home

DPC270 LOW VELOCITY CONTROL

With Internal Low Velocity F-Sensor

- Ultra low velocity 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
- Remote 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

DPC270 Controller with built in sensor, Type 'A' display and alarm

GENERAL

The DPC270 was designed to provide ultra low air velocity or volume control in laboratory and precision industrial environments and 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 DPC270 has a built in sensor and can control damper motors or fan speed invertors. It provides constant air velocity or volume control in ventilation systems. It is used substantially in special process production and industrial areas. It has an option for local and remote alarm outputs and has BMS and Scada monitoring systems connectivity. Full site calibration certificates traceable to National Standards can be supplied.

BUILT IN LOW VELOCITY MEASUREMENT TRANSDUCER

The Controller can read in a 0...10V signal from the built in transducer. The transducer's actual control value is displayed on an LCD Display on the operators front panel of the DPC270.
The LCD Display is normally scaled 0...100% of the 0...10V but can be scaled in other units i.e. m/s, l/s, m3/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 as 0...100% .

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, off 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 Invertor Fan Speed Controls or specialist damper actuators.

MANUAL HAND CONTROL

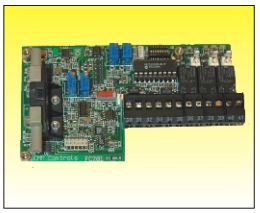
A Hand-Auto switch is provided. When selecting the Hand option, the manual set point dial is made active and the user can select a manual operating set point to drive the invertor or damper into any position. This is ideal for commissioning or emergency actions. The dial is scaled to 0...100% as standard.
The actual speed of the Fan Invertor 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 DPC270 can be supplied for various power supplies such as 24V AC, 110V AC and 230V AC.

THE VELOCITY TRANSDUCER

The CMR low velocity transducer is the F-Sensor technology which is based upon temperature sensitive films laminated with thick film dielectric material . The complete transducer is manufactured by CMR using precision components, SMD technology and computer controlled temperature compensation facilities.



CMR Transducer

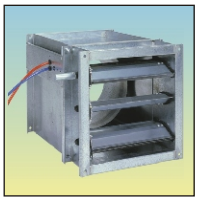
ENCLOSURES

The DPC270 enclosures are wall mount and can be supplied with or without perspex front lid. A keylock is available. When the lid is fitted the enclosure has a protection class of IP65. The front control panel is made of anodised aluminum and the description of the controls are identified with a silkscreen. The front panels can be made for OEM requirements in different designs. The cable glands are normally supplied loose as the enclosure has rear and bottom cable gland knockouts. The transducer tube connections are fitted and consists of chromed brass nipples identified as red for positive and blue for negative velocity pressure connections.

Controller Variations

CMR DAMPERS AND ACTUATORS

CMR provides a large range of dampers either circular or rectangular with a variety of actuators from 4 up 150 seconds rotation speed for 0...90°. The DPC270 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 Volume Control

FAN SPEED INVERTOR CONTROL

The DPC270 is ideal to control any Fan Speed Invertor 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 DPC270 can run the fan in auto or manual mode and provides override capability for the BMS.

Fan Volume Control

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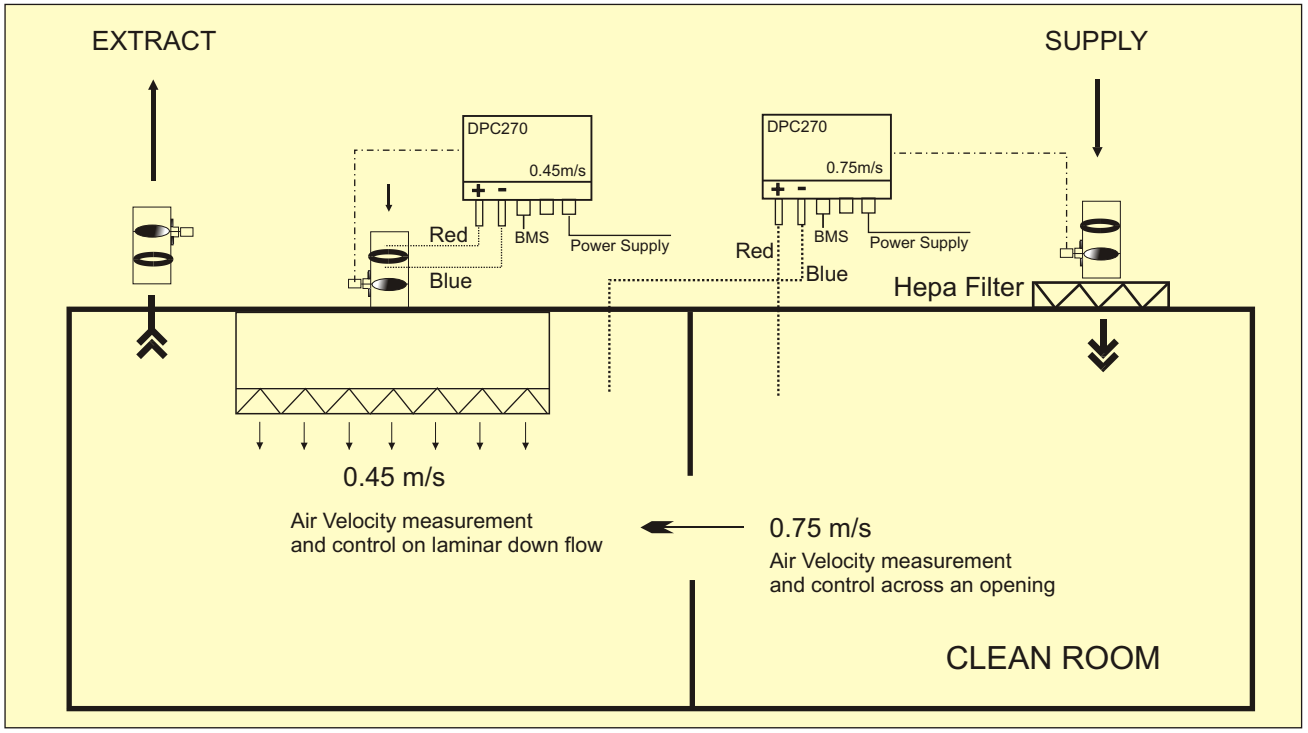
Issue GB 2 - 1 2001

DPC270 ULTRA LOW VELOCITY CONTROL

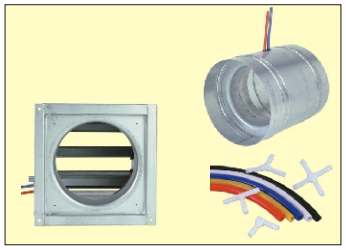
LAMINAR DOWN FLOW CONSTANT VELOCITY AND DIRECTIONAL FLOW CONTROL



The laminar flow must be kept at 0.45m/s. The flow is measured by a CMR venturi valve. The DPC270 has a built in low velocity transducer which is connected via a red and blue PVC tube to the venturi measuring device . To obtain 0.45m/s it is necessary to calculate the volume that has to pass through the valve and the set point of the DPC is set to i.e. 1.8m/s . If the velocity is lower or higher than 1.8m/s then the DPC modulates the valve until the set point is achieved.

