

HOME

CMR CONTROLS

AIR MANAGEMENT SYSTEMS



PRESSURE VELOCITY SENSORS AND CONTROLS

PRECISION COMPONENTS FOR VENTILATION AND PROCESS AIR CONTROL

CMR CONTROLS
Division of C.M.RICHTER EUROPE LTD

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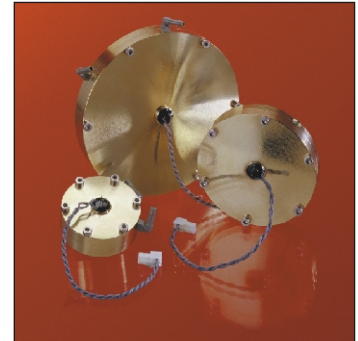


CMR TRANSDUCER MANUFACTURE

ACCURACY AND REPEATABILITY IS MOST IMPORTANT

The CMR Pressure Transducer

CMR manufactures pressure transducers for 20 years. The CMR pressure transducer is based on variable reluctance and measures the displacement of a precision diaphragm by means of frequency change, which means it is not affected by humidity and can withstand a high concentration of formaldehyde. The displacement of the diaphragm is only 0.00015 mm for 0.1Pa or 0.15mm for 100Pa measurement, and therefore no air volume is required. This means the transducer is capable of measuring pressures up to 200m distance utilising the CMR colour coded PVC tubing without losing its accuracy.



CMR Transducer



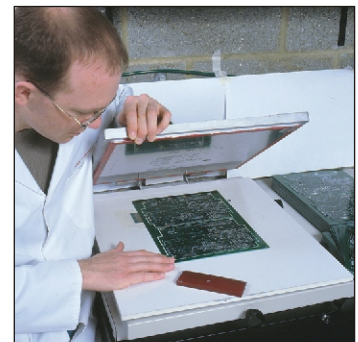
CMR Coil Winding

CMR Sensing Coil Manufacture

The high precision sensing coils have thousands of turns of copper wire which is thinner than hair. The coils are matched and utilised as pairs. The one coil is positive and the other coil is negative excited, and hence they are self compensating during temperature changes. This makes the CMR transducer unique as the sensor will not drift away from its design. In fact, the older the sensor gets, the better the performance and repeatability becomes.

CMR PCB Assembly Preparation

The electronic circuit boards are designed by CMR and the PCB is built to conform to environmental issues. Once the bare PCB is ready it is inspected by CMR and special solder screens are used to prepare the PCB for automatic placement of the components. The latest solder technology is used to guaranty perfect solder joints. The solder paste used does not need a board washing process after using the re-flow solder machine. This makes this solder process extremely environmentally friendly.



PCB Solder Preparation



Electronic Assembly

CMR Surface Mount Pick and Place Machines

CMR populates the PCBs on the latest Pick and Place SMD machine, which can place up to 3800 components per hour. The advantage of the machine is that CMR can manufacture a single or many thousands of electronic boards. The machine is easily programmed and incorporates a complete stock control system. All components are on automatic feeders fitted all around the machine allowing fast and reliable manufacturing output. This facility allows CMR to be flexible to manufacture any sensor just in time.

ALL SENSORS ARE DESIGNED AND MANUFACTURED IN HOUSE BY CMR

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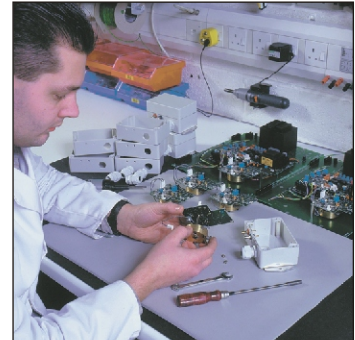


CMR ASSEMBLY AND CALIBRATION

CALIBRATIONS TRACEABLE TO NATIONAL STANDARDS

CMR Sensor Production

The transducer and electronic circuit board is inspected before they are matched to fit together. A pre-calibration is carried out to test the complete assembly for linearity and repeatability. Once the pressure sensor is assembled and has passed a pre-qualifying test, it is ranged for its operating pressure and calibrated to provide 0-10V and 4-20mA over its published pressure range. A final test stage confirms the correct functioning of the complete sensor assembly.



