DPC-100 PRESSURE VOLUME CONTROL

For External Pressure or Volume Sensors

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

DPC-100 Pressure-Volume Controller without built in Sensors

GENERAL

The DPC100 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 via Modbus. The DPC100 can be connected to an external sensor up to 100mA, a damper motor up to 8.5VA or a fan speed invertor. 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 via modbus rtu. Full calibration certificates traceable to National Standards can be supplied for the external sensors to make the CMR control system conform to validation procedures.

REMOTE MEASUREMENT SENSORS

The Controller can read in a 0..10V/4-20mA signal or Modbus rtu from any CMR sensor. The sensor actual value is displayed on an LCD Display on the front operators panel of the DPC100. The LCD Display can be scaled 0...100% of the 0...10V/4-20mA or can be scaled to different engineering units i.e. Pa, mBar, m/s, m/s, m3/s, m3/h or l/s etc.

AUTO CONTROL SET POINT

A set point adjustment is provided for the user to select an operating set point via a keyboard. A secondary set point can be programmed for either day or night set point and can be selected via modbus..

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

The DPC can drive all fast acting CMR motors up to 8.5VA 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. Alternatively, the DPC has also a 0..10V/4-20mA 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 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 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 on the LCD display and on Modbus rtu communication.

POWER SUPPLY

The DPC100 can be supplied for various power supplies such as 24V Vac, 110 ac and 230Vac.

REMOTE CMR SENSORS

The DPC100 was designed to function with all CMR measurement sensors for which data sheets are available separately. The most popular sensors are the DPM-110 Pressure and volume instruments. The units are normally built into a central control panel together with the DPC100 s.
The DPMs have the advantage to provide additional alarm contacts and a separate 4...20mA signal and modbus 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's convenience. Calibration is also made easy as all the controls are on the front keyboard.

DPM-110 Sensor

P-Sensor

OTHER REMOTE CMR SENSORS

The sensors can also be mounted in the field at any distance and the CMR P-Sensors, or V-Sensors in ABS or Aluminium Enclosures are ideal for pressure or volume control. V-Sensors are used where an additional alarm is needed and a remote display alarm plate with mute function. All sensors are for air pressure and for constant or variable air volume control.

V-230 Sensors

CMR DAMPERS AND ACTUATORS

CMR provides a large range of dampers either circular or rectangular with a variety of actuators from 1 up 400 seconds rotation speed for 0...90°. The DPC100 can control a limited range of actuators (up to 8.5VA) accurately and without hunting. It is recommended to use CMR dampers and actuators as the mechanical strength of the damper drive spindle and the torque of the actuator is critical.

CMR Venturi Valve

FAN SPEED INVERTOR CONTROL

The DPC100 is ideal to control EC Fans or Fan Speed Invertors 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 DPC100 can run the fan in auto or manual mode and be interfaced with the BMS.

CMR EC Fans

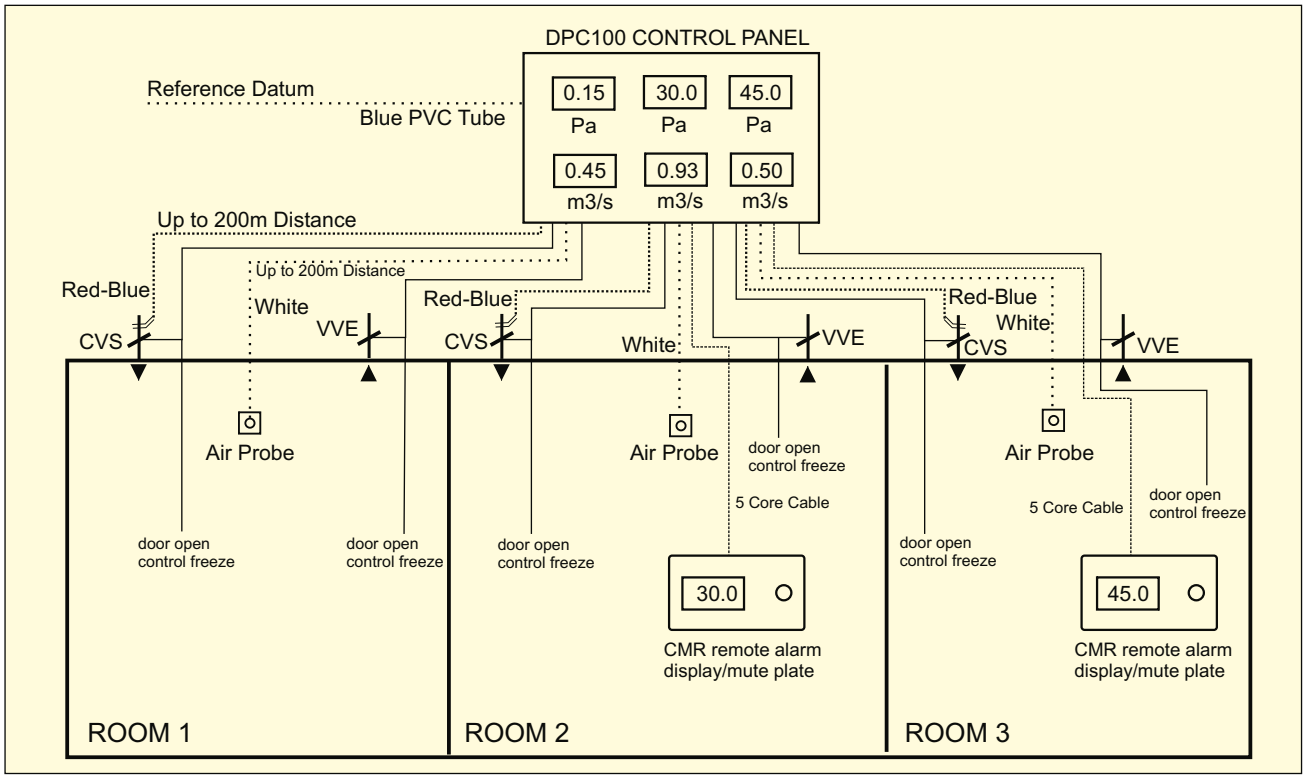
CMR CONTROLS Ltd
Precision Air Pressure and Volume Sensors

22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
web www.cmr-controls.com

Phone +44 (0) 1268 287222
Fax +44 (0) 1268 287099
mail sales@cmr-controls.com

DPC-100 CLEAN ROOM CONTROLLER

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



The above CMR Control Panel has three DPM-110 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 DPC100 reads the air volume and controls the constant volume supply (CVS) valves to provide constant air-change rate into the rooms. Three DPM-110 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 stabile 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 DPM-110 AND DPC100s

CMR Control Panel with DPM-110 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 DPC100 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.

