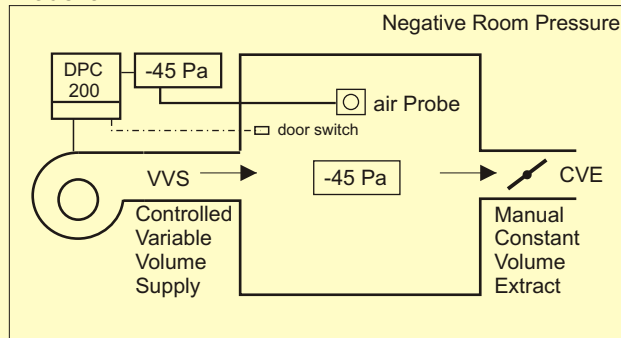
TYPICAL AIR PRESSURE OR AIR VOLUME FAN SPEED CONTROL USING DPC200 CONTROLLERS.

Mode 'G'



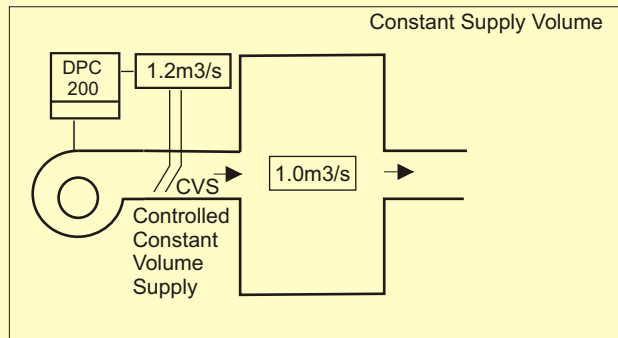
The room must be controlled at 15Pa positive pressure using variable volume supply and manual constant extract. On start up, the supply fan must speed up and starts reducing speed if the room pressure is greater than 15Pa. The fan speed locks when a door is opened and re-starts after a time out when closed again.

Mode 'J'



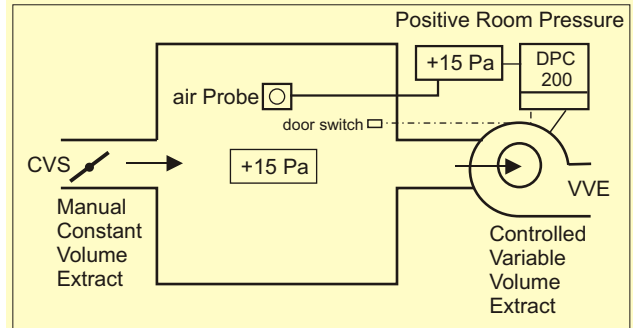
The room must be controlled at -45Pa negative pressure using variable volume supply and manual constant extract. On start up, the supply fan must reduce speed and starts speeding up if the room pressure is more negative than -45Pa. The fan speed locks when a door is opened and re-starts after a time out when closed again.

Mode 'L'



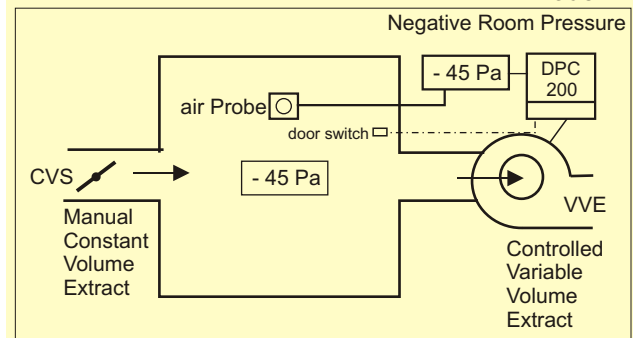
The room must be controlled at 1.0m³/s constant volume supply. On start up, the supply fan must speed up and if the volume is more than the set point the fan speed starts reducing to achieve the required constant volume. The controller has an adjustable set point to vary the supply volume if required. The DPC can be linked to the extract fan to provide supply to extract tracking.

Mode 'H'



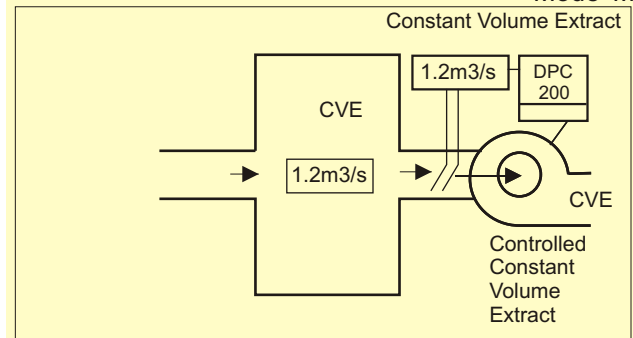
The room must be controlled at 15Pa positive pressure using variable volume extract and manual constant supply. On start up, the extract fan must reduce and starts speeding up if the room pressure is greater than 15Pa. The fan speed locks when a door is opened and re-starts after a time out when closed again.

Mode 'K'



The room must be controlled at -45Pa negative pressure using variable volume extract and manual constant supply. On start up, the extract fan must speed up and starts reducing speed if the room pressure is more negative than -45Pa. The fan speed locks when a door is opened and re-starts after a time out when closed again.

Mode 'M'



The room must be controlled at 1.2m³/s constant volume extract. On start up, the extract fan must speed up and if the volume is more than the set point the fan speed starts reducing to achieve the required constant volume. The controller has an adjustable set point to vary the extract if required. The DPC can be linked to the supply fan to provide extract to supply tracking.