Sensor Assembly



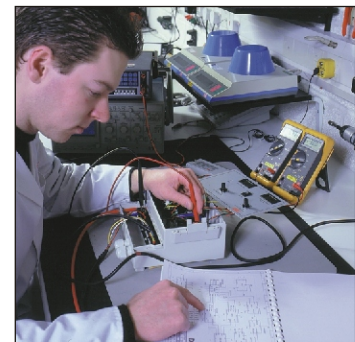
CMR Climate Chamber

CMR Temperature Compensation Systems

Once the sensor assembly is ranged and tested, it is placed into one of the CMR climate chambers which can hold a large quantity of sensors at any one time. The chamber is fully computerised and each sensor is connected to an especially designed micro processor which drives the temperature of the chamber from 10°C to 50°C in 10° stages and then back again. During the temperature cycles, the temperature drift of each CMR pressure sensor is measured and finally compensated automatically, without opening the climate chamber. After several hours the sensors are ready for final mounting into enclosures.

CMR Calibration to International traceable Standards

Finally, the CMR pressure sensors are calibrated against automatic precision calibrators. All CMR laboratory calibrators are traceable to all national standards and are calibrated by the national laboratory and are certified. During calibration of the CMR sensors, a multi point certificate is produced indicating the actual pressure injected and the relative measurement output of the CMR sensor. Once the sensor has passed, the certificate is printed and placed into the sensor enclosure as standard. Each sensor has its unique serial number and a copy of the calibration certificate can be obtained from CMR at any time.



Final Calibration



CMR Calibrator Cal95

CMR Portable Calibrator with Traceable Calibration Certificate

CMR manufactures manual portable calibrators, which are used to check and calibrate any pressure or velocity pressure transducers in the field. The most popular type is the CAL95 which has a built in hand pump to generate the pressure for the transducers to be checked. It has an LCD display to indicate the reference pressure. The CAL95 has an output voltage signal which can be connected to a chart recorder or computer scada system to record the calibration pressures. The instrument is used by many commissioning and controls engineers worldwide since many years.

ALL CMR SENSORS ARE CALIBRATED TO PROVIDE FAST VALIDATION

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CMR P-SENSOR PRESSURE SENSOR