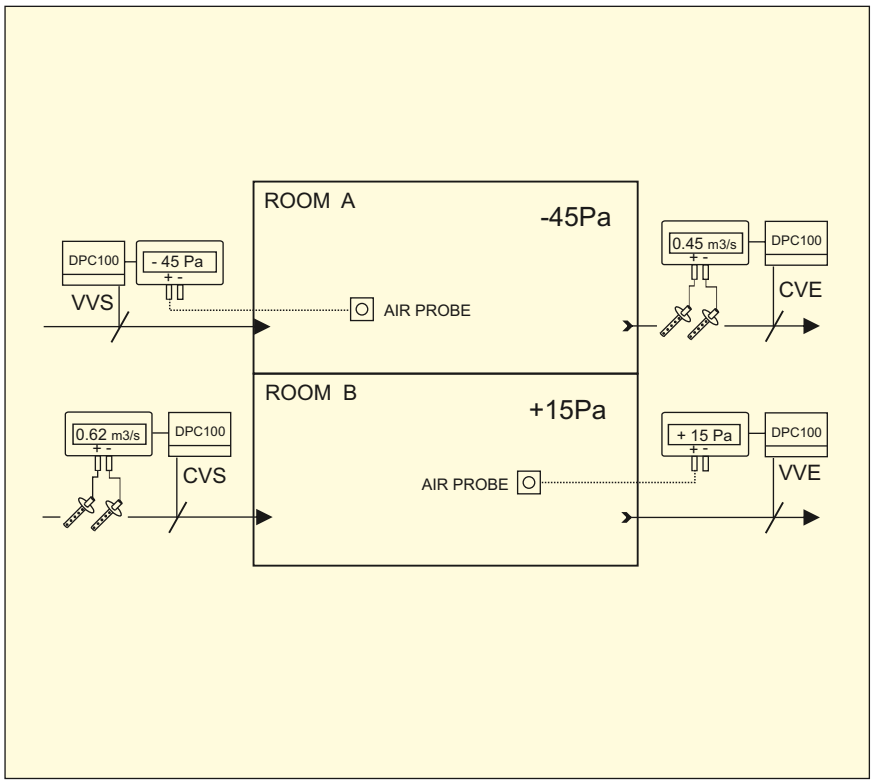
CMR CONTROLS Ltd
Precision Air Pressure and Volume Sensors

22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
web www.cmr-controls.com

Phone +44 (0) 1268 287222
Fax +44 (0) 1268 287099
mail sales@cmr-controls.com

DPC-100 AIR CONTROL APPLICATIONS

TYPICAL ROOM PRESSURE AND VOLUME CONTROL WITH A DPC 100



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.

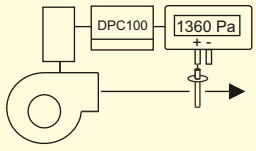
ROOM B
The supply air is set up to be a constant volume supply (CVS) to maintain 0.62m3/s.
The extract is set up as variable volume extract (VVE). The room pressure is measured via the air probe and the extract air is controlled to maintain +15Pa in the room.

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 DPC100 is a standard controller which can be configured to provide constant supply, constant extract, variable volume supply or variable volume extract.

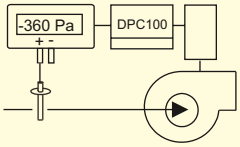
It is recommended to use the CMR dampers and valves with CMR actuators, as the mechanical connections and the gearboxes have been designed for continuous action all year round. All DPCs and DPMs can be connected via modbus rtu only to remote MPCs, BMS or SCADA systems to read in the pressures, volumes and set points. The DPC can also receive remote set points and be controlled to be in automatic or manual mode.

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

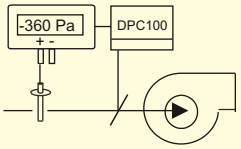
STATIC PRESSURE CONTROL



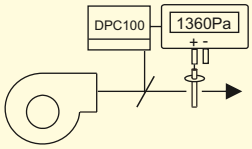
Supply Fan Speed Control



Extract Fan Speed Control

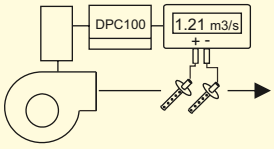


Extract Damper Control

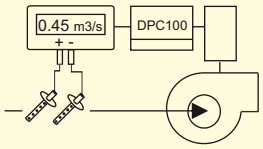


Supply Damper Control

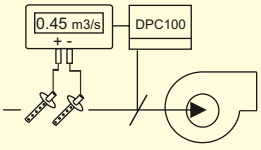
CONSTANT VOLUME CONTROL



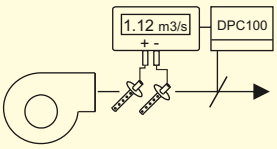
Supply Volume Fan Control



ExtractVolume Fan Control



Extract Volume Damper Control



Supply Volume Damper Control

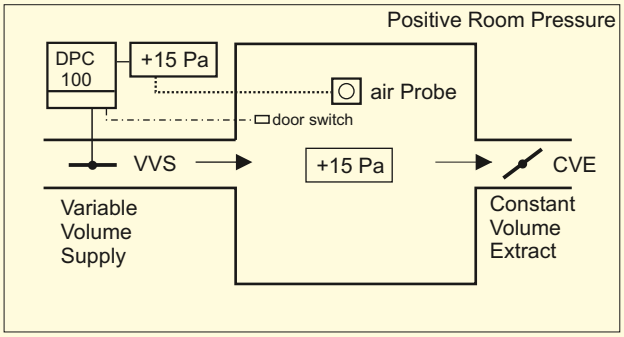
CMR CONTROLS Ltd
Precision Air Pressure and Volume Sensors
22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
web www.cmr-controls.com
Phone +44 (0) 1268 287222
Fax +44 (0) 1268 287099
mail sales@cmr-controls.com