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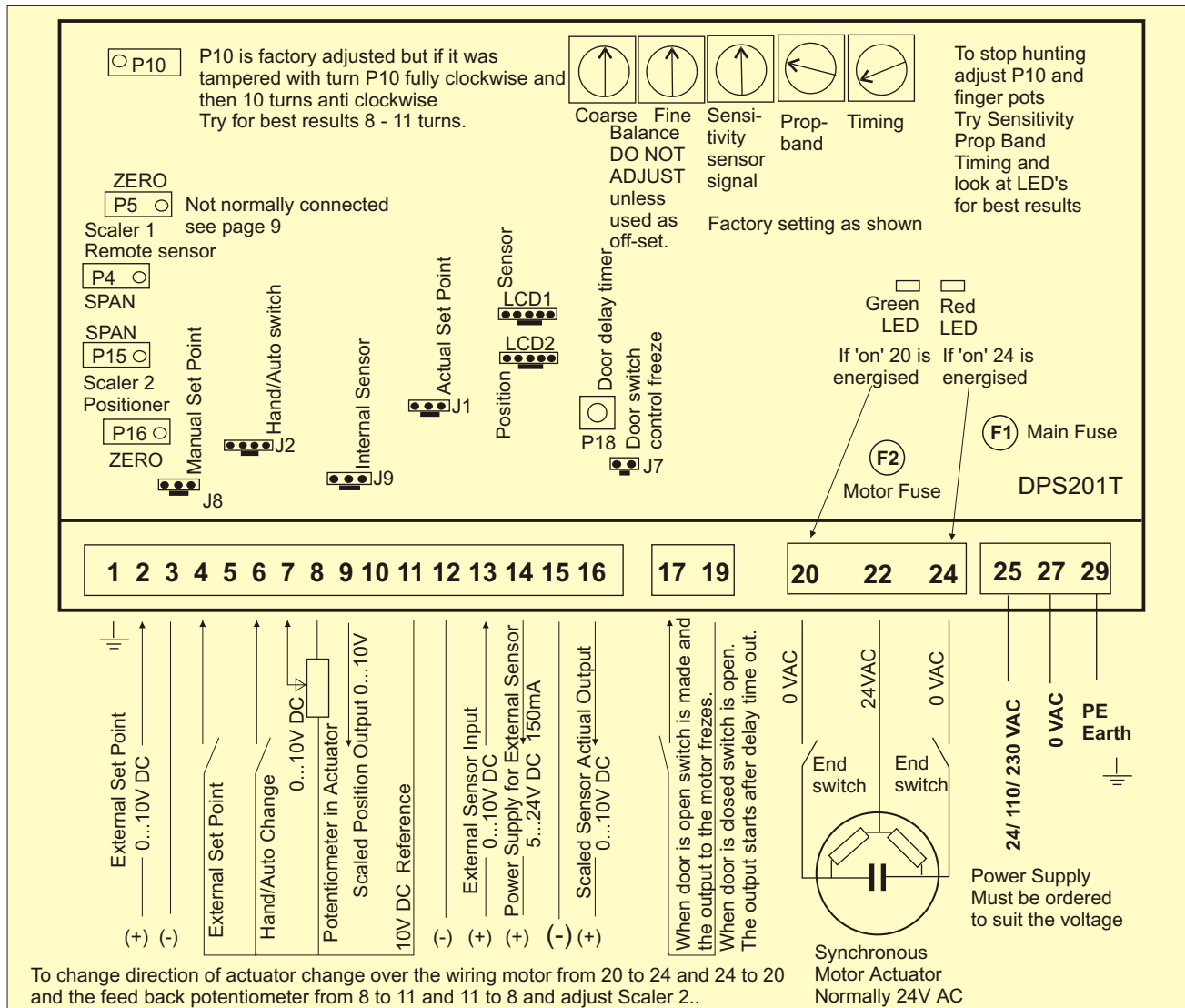
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DPC200 AST-VMS/L MOTOR CONTROL

DPC200 CONTROL BOARD WITH TRIAC OUTPUT TO DRIVE SYNCHRONOUS MOTORS



COMMISSIONING DAMPER ACTUATOR MOTION

Control method: Damper must be open on start up.

With no pressure or volume applied to the sensor and the setpoint set to +50% the green LED must be on and the damper must drive to open position on 20. If not, change over motor wires from 20 to 24 and 24 to 20 to change direction of motor. Adjust the end limit switch in the motor to give maximum opening position.

Apply pressure to (+) port of the sensor so that the signal is higher than the set point and the damper should drive to closed position. The red LED and 24 should be on. Adjust the closed limit switch to fully closed position. Repeat this process a few times until correct.

Control method : Damper must be closed on start up.

With no pressure or volume applied to the sensor and the setpoint set to +50% the green LED must be on and the damper must drive to closed position on 20. If not, change over motor wires from 20 to 24 and 24 to 20 to change direction of motor. Adjust the end limit switches in the motor to give fully closed position.

Apply pressure to (+) port of the sensor so that the signal is higher than the set point, the red LED must be on and the damper should drive to open position 24. Adjust the open limit switch to fully open position. Repeat this process a few times until correct.

COMMISSIONING DAMPER ACTUATOR POSITION

Control method: Damper must be open on start up.

The scaler 2 is the actuator position potentiometer scaling. The potentiometer is connected to 11 (10V) and 8 (GND) the output wiper is connected to 7. When the damper is fully open adjust span (P15) to 10V measured on 9. Close the damper as described on the left. Adjust the zero (P16) to be 0V on 9.