A very unusual application is to have always a flow from one room to the next through an open space. The DPC's built in velocity sensor measures the flow i.e. 0.75m/s. The red PVC tube is fitted to the more positive pressure room and runs to the DPC controller. The negative port of the DPC270 is connected to the lower pressure area. If the set point is set to 0.75m/s and the actual velocity is lower or higher then the supply air valve modulates until 0.75m/s achieved.

TYPICAL COMPONENTS USED TO CONTROL LOW VELOCITIES OR AIR VOLUMES WITH THE DPC270



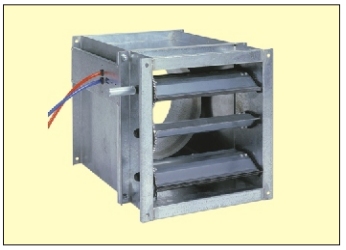
CMR round or rectangular Venturi volume measurement devices and PVC tubes and fittings.

CMR air control galvanised or stainless valves fitted with or without venturi volume flow measurement devices. The VMS economy or the AST 4s actuators are factory fitted.

Heavy duty dampers are made in sizes up to 1200mm in increments of 10mm . AST motors are fitted.

CMR air tight control damper with venturi, flanges and VMS actuator can be controlled by any DPC.

CMR air control poly propylene valves (PPS) fitted with or without venturi volume measurement devices with or without flanges. VMS or AST actuators are factory fitted.



CMR rectangular volume control damper with venturi. Suitable for all CMR actuators and DPC controllers.

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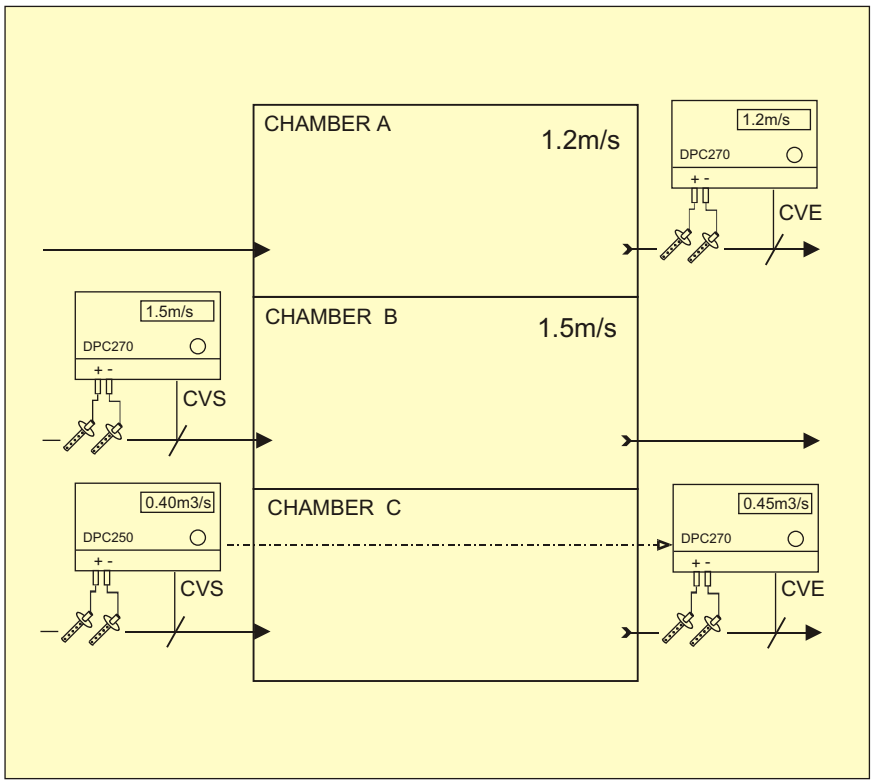
Issue GB 2 - 1 2001

DPC270 AIR CONTROL APPLICATIONS

TYPICAL TEST CHAMBER CONTROL AND VOLUME TRACKING



DPC270 AIR CONTROLS

CHAMBER A
The extract is set up as constant velocity extract (CVE) to maintain 1.2m/s in the extract duct. The extract velocity is measured in the duct by a CMR venturi or Velo Probe and the ultra low velocity sensor which is built into the DPC270. The DPC adjusts the CMR damper actuator to maintain 1.2m/s velocity.

CHAMBER B
The supply is set up as constant velocity supply (CVS) to maintain 1.5m/s in the supply duct. The supply velocity is measured in the duct by a CMR venturi or Velo Probe and the ultra low velocity sensor which is built into the DPC270. The DPC adjusts the CMR damper actuator to maintain 1.5m/s velocity.

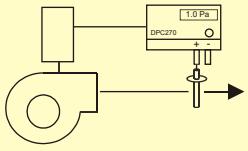
CHAMBER C
The supply is set up as constant volume supply (CVS) and the extract as constant volume extract (CVE). The volume can be offset by external means i.e. BMS and both CVE or CVS can track each other. The schematic shows the supply volume sets the extract volume.

The above schematic shows typical applications for the DPC270 controllers. The DPC270 is normally used ultra low velocity or volume control in commercial or industrial installations. For large installations we suggest to use the DPC200 with the F-Sensor instruments fitted remotely and the DPC200 locally in a central control panel, which makes commissioning and validation easier. The DPC270 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 either supply or extract can be tracked with an adjustable off set. It is unique, as the built in F-Sensor can measure ultra low velocities.

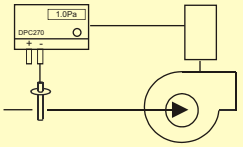
It is recommended to use the CMR dampers and valves with CMR actuators, as the mechanical connections and the gearboxes have been designed for continuous high speed action.
All DPCs can be connected to remote MPCs, BMS or Scada computer systems to read in the pressures, volumes and set points. The DPC 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. All DPCs have control freeze and timed release when chamber doors are opened and closed. The DPC270 can only be commissioned and calibrated on site. Certificates of calibration traceable to national standards can be issued on site.