Issue DPC100-GB04-2

DPC-100 DAMPER CONTROL METHODS

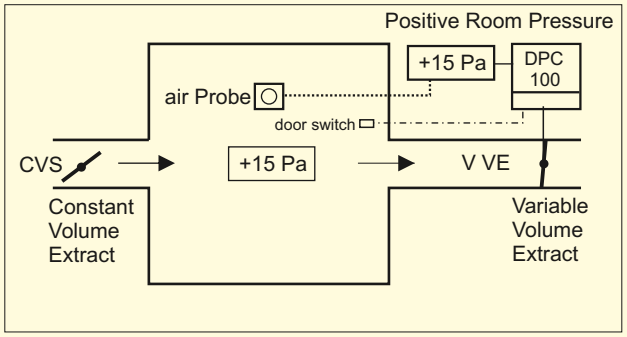
TYPICAL AIR PRESSURE OR AIR VOLUME DAMPER CONTROLS USING DPC100 CONTROLLERS.
Damper Actuators control can be open-off-close - 0(2)..10V Type and 4..20mA

Mode 'A'



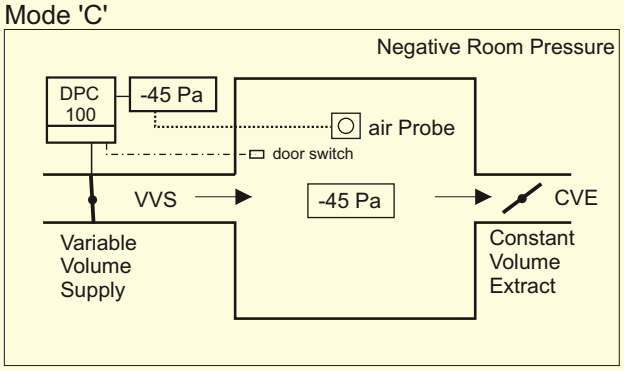
The room must be controlled at 15Pa positive pressure using variable volume supply and manual constant extract. On start up, the supply damper must be open and starts closing if the room pressure is greater than 15Pa. The damper motor stops when a door is opened and re-starts after a time out when closed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

Mode 'B'



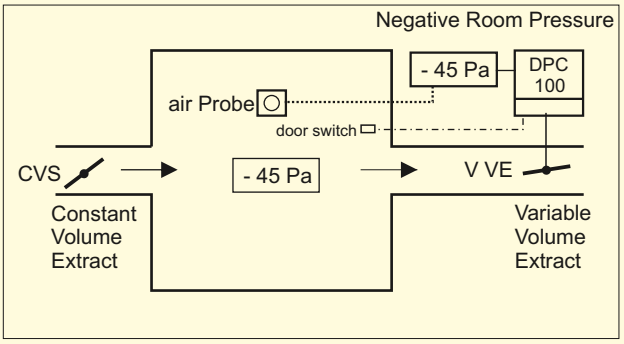
The room must be controlled at 15Pa positive pressure using variable volume extract and manual constant supply. On start up, the extract damper must be closed and starts opening up if the room pressure is greater than 15Pa.The damper motor stops when a door is opened and re-starts after a time out when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

Mode 'C'



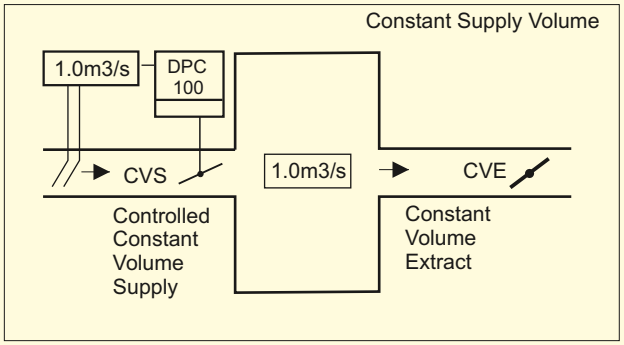
The room must be controlled at -45Pa negative pressure using variable volume supply and manual constant extract. On start up, the supply damper must be closed and starts opening if the room pressure is more negative than -45Pa. The damper motor stops when a door is opened and re-starts after a time out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

Mode 'D'



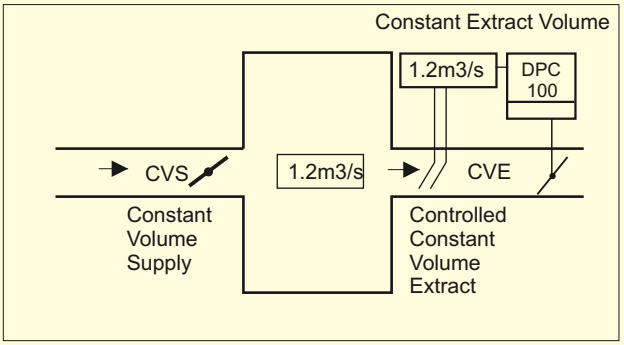
The room must be controlled at -45Pa negative pressure using variable volume extract and manual constant supply. On start up, the extract damper must be open and starts closing if the room pressure is more negative than -45Pa. The damper motor stops when a door is opened and re-starts after a time out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

Mode 'E'



The room must be controlled at 1.0m3/s constant supply volume. On start up, the supply t 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.

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.

CMR CONTROLS Ltd
Precision Air Pressure and Volume Sensors

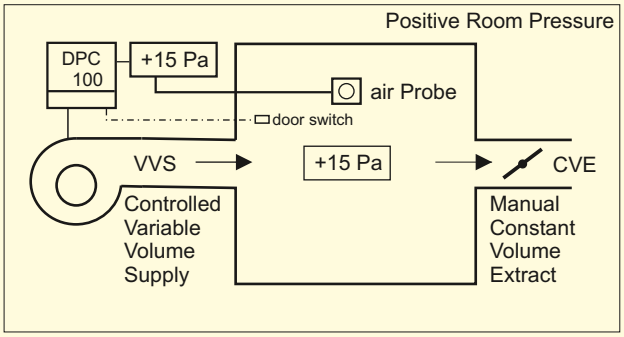
22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
web www.cmr-controls.com

Phone +44 (0) 1268 287222
Fax +44 (0) 1268 287099
mail sales@cmr-controls.com

DPC-100 DAMPER CONTROL METHODS

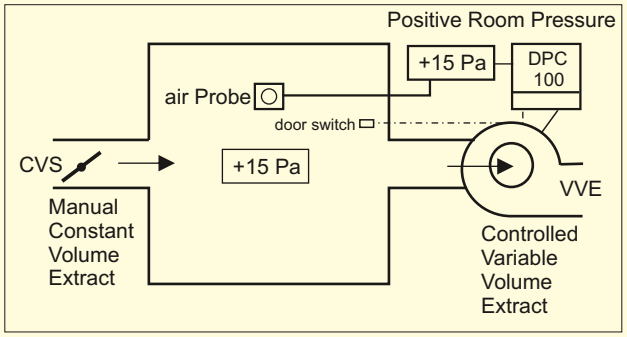
TYPICAL AIR PRESSURE OR AIR VOLUME FAN SPEED CONTROL USING DPC100 CONTROLLERS.