If the damper works incorrectly change over 8 to 11 and 11 to 8 to inverse the potentiometer function and repeat above process until correct.

Control method: Damper must be closed on start up.

The scaler 2 is the actuator position potentiometer scaling. The potentiometer is connected to 11 (10V) and 8 (GND) the output wiper is connected to 7. When the damper is fully closed adjust span (P15) to 10V measured on 9. Open the damper as described on the left. Adjust the the zero (P16) to be 0V on 9.

If the damper works incorrectly change over 8 to 11 and 11 to 8 to inverse the potentiometer function and repeat above process until correct.

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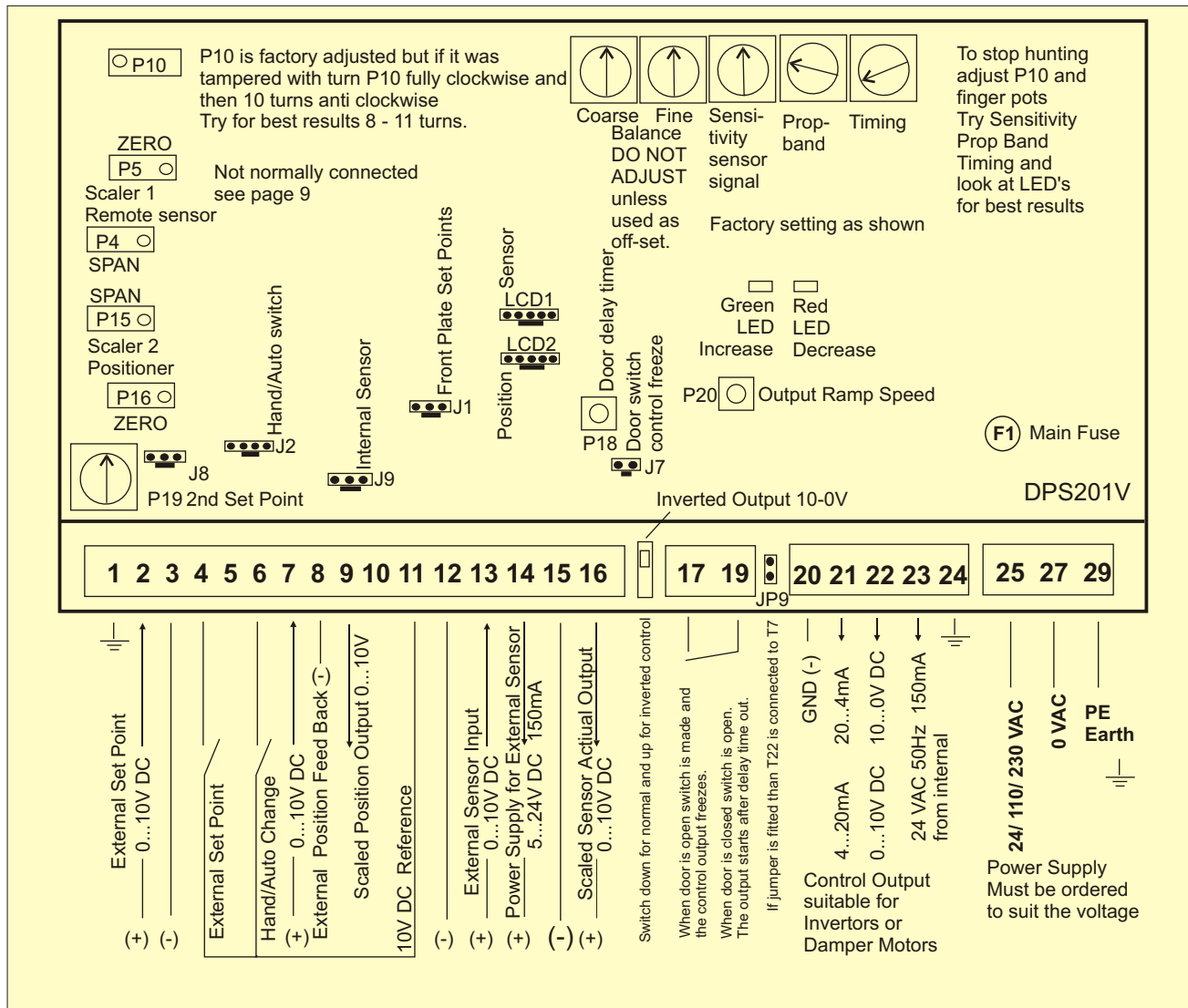
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DPC200 CONTROLLER 0-10V OR 4-20mA

DPC200 CONTROL WITH 0...10V/4...20mA OUTPUT TO DRIVE FAN SPEEDS OR DAMPER MOTORS



COMMISSIONING A

On start up the fan must speed up or the damper opens

With no pressure or volume applied to the sensor and the set point set to +50% the green LED must be on and 0...10V drives the fan up or damper open. If not, change over the inverter switch to normal position to change direction of the output signal. Adjust any top end limits on the external equipment if required. Apply a pressure or flow to (+) port of the sensor so that the signal is higher than the set point and the Fan should reduce speed or the damper closes. The red LED must be on and 0V drives the fan down. Adjust any end limits on the external equipment if required. Repeat this process a few times until correct.

The scaler 2 is the feed back positioner scaling circuit..

The feed back voltage from the Invertor or damper motor should preferably be 0...10V. The signal is fed into 7. If the fan is in low speed position adjust zero (P16) to read 0V on 9. If the fan is in full speed position adjust span (P15) to read 10V on 9. Try the controller on manual control by changing the set point. Repeat this process a few times until correct.