TYPICAL ULTRA LOW VELOCITY PRESSURES AND VOLUME FAN SPEED OR DAMPER CONTROL APPLICATIONS

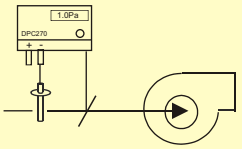
ULTRA LOW STATIC PRESSURE CONTROL



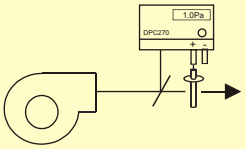
Supply Fan Speed Control



Extract Fan Speed Control

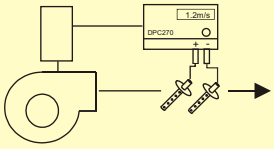


Extract Damper Control

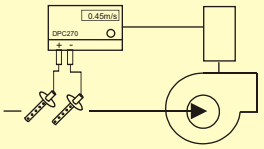


Supply Damper Control

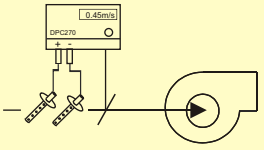
CONSTANT ULTRA LOW VELOCITY CONTROL



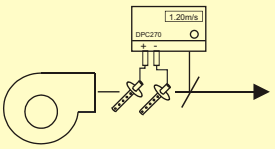
Supply Volume Fan Control



Extract Volume Fan Control



Extract Volume Damper Control



Supply Volume Damper Control

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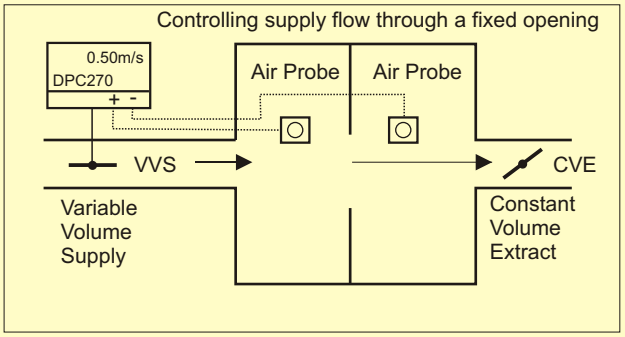
DPC270 DAMPER CONTROL METHODS

TYPICAL ULTRA LOW VELOCITY OR AIR VOLUME DAMPER CONTROLS USING A DPC270

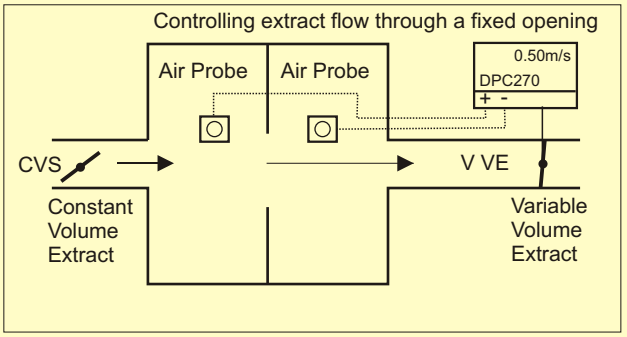
Damper Actuators can either be the OPEN-OFF-CLOSE or the 0-10V Type

Mode 'A'



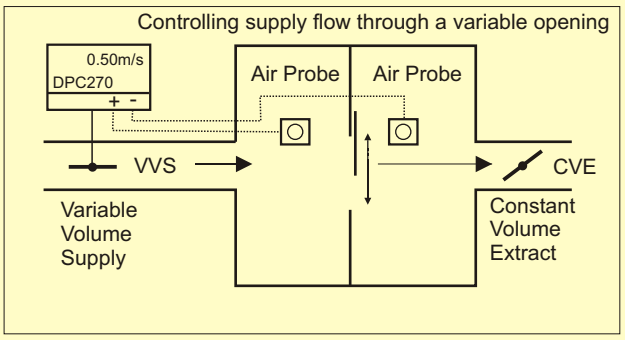
The chamber must be controlled at 0.50m/s across a fixed opening in the wall using variable volume supply and constant extract. On start up, the supply damper must be open and starts closing if the velocity is greater than 0.50m/s. The damper motor stops when a door is opened and re-starts after a time out when closed again.

Mode 'B'



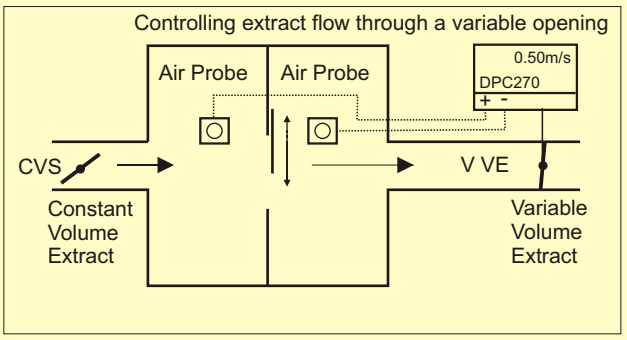
The chamber must be controlled at 0. 50m/sacross a fixed opening in the wall using variable volume extract and constant supply. On start up, the extract damper must be open and starts closing if the velocity is greater than 0.50m/s.The damper motor stops when a door is opened and re-starts after a time out when closed again.

Mode 'C'



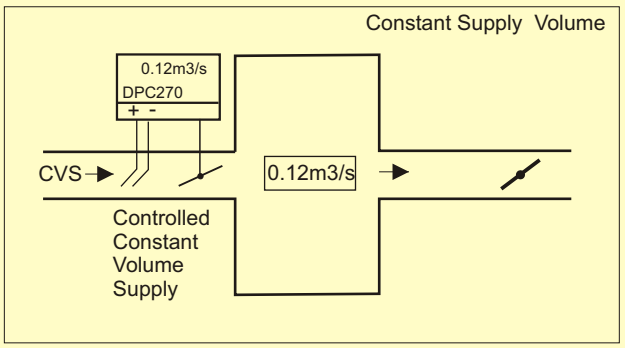
The chamber must be controlled at 0.50m/s across a variable opening in the wall using variable volume supply and constant extract. On start up, the damper must be open and starts closing if the velcoity is greater than 0.50m/s. The damper motor stops when a door is opened and re-starts after a time out when closed again.

Mode 'D'



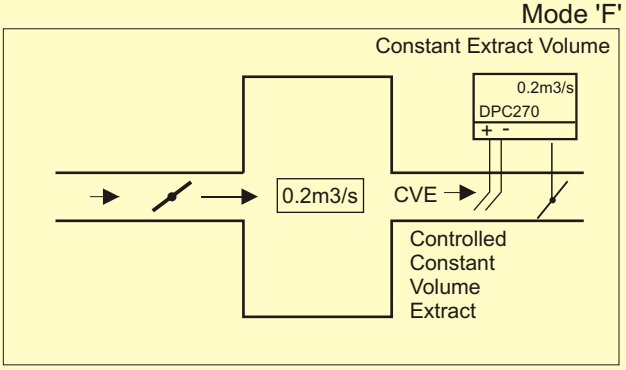
The chamber must be controlled at 0.50m/s across a variable opening in the wall using variable volume extract and constant supply. On start up, the damper must be open and starts closing if the velcoity is greater than 0.50m/s. The damper motor stops when a door is opened and re-starts after a time out when closed again.