Mode 'G'



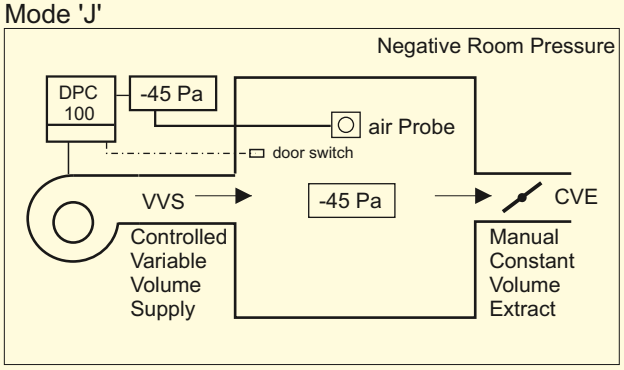
The room must be controlled at 15Pa positive pressure using variable volume supply and manual constant extract. On start up, the supply fan must speed up and starts reducing speed if the room pressure is greater than 15Pa. The fan speed locks when a door is opened and re-starts after a time out when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

Mode 'H'



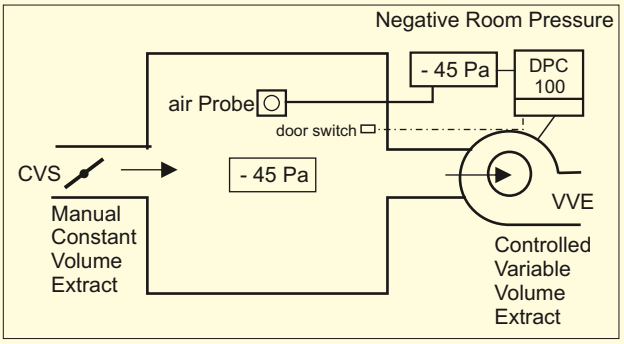
The room must be controlled at 15Pa positive pressure using variable volume extract and manual constant supply. On start up, the extract fan must reduce and starts speeding up if the room pressure is greater than 15Pa. The fan speed locks when a door is opened and re-starts after a time out when closed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

Mode 'J'



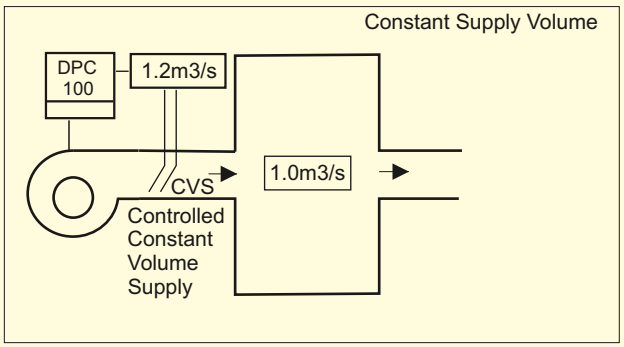
The room must be controlled at -45Pa negative pressure using variable volume supply and manual constant extract. On start up, the supply fan must reduce speed and starts speeding up if the room pressure is more negative than -45Pa. The fan speed locks when a door is opened and re-starts after a time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

Mode 'K'



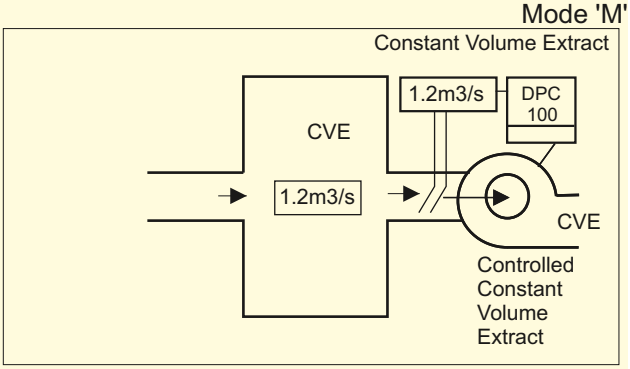
The room must be controlled at -45Pa negative pressure using variable volume extract and manual constant supply. On start up, the extract fan must speed up and starts reducing speed if the room pressure is more negative than -45Pa. The fan speed locks when a door is opened and re-starts after a time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

Mode '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.

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.

CMR CONTROLS Ltd
Precision Air Pressure and Volume Sensors

22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
web www.cmr-controls.com

Phone +44 (0) 1268 287222
Fax +44 (0) 1268 287099
mail sales@cmr-controls.com

DPC-100 PRESSURE VOLUME CONTROL

CONTROL VALUE LCD
This LCD display indicates the actual Room Pressure.

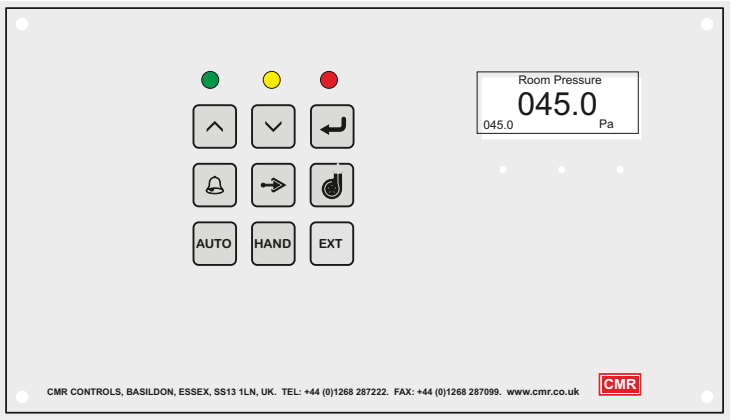
CONTROL SET POINT
The control set point of the Room Pressure is set to 45.0 Pa. The set point is displayed in the lower left corner.