COMMISSIONING B

On start up the fan must reduce speed or the damper closes.

With no pressure or volume applied to the sensor and the set point set to +50% the green LED must be on and 10...0V drives the fan down or closes the damper. If not, change over the inverter switch to inverted output position to change direction of the output signal. Adjust any top end limits on the external equipment if required. Apply a flow to (+) port of the sensor so that the signal is higher than the set point and the Fan should speed up. The red LED must be on and 10V drives the fan up or the damper opens. Adjust any end limits on the external equipment if required. Repeat this process a few times until correct.

It is essential that the external equipment can invert the feed back signal otherwise the DPC270 cannot function. Consult CMR in case of difficulties.

The scaler 2 is the feed back positioner scaling circuit..

The feed back voltage from the Invertor or damper motor should preferably be 10...0V. The signal is fed into 7. If the fan is in low speed position adjust span (P15) to read 10V on 9. If the fan is in full speed position adjust zero (P16) to read 0V on 9. Try the controller on manual control by changing the set point. Repeat this process a few times until correct.

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DPC200 CONTROL BOARD FUNCTION

THE LINK SETTINGS ARE FACTORY SET AND TESTED TO WORK WITH A DPC200 AS ORDERED

POTENTIOMETERS

P1 Sets the external sensor power supply voltage on 14 from 5 to 24VDC.

P2 Set P3 fully clockwise to have maximum output on 11 then adjust P2 to have 10V on 11.

P3 follow P2

P4 If the Jumper on JP7 scaler1 has been set to up position then P4 is the span adjustment for the external sensor coming in on 13 and out on 16.

P5 see P4. P5 is the zero adjustment for scaler1.

P15 if Jumper on JP7 scaler2 has been set to up position then P15 is the span adjustment for the feed back of the position sensor coming in on 7 and out on 9.

P16 see P15. P16 is the adjustment for the zero for scaler2.

LINK SETTINGS

Sensor input on 13

JP7 1-3 2-4 scaler 1 connected
JP7 3-5 4-6 scaler 1 not connected

Square Root Option
 If input on 13 must be square rooted then link as follows:

JP7 1-3 2-4 scaler 2 connected
JP8 2-4 square root connected

Position Sensor on 7

JP7 7- 9 8-10 scaler 2 connected
JP7 9-11 10-12 scaler 2 not connected

External Set Point on 2

Standard factory setting
JP8 3-5 9-11 scaler 2 not connected

Square Root and scaler2 option
 If the set point must be square rooted in case of tracking two volumes with pressure sensors then link as follows:

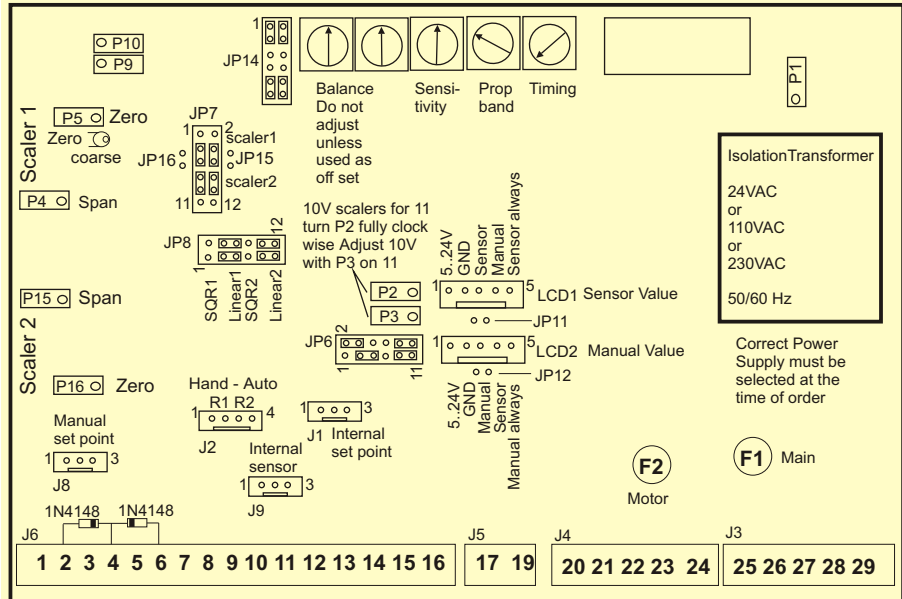
JP8 8-9 square root connected
JP7 9-11 10-12 scaler2 not on 7
JP8 1- 3 7- 9 scaler 2 connected to 2

Internal Set Point P3 connection

If a plain plate has been ordered and no potentiometer can be connected to the board then P3 is the internal set point. In order to make it function link: **JP6 1-3** P3 is now internal set point
 To commission P3 turn P3 fully clockwise, measure on 10 and adjust P2 until 10.00 V is achieved. Then turn P3 from 0-100% = 0...10V internal set point.

Note: if P3 is used as set point 11 cannot be used as reference 10V. Use 14 instead and adjust P1 to 10V on 14.