WITH DIFFERENT ENCLOSURES AND FUNCTIONS



P-Sensor in ABS Enclosure



P-Sensor with LED in Alu



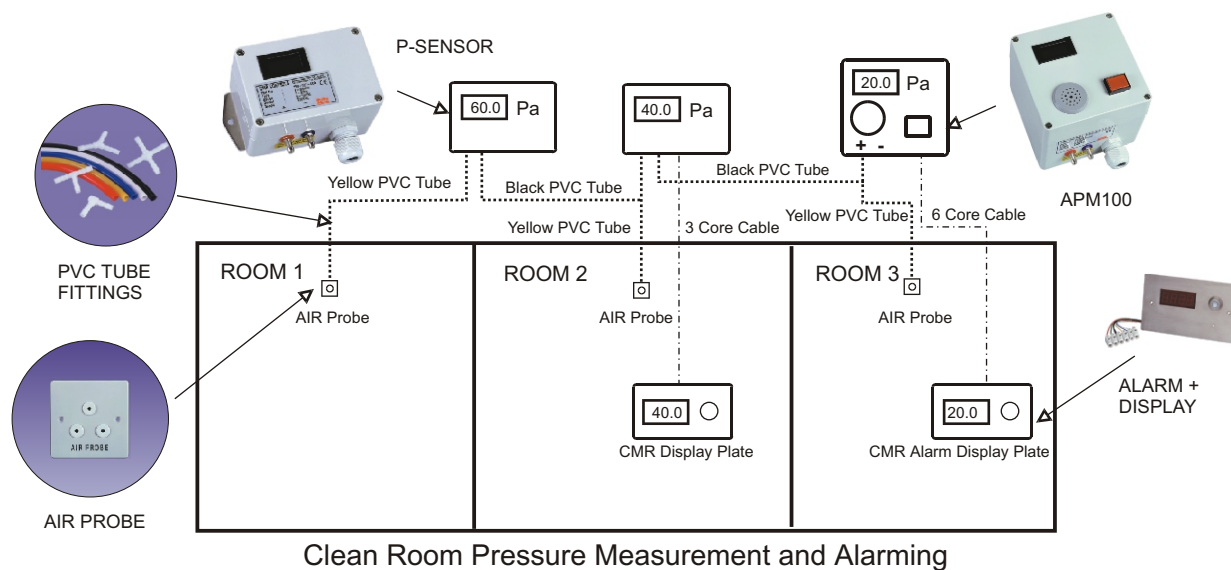
APM100 Pressure Alarm

The P-Sensor in the IP65 ABS wall mount enclosure is the most popular transmitter. It is used in many field mounted applications especially in clean room pressure monitoring, static pressure control and any process control application. All CMR transmitters are calibrated and come with calibration certificates traceable to all national standards. Each sensor has a unique serial number for traceability.

The P-Sensor in Alu enclosure is designed for rugged applications where environmental protection is of great importance. In this case, stainless steel compression fittings are used to connect the pressure sample lines. The cable gland is also made of stainless steel. The optional LED is embedded in the front lid. It is suitable for a multitude of military and nuclear applications. Certificates of conformity and traceable calibration certificates are issued as standard.

The APM100 is a P-Sensor in a larger ABS enclosure with low and high alarm light, buzzer, display and mute facility. It is especially designed for clean room monitoring, where critical operations need to be monitored. High and low alarm adjustable timers and a re-alarm timer are standard. Repeater alarm display plates are available as standard. Custom alarm plates can be made by CMR to suit the design.