LOW PRESSURE ALARM
The low alarm set point can be set to 40 Pa. If the Pressure is lower than 40.0 Pa then it shall alarm after a time out. The internal timer is adjustable from 1 - 300s which means the alarm buzzer and light switches on after i.e. 20 seconds after the pressure is lower than 40.0 Pa

LOW VOLUME ALARM
The air volume is monitored and shall control the extract damper to limit the volume in case of total door opening of the room. The volume is too low or too high and alarm can be raised.

MUTE ALARM
The BELL button is the mute button and by pressing it the buzzer shall switch off.
The alarm can be permanently muted via the parameter set up which is password protected.

CALIBRATION MODE
If the CALIBRATION mode is switched to ON the damper motor stops operating and the damper position is locked in the last position. The tubes can now be removed from the velocity sensor and calibration work can be carried out safely.



DPC-100 Controller Front Panel

AUTO OPERATION
The AUTO switch shall switch the DPC controller into automatic control if it was switched to HAND. Which means the damper motor works on room pressure or volume control.

HAND OPERATION
If the switch is set to HAND position, the damper motor or Fan Speed Controllers can be positioned with the UP and DOWN arrow keys which program the manual set point to any position from fully closed at 0% to fully open at 100%.

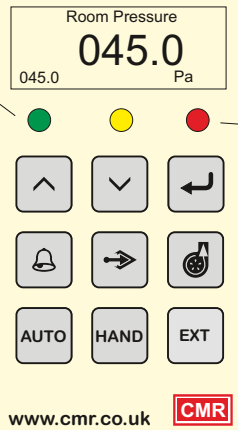
FAN BUTTON
This is an optional switch to power up a ventilator

PROGRAM BUTTON
This is used to enter the parameters into the controller and is password protected.

ALL HEALTHY
The green light is normally on if there are no alarms present. I.e. the pressure or air volume is normal and there is no other alarm present.

MUTE ALARM
By pressing the BELL button the alarm can be muted.

AUTO - HAND
When the AUTO button is pressed it shall go into automatic mode. When the HAND button is pressed the damper position can be set to any fixed position. The LCD indicates 'hand'



GRAPHIC LCD DISPLAY
The LCD display indicates the actual Room Pressure or Air Volume. The indicator is duplicated from the DPC controller Actual pressure indicator is scaled in Pa. The display is slower to indicate than the control action as dampening is programmed into the LCD.

ALARM
The red Alarm Light shall come on in case of pressure or air volume is either higher or lower than the alarm set points. The buzzer shall come on as well if not permanently muted. When pressing the BELL button the buzzer can be muted and also reset if the alarm has been set to latching
.

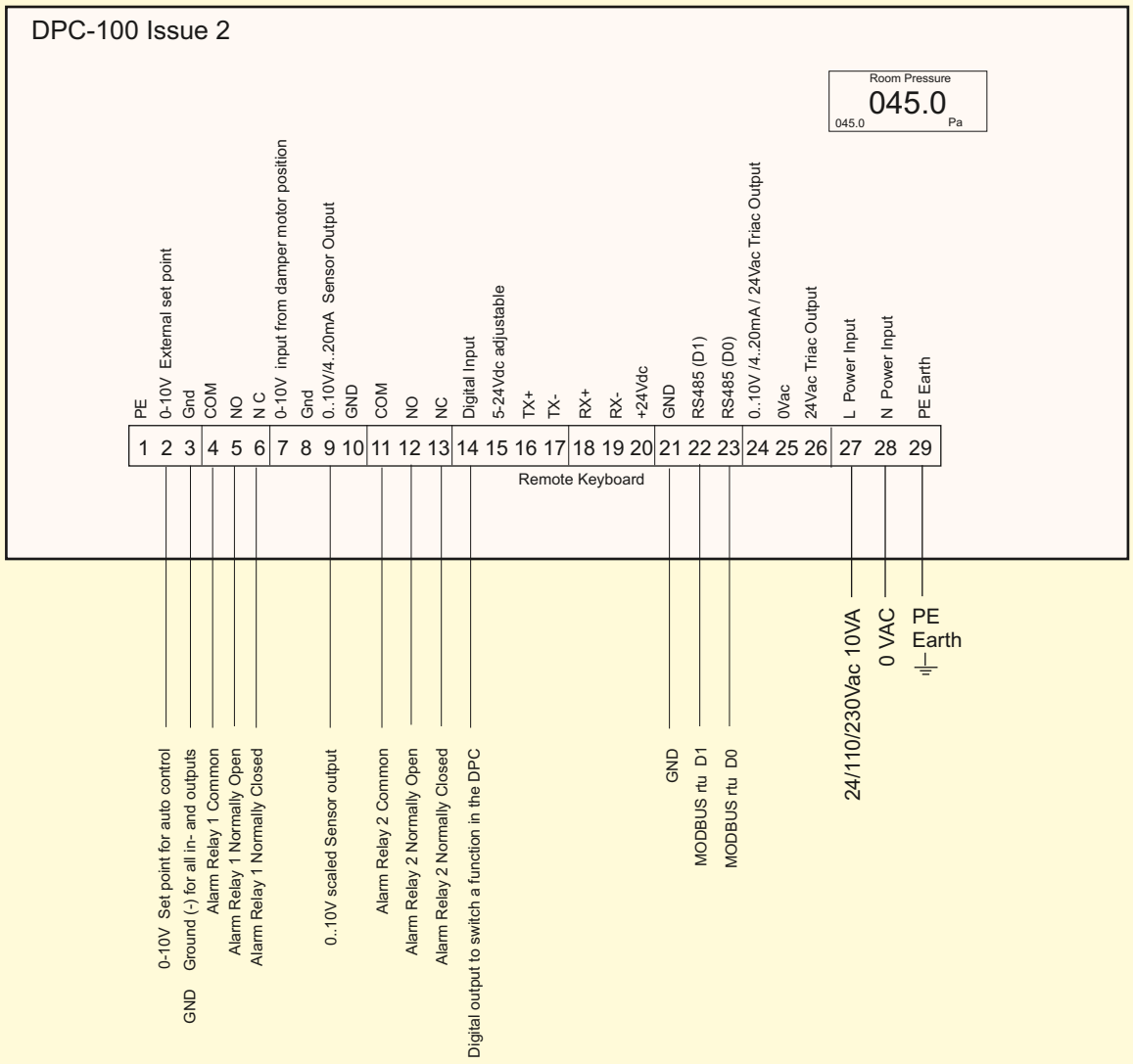
EXT
The EXT can switch in the external set point from a device i.e. BMS etc..