DPC200 LINK - FRONT PLATE CONNECTORS AND POTENTIOMETER SETTINGS



24VAC POWER SUPPLY

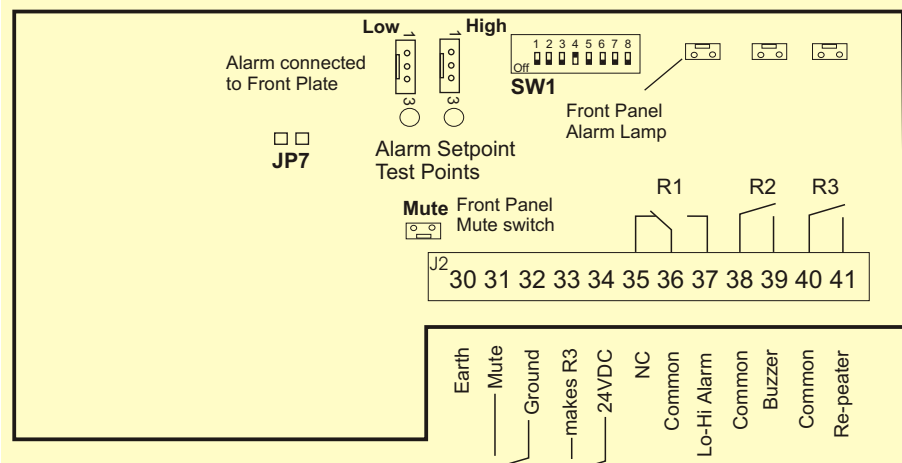
The standard power supply is 24VAC on J3 with fuse F1 (1A). With the 24VAC version the damper motor is connected directly to the external power supply linked under the board to J3 via a separate fuse F2 (1A). Any 24VAC motor can be connected to J4 provided the external power supply is large enough to drive one 24VAC synchronous motor up to 1A.

110V-230VAC POWER SUPPLY

The optional power supply is 110V or 230VAC on J3 with fuse F1 (315mA). With this version the 24VAC is produced by the on-board isolation transformer and a maximum of 350mA can be connected to J4. In this case the board must be configured to internal 24VAC supply to J4. Do not exceed the maximum power available from the board. Consult CMR.

OPTIONAL FC201 ALARM BOARD CONNECTIONS AND SETTINGS

If the alarm board is fitted as retrofit in the field, make sure that the link JP7 is unsoldered. Use SW1 switch settings to achieve different alarm modes and times.



SW1	1	n/a	6	On=Latching Alarm	4 off	5 off	0s	Alarm Delay
	2	n/a	7	On=Re-Alarm Timer set	4 off	5 on	10s	Alarm Delay
	3	n/a	8	On=High Alarm on Re-peater	4 on	5 off	30s	Alarm Delay
	4	Timer		Off=Sash Alarm Output	4 on	5 on	60s	Alarm Delay
	5	Timer						

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DPC200 OPERATOR FRONT PANEL

FRONT PANEL EXPLANATION

1. LCD displays the actual sensor value in %
2. Control set point in 0...100% or -100..100 %.
3. Low Alarm set point 0...100% or -100 ..100 %.
4. High Alarm set point 0...100% or -100..100 %.
5. Alarm light switches on after time out of alarm.
6. If the Mute button is switched to off position, then the buzzer shall switch on after the time out of any alarm. In on position, the buzzer is always muted.
7. In auto the controller follows the sensor set point. In hand operation the controller follows the manual set point.
8. LCD displays manual position of the actuator or the feed back of the inverter in %.
9. Control set point for the Manual positioner.
10. When switching the CAL to on, the control output freezes and the sensor can be calibrated

CHOICE OF FRONT PANELS

TYPE 'A' Fully populated with alarms, hand - auto and LCDs for actual sensor and position feed back. The sensor range is 0...100% suitable for positive range only.

TYPE 'B' Same as Type 'A' but sensor range is -100%-0-+100% suitable for positive and negative range.

TYPE 'C' Same as Type 'A' but without alarm.

TYPE 'D' Same as Type 'B' but without alarm.

TYPE 'E' Same as Type 'C' but without manual LCD and without manual set point.

TYPE 'F' Same as Type 'D' but without manual LCD and without manual set point.

TYPE 'G' Same as Type 'A' but with digital set point adjusters instead of dial.

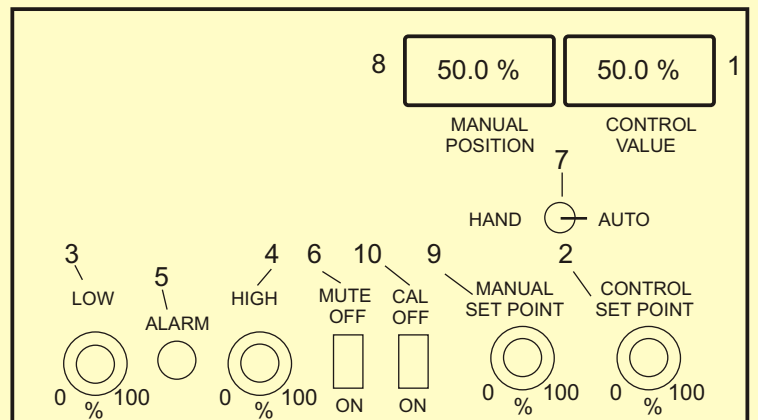
TYPE 'H' Same as Type 'G' but without manual LCD and without manual set point.

TYPE 'I' Same as Type 'H' but without alarms.