Typical Clean Room Pressure Measurement Applications



LOW PRESSURE SENSORS FROM 25 TO 10,000 PA 0-10V AND 4-20mA

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CMR DPM50 PRESSURE MONITOR

PANEL MOUNT WITH HIGH AND LOW ALARMS



DPM50 Pressure Monitor

DMP50 Panel Mount Pressure Monitor

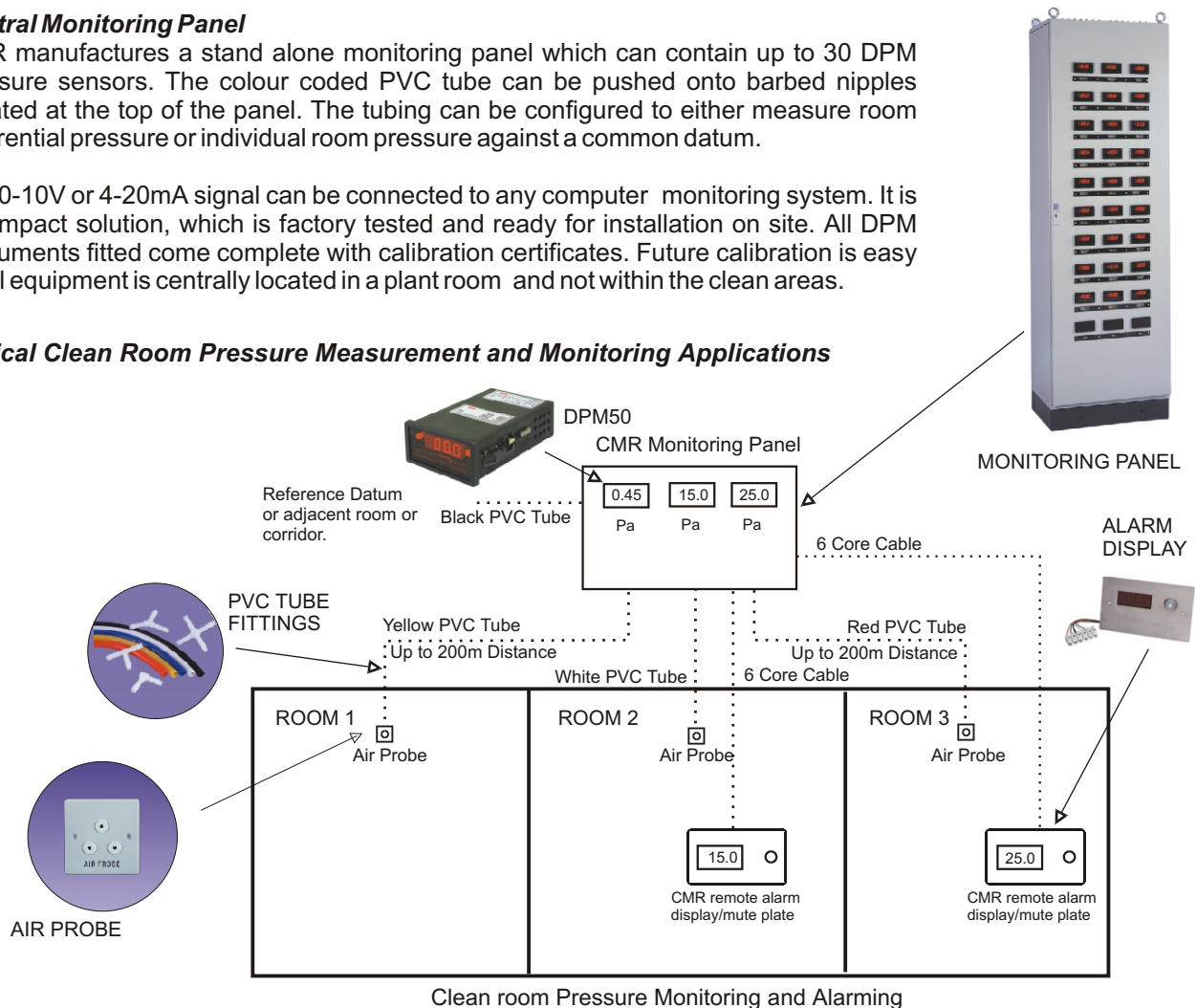
The DPM50 pressure monitor is just like the P-Sensor, it can measure low air pressure but it also has the facility to provide a low and high alarm relay output. Time delays are adjustable for both relays. Alternatively, one relay is used as low and high alarm and the second relay is used to switch on the buzzer. A mute facility shall cancel the second relay to mute the buzzer. All adjustments can be made from the front panel, when removing the red lens from the DPM. The DPM is calibrated to traceable national standard. All CMR transducers measure differential pressure and colour coded CMR PVC tube can be run up to 200m in distance to still have accurate pressure measurement.

Central Monitoring Panel

CMR manufactures a stand alone monitoring panel which can contain up to 30 DPM pressure sensors. The colour coded PVC tube can be pushed onto barbed nipples situated at the top of the panel. The tubing can be configured to either measure room differential pressure or individual room pressure against a common datum.

The 0-10V or 4-20mA signal can be connected to any computer monitoring system. It is a compact solution, which is factory tested and ready for installation on site. All DPM instruments fitted come complete with calibration certificates. Future calibration is easy as all equipment is centrally located in a plant room and not within the clean areas.

Typical Clean Room Pressure Measurement and Monitoring Applications



LOW AIR PRESSURE MONITORING 25 TO 10000 PA 0-10V AND 4-20mA

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CMR V-SENSOR VELOCITY SENSOR