CMR CONTROLS Ltd
Precision Air Pressure and Volume Sensors

22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
web www.cmr-controls.com

Phone +44 (0) 1268 287222
Fax +44 (0) 1268 287099
mail sales@cmr-controls.com

DPC-100 BMS WIRING



BMS wiring from DPC to BMS (12 core shielded cable 0.5mm2)

T2 + Input 0-10V set point from BMS - T3 is GND

T4 Alarm Relay 1 Common
T5 Alarm Relay 1 Normally Open.
T6 Alarm Relay 1 Normally Closed

T9 Scaled internal Sensor 0..10V BMS - T3 is GND

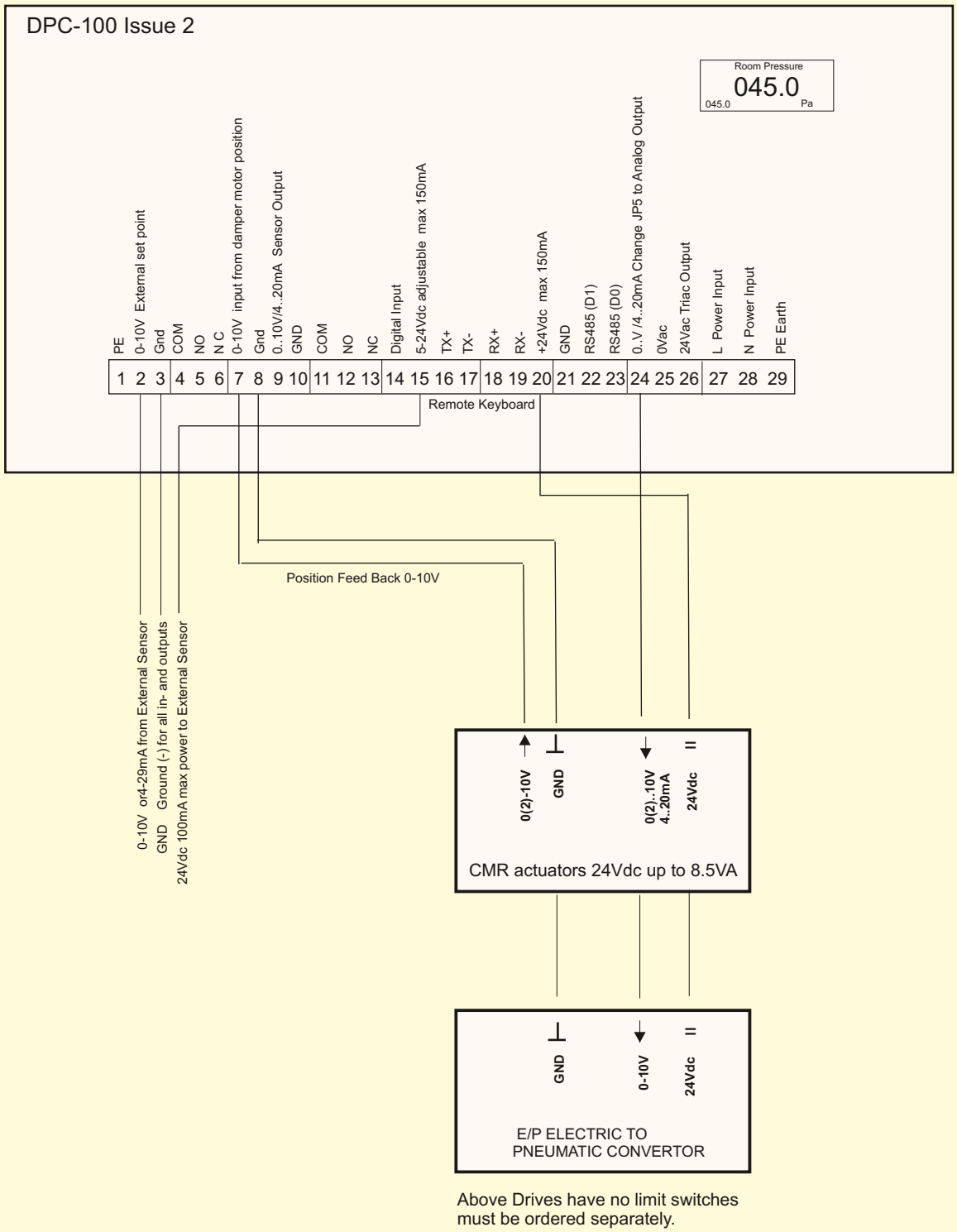
T11 Alarm Relay 2 Common
T12 Alarm Relay 2 Normally Open.
T13 Alarm Relay 2 Normally Closed

MODBUS rtu Wiring Belden 8102

T21 GND MODBUS rtu
T22 D1 MODBUS rtu
T23 D0 MODBUS rtu

CMR CONTROLS Ltd
Precision Air Pressure and Volume Sensors
22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
web www.cmr-controls.com
Phone +44 (0) 1268 287222
Fax +44 (0) 1268 287099
mail sales@cmr-controls.com