Mode 'E'



The chamber must be controlled at 0.12m3/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 at any time. The DPC can be linked to an extract DPC controller if fitted to provide supply to extract tracking.

Mode 'F'



The chamber must be controlled at 0.2m3/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 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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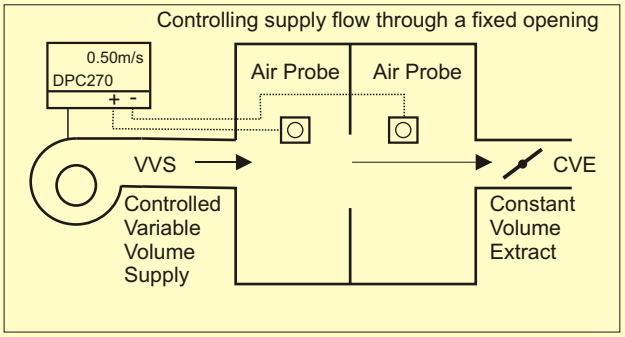
Issue GB 2 - 1 2001

DPC270 FAN SPEED CONTROL METHODS

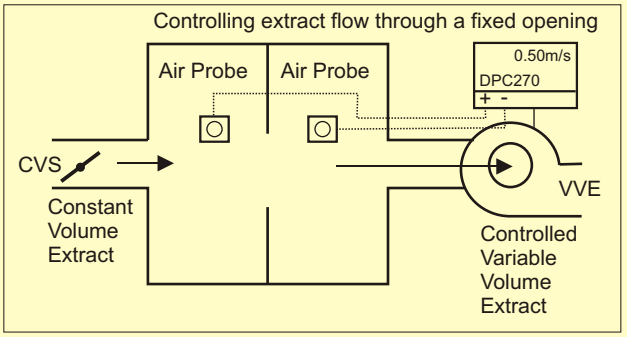
TYPICAL ULTRA LOW AIR VELOCITY OR AIR VOLUME FAN SPEED CONTROL USING A DPC270

Mode 'G'



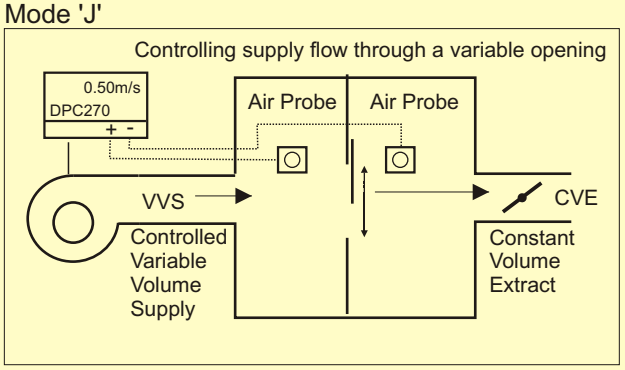
The chamber must be controlled at 0.50m/s across a fixed opening in the wall using variable volume supply and constant extract. On start up, the supply must speed up and reduces speed if the velocity is greater than 0.50m/s. The fan stays constant when a door is opened and re-starts after a time out when closed again.

Mode 'H'



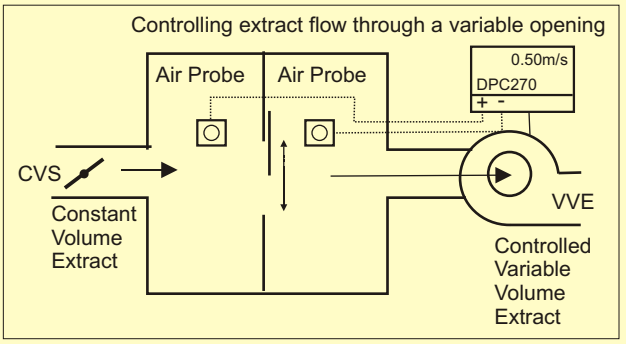
The chamber must be controlled at 0.50m/s across a fixed opening in the wall using variable volume extract and constant supply. On start up, the extract must speed up and reduces speed if the velocity is greater than 0.50m/s. The fan stays constant when a door is opened and re-starts after a time out when closed again.

Mode 'J'



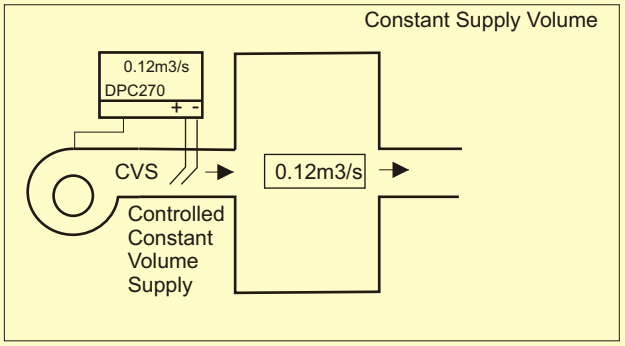
The chamber must be controlled at 0.50m/s across a variable opening in the wall using variable volume supply and constant extract. On start up, the supply must speed up and reduces speed if the velocity is greater than 0.50m/s. The fan stays constant when a door is opened and re-starts after a time out when closed again.

Mode 'K'



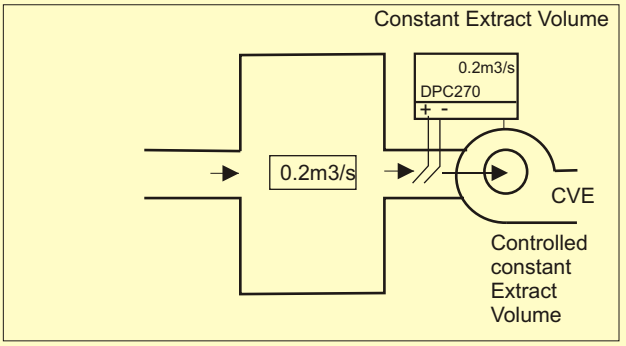
The chamber must be controlled at 0.50m/s across a variable opening in the wall using variable volume extract and constant supply. On start up, the extract must speed up and reduces speed if the velocity is greater than 0.50m/s. The fan stays constant when a door is opened and re-starts after a time out when closed again.

Mode 'L'



The chamber must be controlled at 0.12m3/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 'M'



The chamber must be controlled at 0.2m3/s constant extract volume. 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 volume if required. The DPCs can be linked to the supply fan to provide extract to supply tracking.