COMMERCIAL AND HEAVY INDUSTRIAL APPLICATIONS



V-Sensor in ABS Enclosure



V-Sensor with LED in Alu



APM105 Velocity Alarm

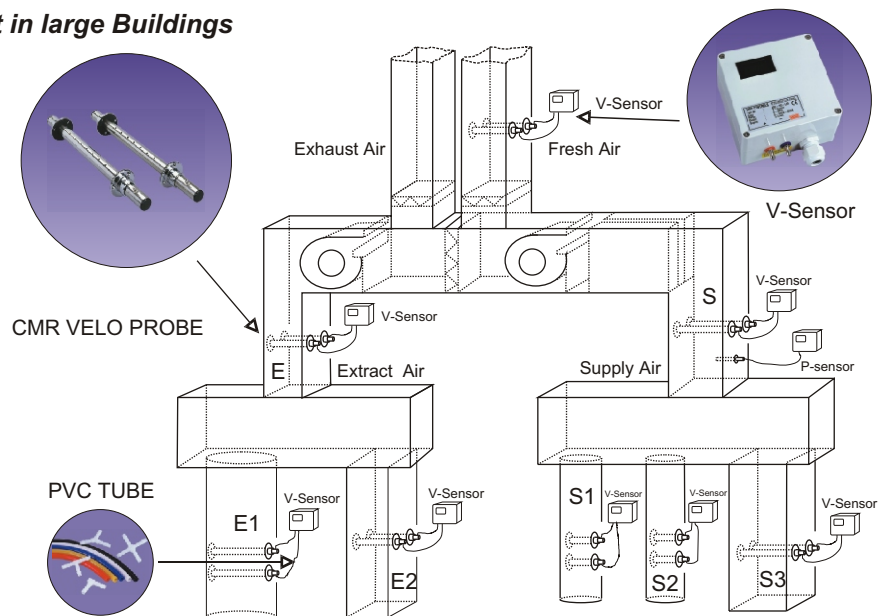
The V-Sensor in the ABS wall mount enclosure without LCD display is the most used velocity transmitter. Normally it works in conjunction with the CMR Velo Probes to measure duct volumes so that fans or dampers can be controlled. The V-Sensor has a linear volume output and can be used with any flow grid or venturi measuring devices. All sensors come with calibration certificates traceable to national standards.

The V-Sensor in Alu enclosure is designed for rugged applications where environmental protection is of great importance. In this case, stainless steel compression fittings are used to connect the pressure sample lines. The cable gland is also made of stainless steel. The optional LED is embedded in the front lid. It is suitable for a multitude of military and nuclear applications. Certificates of conformity and traceable calibration certificates are issued as standard.

The APM105 is a V-Sensor in a larger ABS enclosure with low and high alarm light, buzzer, display and mute facility. It is especially designed for clean room monitoring, where critical air change rates need to be alarmed. High and low alarm adjustable timers and a re-alarm timer are standard. Repeater alarm display plates are available as standard. Custom alarm plates can be made by CMR.

Typical Air Volume Measurement in large Buildings

The Velo Probe and V-Sensor air-volume sensor arrangement is used to measure the total supply, extract and fresh air volume in a large air handling systems. Individual supply and extract ducts are also measured to provide correct air volumes to all parts of the building. CMR manufactures the Velo Probes to any size and provides a complete service, such as site survey, design and commissioning. A full range of duct flow grids, attenuator oval flow probes and venturi duct sections in either round or rectangular are manufactured.



LOW VELOCITY SENSORS FROM 2.5 TO 28.8M/S RESOLUTION 0.1 M/S

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CMR DPM55 VELOCITY MONITOR

CENTRALIZED WITH HIGH AND LOW ALARMS



DPM55 Velocity Monitor

DPM Panel Mount Velocity Pressure Monitor

The DPM55 velocity monitor is just like the V-Sensor, it can measure low air velocity but it also has the facility to provide a low and high alarm relay output. Time delays are adjustable for both relays. Alternatively, one relay is used as low and high alarm and the second relay is used to switch on the buzzer. A mute facility shall cancel the second relay to mute the buzzer. All adjustments can be made from the front panel, when removing the red lens from the DPM. The DPM is calibrated to traceable national standard. All CMR transducers work on differential pressure and colour coded CMR PVC tube can be run up to 200m in distance to still have accurate velocity measurement.