DPC-100 0(2)..10V - 4..20mA ACTUATOR

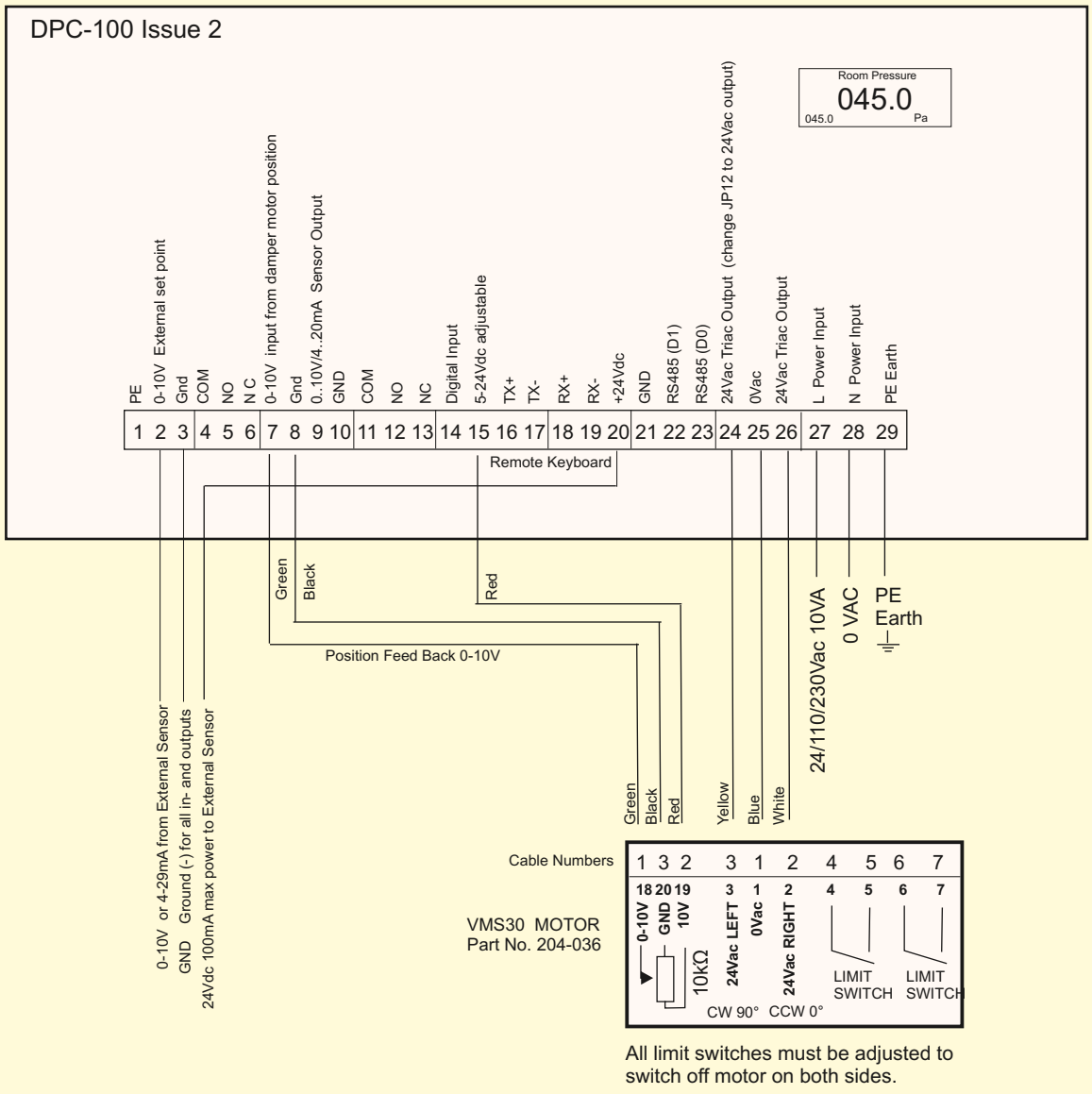


CMR CONTROLS Ltd
Precision Air Pressure and Volume Sensors

22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
web www.cmr-controls.com

Phone +44 (0) 1268 287222
Fax +44 (0) 1268 287099
mail sales@cmr-controls.com

DPC-100 24VAC TRI-STATE ACTUATORS



CMR CONTROLS Ltd
Precision Air Pressure and Volume Sensors

22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
web www.cmr-controls.com

Phone +44 (0) 1268 287222
Fax +44 (0) 1268 287099
mail sales@cmr-controls.com

DPC-100 ORDER DESCRIPTION

GENERAL
CMR manufactures the DPC-100 wall mount or panel mount air pressure and air volume controller to suit many applications. Because of the variety of functions and power supplies it has been necessary to design an easy to use selection table for anybody to make up a DPC-100 controller specification to satisfy a requirement. You will find all specifications available with the associated ordering Code on the DPC-100 Controller Selection Table (Page 11) . In order to select the correct part we have made up a sample selection below:

DPC-100 PART NUMBER
The DPC-100 Part Number starts with the selection of the controller type '71'.

DPC-100 Board Issue No.
The DPC-100 will have an update on the electronic board from time to time and to identify the issue No i.e. for software and hardware, this number might change. For Issue 2 the Code is '2'.
The Part Number extends to '712'

TUBE NIPPLES
The DPC-100 has no nipples fitted which has the Code 'N'.
The Part Number extends to '712 N'.

NEGATIVE PRESSURE RANGE
No Sensor is fitted and therefore the Code is always '0000'.
In the Example the is Code '0000' .

The Part Number extends to '71 2 N 0000'.

BASE TRANSDUCER MEASUREMENT RANGE
Not applicable which always has the Code 'N' .
The Part Number extends to '71 2 A 0000 N'.

POSITIVE PRESSURE RANGE
No Sensor is fitted and therefore the Code '0000'.

The Part Number extends to '71 2 N 0000 N 0000'.

UNITS OF MEASUREMENT FOR SENSOR
Not applicable and therefore the code is 'N'.

The Part Number extends to '71 2 N 0000 N 0000 N

CABLE GLANDS
The DPC-100 is supplied with Glands so that the motor cable, remote display plate and communication can easily be installed by an electrician to be terminated on terminals.
We have selected Glands which has the Code '0'.
The Part Number extends to '71 2 N 0000 N 0000 N 0

POWER SUPPLY
The DPC-100 can be ordered in
24VAC with Code '3'
110VAC with Code '4'
230VAC no power cable fitted with Code '5'
230 UK complete with cable and UK plug with Code '6'
230 EU complete with cable and European plug with Code '7'

All cables are 3 m long .
We have chosen 230V with cable and UK plug which has Code '6'.
The Part Number extends to '71 2 N 0000 N 0000 N 0 6.

FINAL PART NUMBER
The Part Number to order is '712 N 0000 N 0000 N 0 6.

Now try and select your own DPC-100 using the DPC-100 Order Selection Table.