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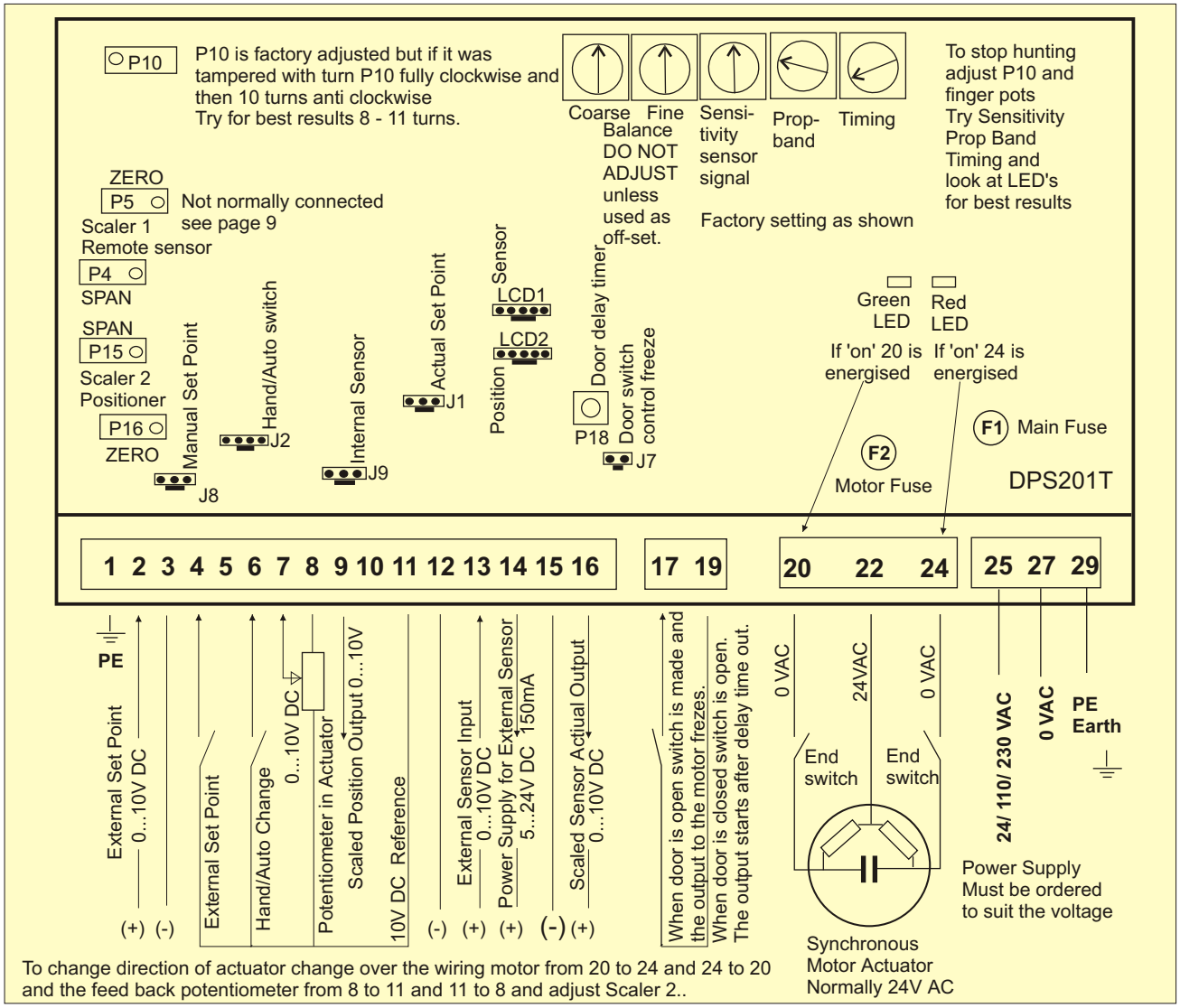
DPC270 AST-VMS/L MOTOR CONTROL

DPC270 CONTROL BOARD WITH OPEN-OFF-CLOSE OUTPUT TO DRIVE SYNCHRONOUS MOTORS



To change direction of actuator change over the wiring motor from 20 to 24 and 24 to 20 and the feed back potentiometer from 8 to 11 and 11 to 8 and adjust Scaler 2..

COMMISSIONING DAMPER ACTUATOR MOTION

Control method: Damper must be open on start up.
With no velocity 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 velocity 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 velocity 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 velocity 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 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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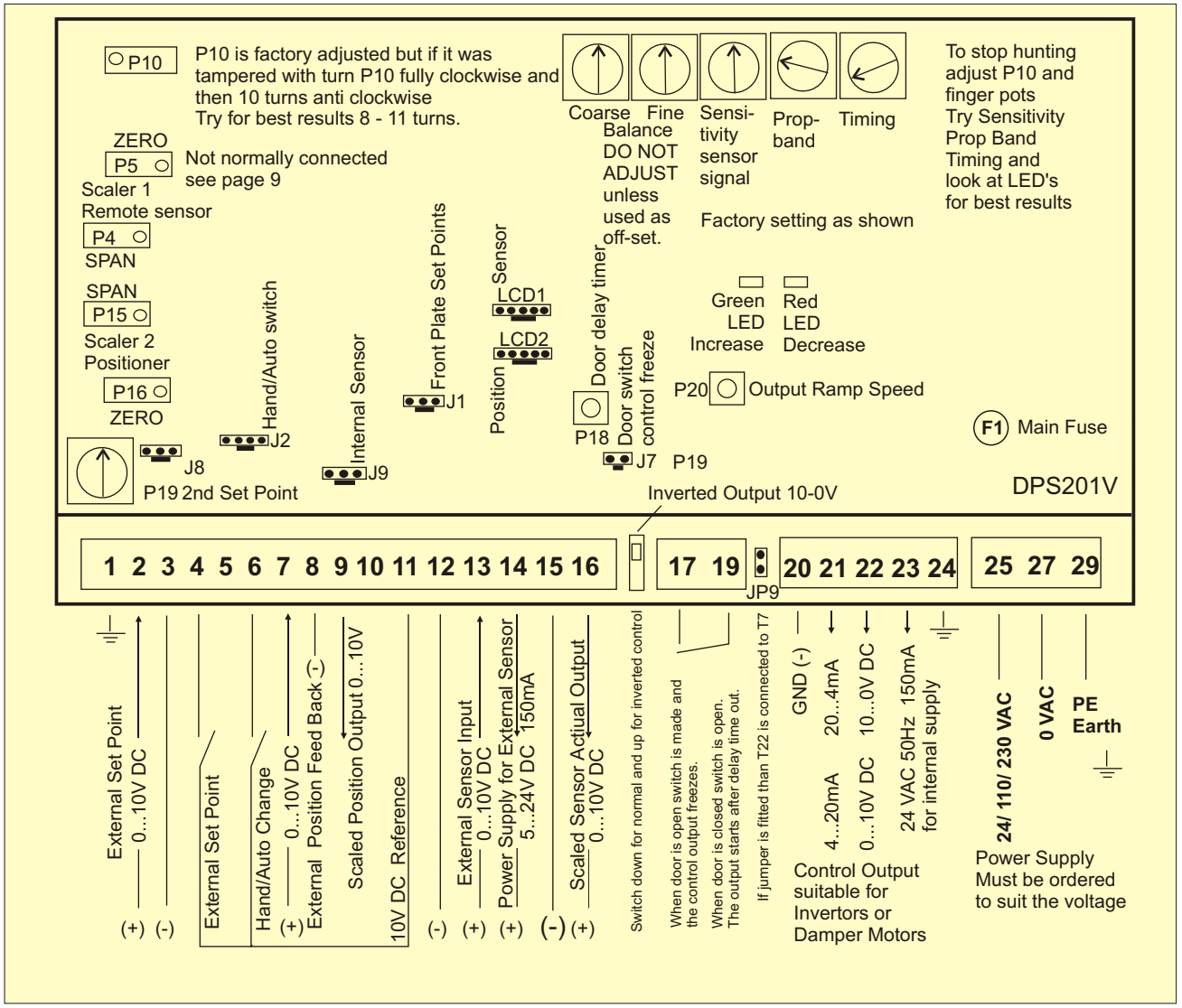
Issue GB 2 - 1 2001