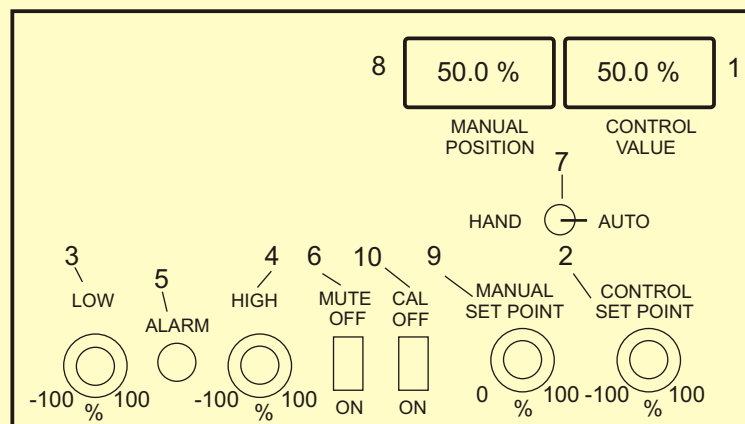
TYPE 'J' Same as Type 'G' but without alarms.

TYPE 'K' Plain plate without any controls.
Note: The layout may change . Consult CMR.

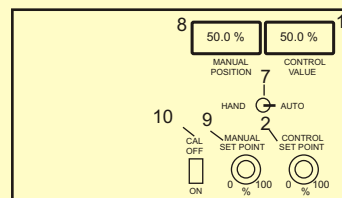
CHOICE OF FRONT PANELS WITH OR WITHOUT ALARM



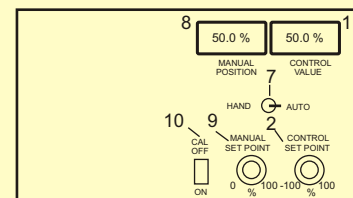
0...100% FRONT PLATE TYPE 'A'



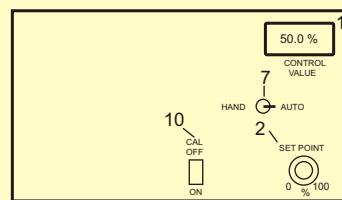
-100%-0-100% FRONT PLATE TYPE 'B'



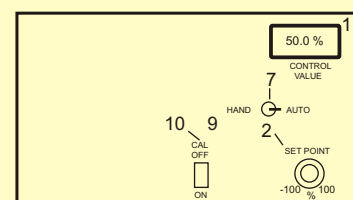
0...100% FRONT PLATE TYPE 'C'



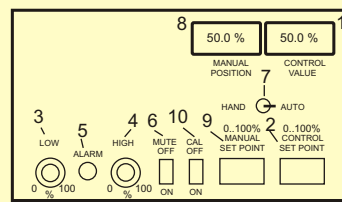
-100%-0-100% FRONT PLATE TYPE 'D'



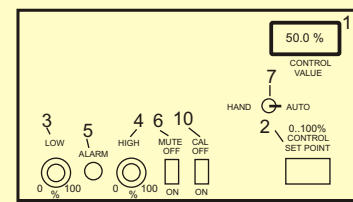
0...100% FRONT PLATE TYPE 'E'



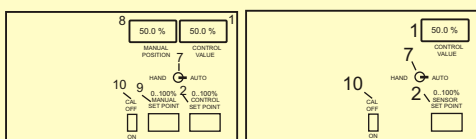
-100%-0-100% FRONT PLATE TYPE 'F'



0...100% PLATE DIGITAL TYPE 'G'



0...100% PLATE DIGITAL TYPE 'H'



FRONT PLATE TYPE 'J' 0...100% DIGITAL TYPE 'K'

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DPC200 ORDER DESCRIPTION

DPC200 PRESSURE - VOLUME CONTROLLER TO BE USED WITH EXTERNAL SENSOR

GENERAL

CMR manufactures a large range of DPC200 wall or panel mount pressure or volume controllers to suit many applications. Because of the variety of control outputs and power supplies it has been necessary to design an easy to use selection table for anybody to make up a DPC200 controller specification to satisfy a requirement. You will find all specifications available with the associated ordering Code on the DPC200 Controller Selection Table (Page 11). In order to select the correct part we have made up a sample selection below:

DPC200 PART NUMBER

The DPC200 Part Number starts with the selection of the controller type of enclosure without Lid, with Lid or with Lid and key lock. DPC200 enclosure without Lid has the Code '66A'. DPC200 enclosure with Lid has the Code '66B'. DPC200 enclosure with Lid and key lock has the Code '66C'.

As an example, we have chosen the Code 'A'. The Part Number starts therefore with '66A'.

NEGATIVE PRESSURE RANGE

The DPC200 is always supplied without internal sensor and acts as controller only. If a sensor is required, refer to the CMR P-Sensor, DPM, V-Sensor, VT-Sensor and F-Sensor specification sheets. As there is no sensor fitted the Code is always '000'. The Part Number extends to '66A 000'.

POSITIVE RANGE

The DPC200 is always supplied without internal sensor and acts as controller only. If a sensor is required, refer to the CMR P-Sensor, DPM, V-Sensor, VT-Sensor and F-Sensor specification sheets. As there is no sensor fitted the Code is always '000'. The Part Number extends to '66A 000 000'.

OPERATOR FRONT PANEL

The operator panel is an anodized aluminium panel which has various options as shown on page 9. The choice of plate is expressed as Plate Type as follows:

Type 'A' has all functions and the sensor control set point is a dial 0...100%. The order Code is 'A'.

Type 'B' is similar to Type 'A' except the sensor set point dial is -100..0..+100%. This type is used, when using a sensor which has a measurement range i.e. -100Pa - 0 - +100Pa, which means the sensor can measure from 0Pa to (-)100Pa and from 0Pa to (+)100Pa and the set point can be adjusted from 0 to (-)100% and 0 to (+)100%. The Code is 'B'.

Other Types are available such as 'C' up to 'J'. see DPC200 Operator Front Panel on page 9.