CMR CONTROLS Ltd
Precision Air Pressure and Volume Sensors
22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
web www.cmr-controls.com
Phone +44 (0) 1268 287222
Fax +44 (0) 1268 287099
mail sales@cmr-controls.com

DPC-100 ORDER SELECTION TABLE

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 depending on a specific requirement.

The Example Part Number 712A0000N0000N06 which is printed above the Selection Table and identified as being a DPC-100 with ABS enclosure, having an LCD Display and Keyboard, with an issue No 2, No Nipples, No Sensors, No Range Units, No Sensor ,No Label, with Cable Entry Glands, the Power Supply is an isolated 230Vac with a UK Plug.

The DPC-100 would be supplied with an LCD-Display-Keyboard mounted into the recess of the case.

EXAMPLE PART NUMBER SELECTION (The code after the (=) sign is used i.e. Issue = 2)

71	2	N	0000	N	0000	N	0	6
P-Sensor	**ISSUE**	**Nipple**	**Negative**	**Range**	**Positive**	**Label**	**Cable**	**Power**
Part No.	**No**	**Size**	**Range**	**Units**	**Range**	**Units**	**Entry**	**Supply**
Base = 71	Issue = 2	Not Fitted	None	None	None	None	Gland = 0	24 Vac = 3
								110 Vac = 4
								230 Vac = 5
								230UK = 6
								230EU = 7

HOW TO ORDER

EXAMPLE
A wall mount pressure air volume controller is required of the Type DPC-100
The latest Issue main board is required
The tube connections are not required
Negative Range - there is no sensor fitted
The Range Units are not applicable
Positive Range - there is no sensor fitted
The Label Units of the sensor is not applicable
The Cable Entry must be Glands
The power supply must be 24Vac

Call CMR for assistance at any time

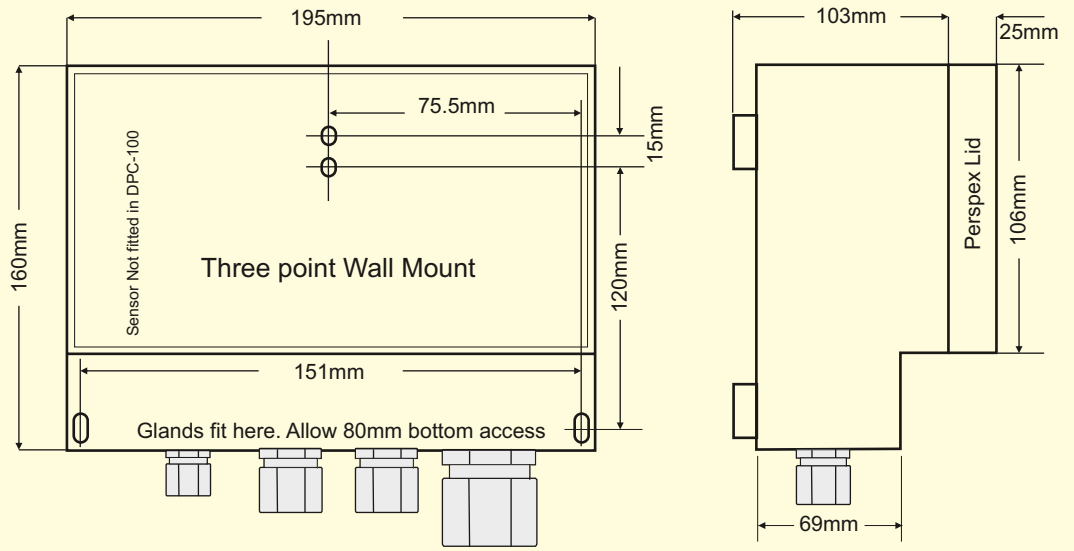
The part Number for this DPC 100 is 71 2 N 0100 N 0000 N 0 3

CMR CONTROLS Ltd
Precision Air Pressure and Volume Sensors
22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
web www.cmr-controls.com
Phone +44 (0) 1268 287222
Fax +44 (0) 1268 287099
mail sales@cmr-controls.com

DPC-100 ISSUE 2 SPECIFICATION

Measurement Range	Sensor See order selection Table for P-Sensor - V-Sensor - DPM-Sensors or any other sensor
Optional Range	Any range of the connected sensor
Overload Capacity	See Sensor Data Sheets
Media	See Sensor datasheet
Sensor Type	See Sensor datasheet
AC Power Supplies	24 VAC 50/60Hz Fuse T1.0 A Wickmann
	110VAC 50/60Hz Fuse T315 mA Wickmann
	230VAC 50/60Hz Fuse T315 mA Wickmann
AC Control Output	24 VAC (internal power from isolation transformer) max 350mA (8.5VA) (Fused T1A Wickmann)
	via Triacs
DC Control Output	0..10Vdc or 4..20mA
Sensor Output Voltage	0-10V or 4-20mA (0...100% of Range)
RL = 5kOhm min	.
Hysteresis/Repeatability	See Sensor datasheet
Linearity (Accuracy)	See Sensor datasheet
Zero Drift	See Sensor datasheet
1 x Digital Input	Door Control or Damper closing mode or fan fault or Mute
Analog input	On T2 0...10V or 4-20mA for external set point or external sensor i.e. P-Sensor
Position analog Input	On T7 0...10V
Alarm Threshold	On keyboard
Control Function	Off-Set - Sensitivity - Proportional Band - Timing / Integral - Ramp Speed - output Freeze
Alarm change over Relays	1A 24VDC / AC Low/High Alarm - Buzzer and repeater.
Operating Temperature	+10°C to +40°C (Storage -40°C to +70°C)
Mounting Position	Vertical or Horizontal
Weight	1.4 kg
Electrical Connections	1 x M20mm 2 x M16mm 1 x M12 Glands Internal screw Connections.
Air Tube Connections	Not fitted
Communication	1 x Modbus rtu - Remote Keyboard Modbus rtu
Enclosure	ABS Grey with clear front Lid - Protection Class IP65.
Conformity	EN61326-1 EMC EN61010-1 SAFETY
Calibration Certificate	See Sensor datasheet

DPC-100 Issue 2 ENCLOSURE DIMENSIONS



CMR CONTROLS Ltd
Precision Air Pressure and Volume Sensors

22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
web www.cmr-controls.com

Phone +44 (0) 1268 287222
Fax +44 (0) 1268 287099
mail sales@cmr-controls.com

The information is subject to change without notice