DPC270 CONTROLLER 0-10V OR 4-20mA

DPC270 CONTROL WITH 0...10V/4-20mA OUTPUT TO DRIVE FAN SPEEDS OR DAMPER MOTORS



COMMISSIONING INCREASING VELOCITY ON START UP

On start up the fan must speed up or the damper opens
With no velocity 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 invertor switch to normal 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 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 DECREASING VELOCITY ON START UP

On start up the fan must reduce speed or the damper closes.
With no velocity 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 invertor 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 read10V 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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DPC270 CONTROL BOARD FUNCTION

THE LINK SETTINGS ARE FACTORY SET AND TESTED TO WORK WITH A DPC270 AS ORDERED

POTENTIOMETERS

P1 Sets the external sensor power supply voltage on14 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 signal coming in on 13.

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 external position sensor on 7.

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
The sensor has a square root option so that the DPC square rooter is not used

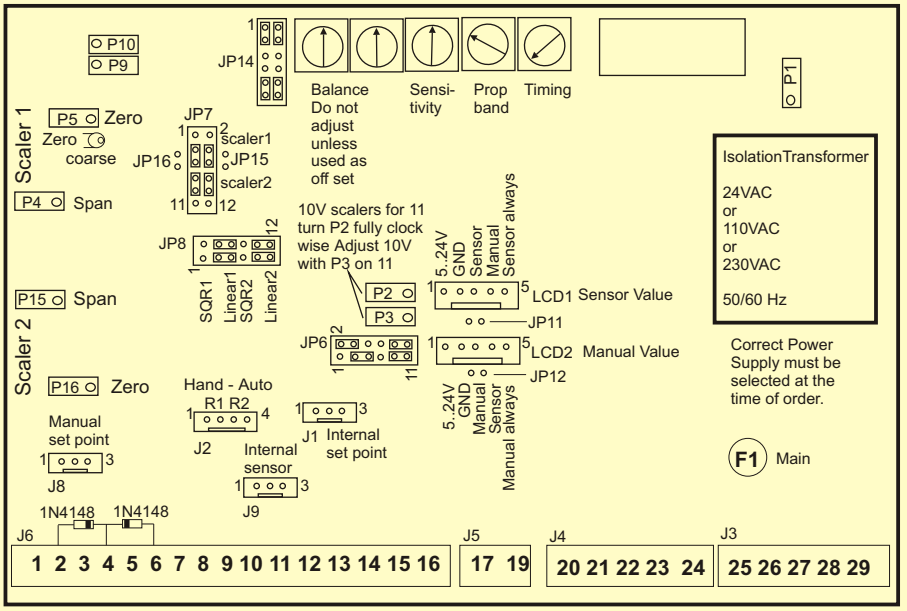
Position Sensor on 7
JP7 7- 9 8-10 scaler 2 connected
JP7 9-11 10-12 scaler 2 not connected

External Set Point on 2
Standard factory setting
JP8 3-5 9-11 scaler 2 not connected

For tracking of low volumes use a CMR F-Sensor as second sensor and scaler2 option and feed in the external volume signal into T2 as external set point and link as follows:
JP8 8-9 square root do not link
JP7 9-11 10-12 scaler2 not on T7
JP8 1- 3 7- 9 scaler 2 connected to 2
Link T14 to T4

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.

DPC270 LINK - FRONT PLATE CONNECTORS AND POTENTIOMETER SETTINGS

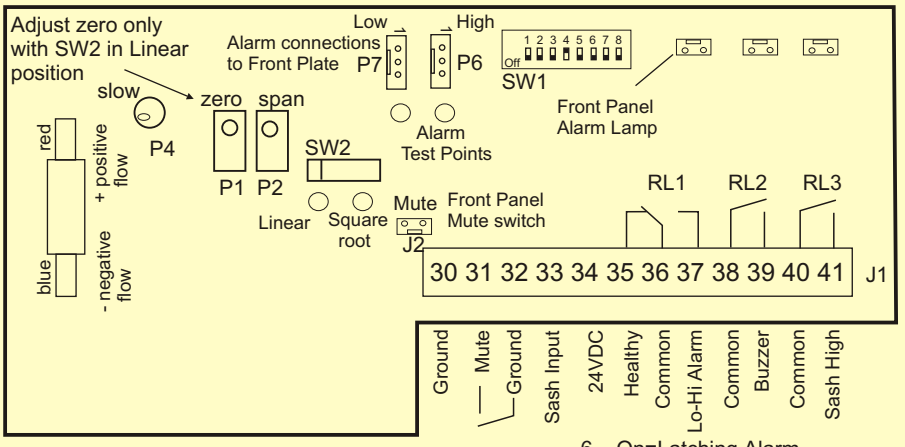


24VAC POWER SUPPLY
The standard power supply is 24VAC on J3 with fuse F1 (1A). With the 24VAC version the damper motor is connected directly to the external power supply linked under the board toJ3 via a separate fuse F2 (1A). Any 24VAC motor can be connected to J4 provided the external power supply 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.

FC201 FLOW VELOCITY SENSOR AND ALARM CONNECTIONS AND SETTINGS
The sensor is factory calibrated. To check the calibration of the sensor remove all tubes and short circuit or block the negative or positive port to stop draught going through sensor, Switch SW2 to Linear and measure on T13 and adjust zero (P1) to 0.00V.
To adjust the span, reconnect all the tubes.

Switch SW2 back to square root and run the system and use a reference instrument to measure the actual velocity and adjust the span (P2) accordingly measuring the voltage on T13. Repeat a few times. The dampening should be adjusted to 20% clock wise on P4 (slow) to remove some of the turbulance..