In the example we have chosen Type 'A'. The Part Number extends to '66A 000 000 A'.

POWER SUPPLY

The DPC200 can be ordered for 24VAC with Code '3', 110VAC with Code '4' and 230VAC with Code '5'. We have chosen 24VAC which has the Code '3'. The Part Number extends to '66A 000 000 A 3'.

CONTROL MODE

Page 4 and Page 5 shows various control modes. The mode selection is important to set up the controller's output. Look at the sketches and select the desired mode or ask CMR for assistance.

We have chosen Mode 'B' on page 4. The Part Number extends to '66A 000 000 A 3 B'.

CONTROL OUTPUT

The Industry Standard for Output Signals is 0...10V which has the order Code 'A'. The Control output signal can also be inverted to provide 10...0V. This is normally required, when a fan must be at high speed at no pressure feed back. The Code is 'B'. See Page 5 Speed Control Methods.

The Control output for CMR damper motors as described on Page 4 Damper Control Methods is a triac output to drive synchronous motors open-off-close. The output is generated by the isolation transformer built into the DPC, which means the output is named 24VAC I (internal) and has the code 'C'. This means no matter what the power supply is i.e. 24VAC, 110VAC or 230VAC by choosing code 'C' the control output is always 24VAC (internal) but it is limited to 350mA.

If AC X (external) Code 'D' is ordered, then the control output is the same as the power supply i.e. 24VAC, 110VAC or 230VAC non isolated.

It is advisable to mention what type of equipment shall be driven by the DPC200 controller during order stage in order to make sure the control output is capable to drive the used actuator.

We have chosen 24V ACX as control output which has the Code 'D'. The Part Number extends to '66A 000 000 A 3 B D'.

SCALED UNITS

The range is printed on the product label fixed to the lid of the controller. Normally, the range is printed in % but other ranges can be selected under this order code. If and LCD or LED is required then the set point dials are always in %. The set point dials and manual LCD are always in % and cannot be scaled unless a special factory order is made. The 3 1/2 digit sensor LCD is factory scaled to suit the front operator plate ordered. If the front plate is Type 'A' than the sensor LCD is calibrated as 0-100.0%. If the front plate Type 'B' is selected than the sensor LCD is scaled to -100% to +100% over the range. The order code for % scaling is '1'.

The sensor LCD can be ordered calibrated in other engineering units and full details of range must be specified during order stage.

Pa (Pascals) has the Code '2', mBar has the Code '3'.

m/s has the Code '4', m3/s has the Code '5'.

In the example we have chosen the Code '1'.

The Part Number extends to '66A 000 000 A 3 B D 1'.

DECIMAL PLACES

If no LCD is fitted then this is N/A (not applicable).

The 3 1/2 digit LCD can only display 1999 or 199.9 or 19.99 or 1.999 all depending on the decimal place setting.

No decimal place can be set to Code 'A' which displays 000

Code 'B' displays 00.0, Code 'C' displays 0.00

Code 'D' displays .000

We have chosen the standard setting 00.0 with Code 'B'.

The Part Number extends to '66A 000 000 A 3 B D 1 B'.

ALARM FUNCTION

The DPC200 can be supplied with an alarm threshold output board as described on page 8. The board has a low/high alarm relay and a buzzer relay. A low and high threshold set point adjuster is on the front of the control panel. If the sensor signal is below or above the threshold, a timer can be programmed to switch on the alarm and buzzer relay. The buzzer can be muted. A repeater relay is available for remote BMS input. If the alarm board is not required the Code shall be '0' for 'NO'. If the alarm board is required, the order Code is '1' for 'AL'.

In the example we have chosen Code '0'.

The Part Number extends to '66A 000 000 A 3 B D 1 B 0'.

FINAL PART NUMBER to order is '66A000000A3BD1B0'.

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DPC200 ORDER SELECTION TABLE

THE SELECTION TABLE IS FOR A DPC200 CONTROLLER WITH EXTERNAL SENSOR

The selection Table has been prepared to make ordering easy. Each Column contains a number of different options which are available and a Part Number can be established by yourself depending on your specific requirements.

The Example Part Number 66A 000 000 A 3 B D 1 B 0 which is printed above the Selection Table can be identified as being a DPC200 Pressure - Volume Controller.

The controller has no Lid and is suitable for an external CMR sensor. The Negative and Positive Range is not applicable. The front plate is fully populated Type 'A' with 0...100% sensor set point dial. The power supply is 24VAC, the control mode is Type B driving an extract damper motor in positive pressure. The control output is 24V ACX. The LCD is scaled to 0...100.0% with one decimal place. No alarm is required.

EXAMPLE PART NUMBER SELECTION (The code after the (=) sign is used i.e. No Lid = 66A)

66A	000	000	A	3	B	D	1	B	0
DPC200	Negative	Positive	Front	Power	Control	Control	Scaled	Decimal	Alarm
Part No.	Range	Range	Plate	Supply	Mode	output	Units	Places	fitted
No Lid = 66A	N/A = 000	N/A = 000	T = A	24 VAC = 3	N/A = 0	0...10V = A	% = 1	N/A = N	NO = 0
With Lid = 66B			T = B	110 VAC = 4	Mode = A	10...0V = B	Pa = 2	000 = A	YES = 1
With Key = 66C			T = C	230 VAC = 5	Mode = B	24VAC I = C	mBar = 3	00.0 = B	
			T = D		Mode = C	AC X = D	m/s = 4	0.00 = C	
			T = E		Mode = D		m3/s = 5	.000 = D	
			T = F		Mode = E				
			T = G		Mode = F				
			T = H		Mode = G				
			T = I		Mode = H				
			T = J		Mode = I				
			T = K		Mode = J				
					Mode = K				
					Mode = L				
					Mode = M				