SW1 1 n/a
2 n/a
3 n/a
4-5 Timer

4 off - 5 off 0s Alarm Delay
4 off 5 on 10s Alarm Delay
4 on 5 off 30s Alarm Delay
4 on 5 on 60s Alarm Delay

6 On=Latching Alarm
7 On=Re-Alarm Timer set
8 On=High alarm on RL3
Off=Sash Alarm Output

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DPC270 OPERATOR FRONT PANEL

FRONT PANEL EXPLANATION

1. LCD displays the actual sensor value in %
2. Control set point in 0...100%
3. Low Alarm set point 0...100%
4. High Alarm set point 0...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 invertor 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' Not available with DPC270

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

TYPE 'D' Not available with DPC270

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

TYPE 'F' Not available with DPC270

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

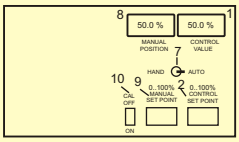
TYPE 'H' Same as Type 'G' but without manual LCD and without manual set point.

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.

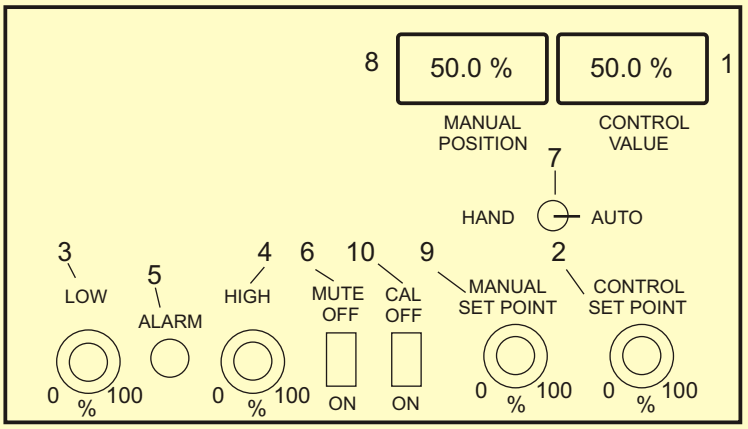
Note: The layout may change . Consult CMR.



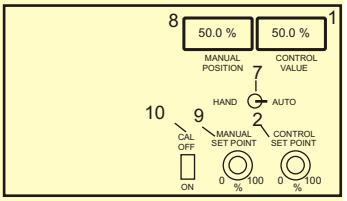
FRONT PLATE TYPE 'J'

PLAIN FRONT TYPE 'K'

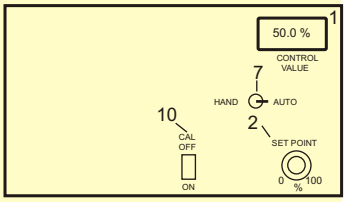
CHOICE OF FRONT PANELS WITH OR WITHOUT ALARM



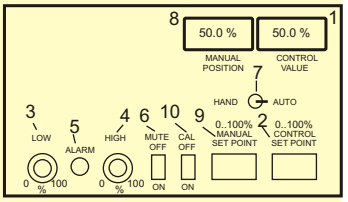
0...100% FRONT PLATE TYPE 'A'



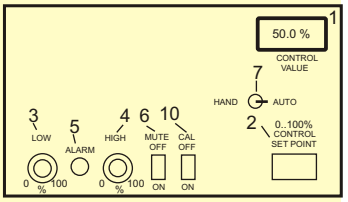
0...100% FRONT PLATE TYPE 'C'



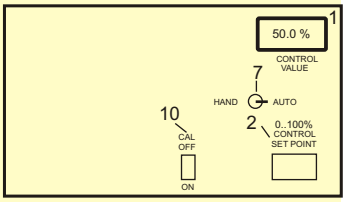
0...100% FRONT PLATE TYPE 'E'



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



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



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

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DPC270 ORDER DESCRIPTION

DPC270 LOW VELOCITY OR AIR VOLUME CONTROLLER WITH INTERNAL F-SENSOR

GENERAL
CMR manufactures a large range of DPC270 wall or panel mount ultra low velocity 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 DPC270 controller specification to satisfy a requirement. You will find all specifications available with the associated ordering Code on the DPC270 Controller Selection Table (Page 11) . In order to select the correct part we have made up a sample selection below:

DPC270 PART NUMBER
The DPC270 Part Number starts with the selection of the controller type of enclosure without Lid, with Lid or with Lid and key lock.
DPC270 enclosure,6mm nipple without Lid has the Code ' 69A '.
DPC270 enclosure,6mm nipple with Lid has the Code '69B'
DPC270 enclosure,6mm nipple with Lid and key lock has the Code '69C'

As an example, we have chosen the Code 'B'.
The Part Number starts therefore with '69B'

NEGATIVE RANGE
The DPC270 is never controlling in a negative velocity range and therefore the Code is always '000'.
The Part Number extends to '69B 000'.

POSITIVE VELCOCITY RANGE
The DPC270 is always supplied with an internal ultra low velocity F-Sensor and only the scaling is different. We have used a range of 2.00m/s which has the Code '015'.
The Part Number extends to '69B 000 015'.

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' All types can be ordered by selecting the type code. In the example we have chosen Type 'A'
The Part Number extends to '69B 000 015 A'.

POWER SUPPLY
The DPC270 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 '69B 000 015 A 3'.

CONTROL MODE
Page 4 and 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.
In the example we have chosen Mode 'G' on Page 5.
The Part Number extends to '69B 000 015 A 3 G'.

CONTROL OUTPUT
The Industry Standard for Output Signals is 0...10V which has the order Code 'A' The Control output signal can also be inversed to provide 10...0V with Code 'B'. Refer to Page 5.
The Control output for CMR damper motors as described on Page 4 is a triac output to drive synchronous motors to open-off-close position. 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. Consult CMR what actuator is to be powered to make sure the power supply is strong enough to drive it.
We have chosen 0...10V as control output which has the Code 'A'.
The Part Number extends to '69B 000 015 A 3 G A'.

SCALED UNITS
The range is printed on the product label fixed to the lid of the controller. Normally, the range is printed as m/s but other ranges can be selected under this order code. If an LCD or LED is required then the set point dials are always in %. The 3 1/2 digit LCDs are factory scaled to suit the front plate ordered. If the front plate is Type 'A' then the LCD is calibrated as 0-100.0%. The Sensor LCD can also be ordered with other engineering unit calibrations and full details of range must be specified during order stage.
The order code for % scaling is '1'. m/s is Code '4' and m3/s is Code '5'. l/s is Code '6'.
In the example we have chosen the Code '4' .
The Part Number extends to '69B 000 015 A 3 G A 4'

DECIMAL PLACES
If no LCD is fitted then this is N/A (not applicable).
The 3 1/2 digit LCD can only display 1999, 199.9, 19.99 or 1.999 all depending on the decimal place setting.
No decimal place is Code 'A' which displays 000.
Code 'B' displays 00.0, 'C' displays 0.00 - 'D' displays .000
We have chosen the standard setting 0.00 which is Code 'C'.
The Part Number extends to '69B 000 015 A 3 G A 4 C'

ALARM FUNCTION (BUILT IN AS STANDARD)
The DPC270 has low/high alarm relay and a buzzer relay. A low and high threshold set point adjuster is on the front panel or on board. 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.