HOW TO ORDER

Make up your own DPC200 Pressure Volume Controller selection below using the empty cells

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EXAMPLE

A wall mount pressure controller is required of the type DPC200
 The DPC200 shall have a Lid with a key lock
 The DPC200 will be used with an external sensor type DPM50
 The negative pressure range must be -100Pa
 The positive pressure range must be +100Pa
 The front plate must have two dial set points for hand/auto with two LCDs and Alarms
 The power supply must be 24V AC
 The control mode should be VVS to control positive pressure with a fan (Mode 'G')
 The control output must be 0...10V to drive a fan speed inverter on the Supply
 The scaled units must be in %
 The indication must be 100.0% with one decimal place
 An Alarm contact must be provided

Call CMR for assistance at any time

The part Number for this DPC200 is 66C 000 000 B 3 G A 1 B 1

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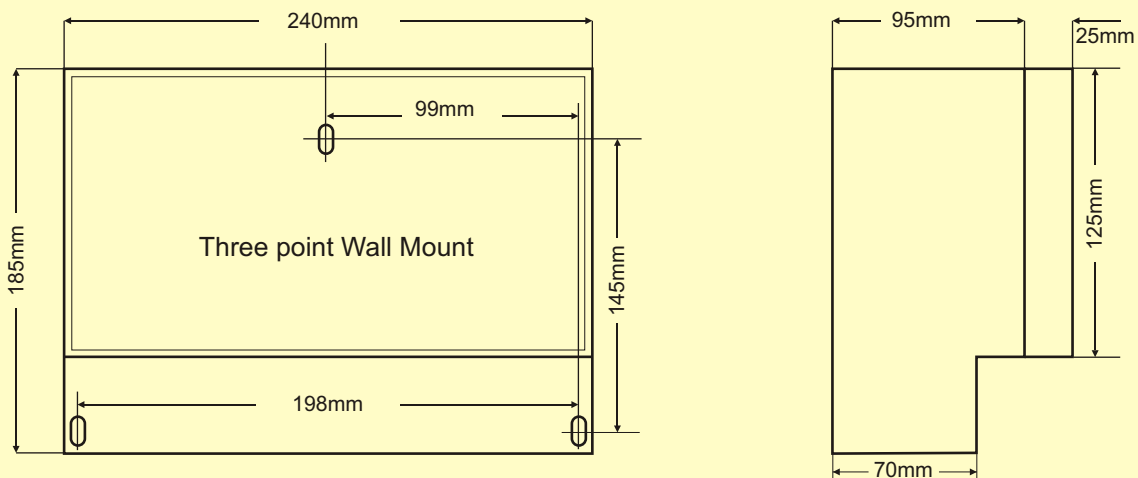
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DPC200 TECHNICAL SPECIFICATION

Measurement Range	See Order Selection Table of the external CMR sensor to be used
Control Range Sensor	The control range is 0...10V or 0-100% of the CMR sensor range. Input is on Terminal 13.
Control Range Feed Back	The control range is 0...10V or 0-100% of the position of the CMR actuator or the speed input on T7.
Set Point Range	The set point range is 0...10V or 0-100% of the position of set point potentiometer or external input on T2
Scaler1 and 2 Range	Any range +/- 0...10V input = +/-0...10V output. Scaler1 input T13 - out T16. Scaler 2 input T7 - out T9
AC Power Supplies	24 VAC 50/60Hz Fuse 1.0 A Wickmann
	110VAC 50/60Hz Fuse 315 mA Wickmann
	230VAC 50/60Hz Fuse 315 mA Wickmann
AC Control Output	24 VAC I (internal power from isolation transformer) max 350mA (Fused 1A Wickmann)
	24VAC (1A), 110VAC (200mA), 230VAC (100mA) output bridged directly to Input Terminals. Fused
Volt Output Signal	0-10V (0...100%) or 10...0V (100%...0%) switchable (RL = 5kOhm min.) 4...20mA or 20...4mA
Set point Signal	0...10V (0...100% of range)
Feed BackSignal	0...10V (0...100% of range)
Sensor Signal	0...10V (0...100% of range)
Proportional Band	0...30% of range
Timing	0...4 seconds adjustable
Sensitivity	0... 10% of sensor range
Operating-Storage Temp.	Operating Temperature 10...70 °C - Storage Temperature -20 to 85°C
Alarm Relay Low/High	24VDC (1A) non inductive - single pole change over.
Low/high Alarm Threshold	Adjustable 0...10V (0...100% of range)
Buzzer Relay	24VDC (1A) non inductive - single pole on-off. Works on same threshold as high/low alarm.
Repeater Relay	24VDC (1A) non inductive - single pole on-off.
Alarm Timers	Switch selectable 0s - 10s - 30s - 60s.
Relay Latching	Switch selectable - Latching or auto-reset.
Weight	1.5 kg
Electrical Connections	5 way power, 5 way control output, 2 and 3 way control board. All Plugs with Screw Connections.
Enclosure	ABS Plastic without perspex Lid IP44
	ABS Plastic with perspex Lid with or without key lock Protection Class IP65
Cable Glands	4 x PG13 and 1 x PG11 entries.
Conformity	EN61326-1 EMC EN61010-1 SAFETY
Calibration Certificate	Can be supplied with Certificate traceable to National Standards depending on external sensor used.

ENCLOSURE DIMENSIONS



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