SQUARE ROOT VELOCITY
The DPC270 is supplied as velocity or volume controller. The Square Root switch must always be set to on.
Square Root is Code '2'.
We have chosen Code '2'
The Part Number extends to '69B 000 015 A 3 G A 4 C 2'

FINAL PART NUMBER
The Part Number to order is ' 69B 000 015 A 3 G A 4 C 2'.

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DPC270 ORDER SELECTION TABLE

THE SELECTION TABLE IS FOR A DPC270 CONTROLLER WITH BUILT IN INTERNAL F-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 69B 000 015 A 3 G A 4 C 2 which is printed above the Selection Table can be identified as being a DPC270 Velocity - Volume Controller.

The controller has a Lid and has a built in low Velocity Sensor. The Negative Range isnot applicable. The positive Range is 2.00m/s. 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'G' driving a supply fan motor in velocity mode. The control output is 0...10V. The LCD is scaled to 2.00 m/s with two decimal places. The Sensor Type is selected as Square root.

EXAMPLE PART NUMBER SELECTION (The code after the (=) sign is used i.e. With Lid = 69B)

69B	000	015	A	3	G	A	4	C	2
DPC270	Negative	Positive	Front	Power	Control	Control	Scaled	Decimal	Sensor
Part No.	Range	Range	Plate	Supply	Mode	output	Units	Places	Type
6mm Nipple	0 m/s = 000	1.00 m/s = 010	T = A	24 VAC = 3	N/A = 0	0...10V = A	% = 1	N/A = N	SQR =2
No Lid = 69A		2.00 m/s = 015	T = C	110 VAC = 4	Mode = A	10...0V = B	m/s = 4	000 = A	
With Lid = 69B		3.00 m/s = 020	T = E	230 VAC = 5	Mode = B	24VAC I = C	m3/s = 5	00.0 = B	
With Key =69C		4.00 m/s = 025	T = G		Mode = C	AC X = D	l/s = 6	0.00 = C	
			T = I		Mode = D			.000 = D	
			T = J		Mode = E				
			T = K		Mode = F				
					Mode = G				
					Mode = H				
					Mode = I				
					Mode = J				
					Mode = K				
					Mode = L				
					Mode = M				

HOW TO ORDER

Make up your own DPC270 Velocity or Volume Controller selection below using the empty cells

EXAMPLE
A wall mount Velocity controller is required of the type DPC270
The DPC270 shall have a Lid with a key lock
The negative velocity range is not applicable.
The positive velocity range must be 4.00 m/s.
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 CVS to control constant supply volume (Mode 'L')
The control output must be 0...10V to drive a Fan Invertor 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 DPC270 is 69C 000 025 A 3 L A 1 B 2

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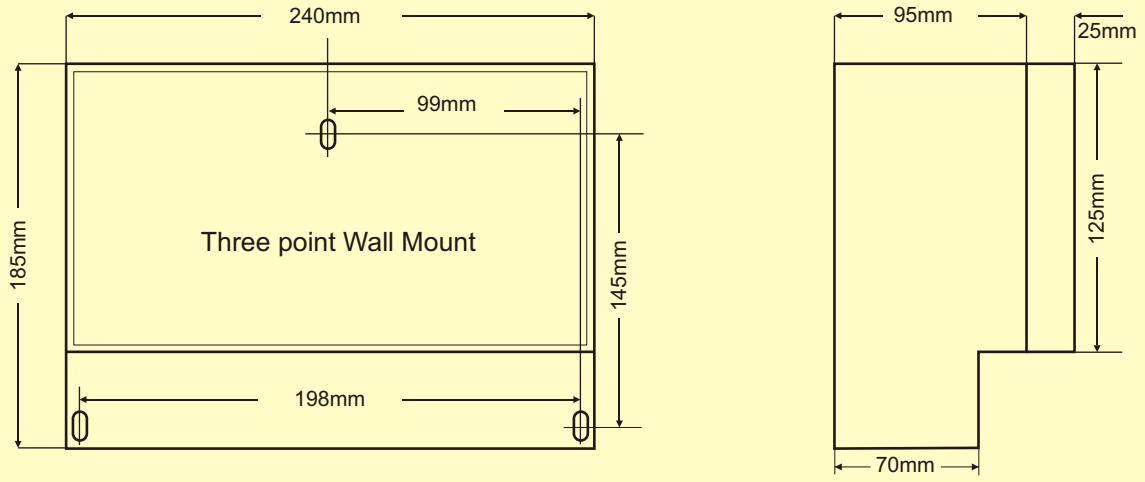
DPC270 TECHNICAL SPECIFICATION

Measurement Range	See Order Selection Table DPC270 on page 11
Optional Range	Any Range from 0...1.00 m/s up to 0...4.00 m/s .
Overload Capacity	To 340 mBar
Media	Non Corrosive Gases such as Air,N2,O2,CO2,N2 O, inert Gases
Sensor Unit	Air Velocity or Mass Flow see CMR F-Sensor technical data sheet
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
DC Control Output	0-10V (0...100%) or 10...0V (100%...0%) switchable on P19 (RL = 5kOhm min.) 4...20 /20...4mA
Sensor Output Voltage	0-10V (0...100% of Range) - Scaler 1 can be connected
RL = 5kOhm min	
Hysteresis/Repeatability	0.5% Typical of Full Scale
Linearity (Accuracy)	2.5% of Full Scale in Square Root Mode
Zero Drift	0.05%K (+10°C to +50°C)
Hand - Auto switch	Digital input on T6 change over from auto to hand min. 0.8V to 31V
External Set Point	0...10V on T2 - scaler2 can be connected
Position Input	0...10V on T7 - scaler 2 can be connected
Alarm Threshold Voltage	0...10V on low and high alarm set point.
Control Function	Off-Set - Sensitivity - Proportional Band - Timing / Integral - Ramp Speed - Door Freeze
Alarm Relays	1A 24VDC / AC Low/High Alarm single pole change over - Buzzer and repeater single pole on-off.
Operating Temperature	+10°C to +70°C
Mounting Position	Vertical
Weight	1.5 kg
Electrical Connections	4 x PG13 1 x PG11 Gland Internal Plugs with Screw Connections
Air Tube Connections	Positive and Negative Velocity Pressure Barbed Nipple 6.5mm O/D x 15mm long standard for PVC tube
Enclosure	ABS Grey with clear front Lid lockable with key Protection Class IP65. Without Lid IP44
Conformity	EN61326-1 EMC EN61010-1 SAFETY
Calibration Certificate	CMR can site calibrate and issue a Certificate traceable to National Standards

ENCLOSURE DIMENSIONS



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