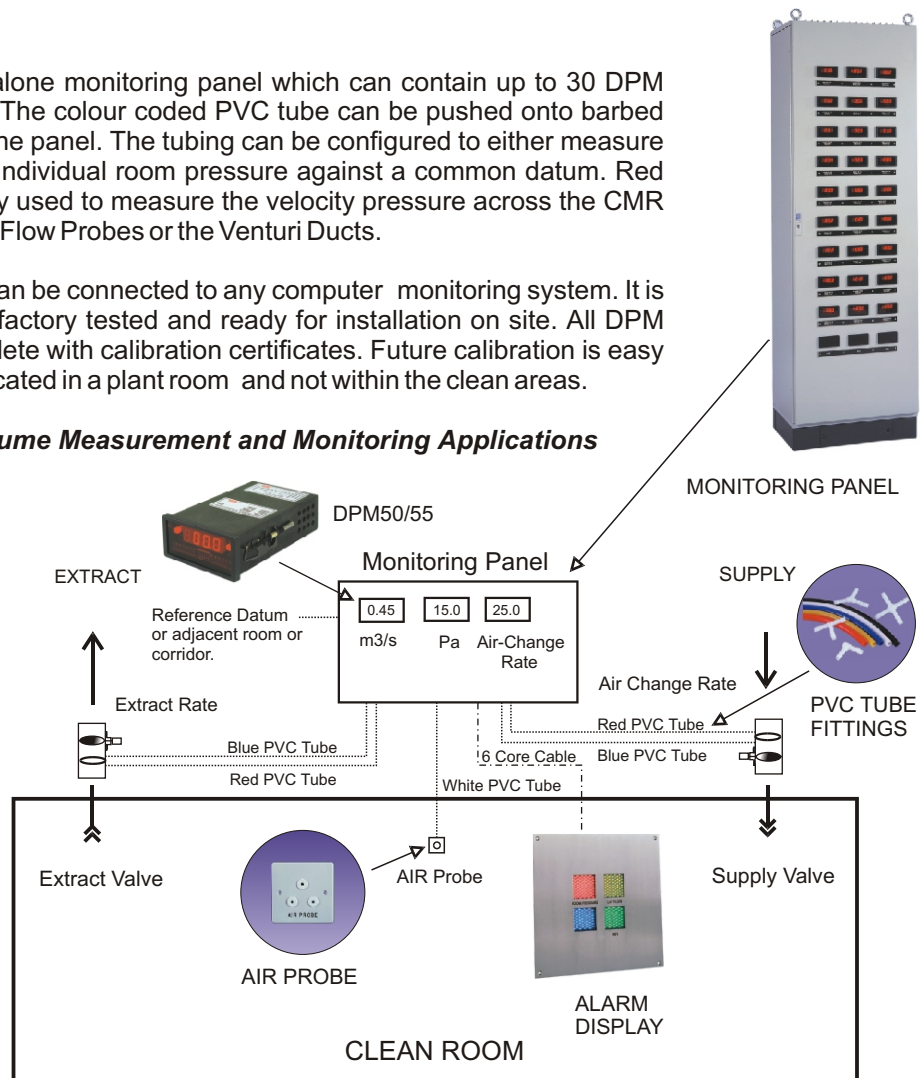
Central Monitoring Panel

CMR manufactures a stand alone monitoring panel which can contain up to 30 DPM pressure or velocity sensors. The colour coded PVC tube can be pushed onto barbed nipples situated at the top of the panel. The tubing can be configured to either measure room differential pressure or individual room pressure against a common datum. Red and blue PVC tube is normally used to measure the velocity pressure across the CMR Velo Probes, Flow Grids, Oval Flow Probes or the Venturi Ducts.

The 0-10V or 4-20mA signal can be connected to any computer monitoring system. It is a compact solution, which is factory tested and ready for installation on site. All DPM instruments fitted come complete with calibration certificates. Future calibration is easy as all equipment is centrally located in a plant room and not within the clean areas.

Typical Clean Room Air Volume Measurement and Monitoring Applications

The supply air change rate is measured, scaled, monitored and alarmed continuously by one DPM55 monitor. A DPM50 is connected to an air probe which measures the room pressure. A Venturi and a DPM55 measures the extract rate. In case of low or high volumes and pressures, an alarm is generated and displayed on large LEDs fitted to a remote stainless steel plate which has colour LEDs to identify which area is on alarm. It is a compact and calibrated and can easily be validated.



A COMPLETE CALIBRATED SYSTEM READY FOR USERS VALIDATION

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CMR AIR VOLUME MEASUREMENT

ACCURATE AND REPEATABLE AIR VOLUME CONTROL



CMR Stainless Velo Probes



Oval Flow Probe for Silencer



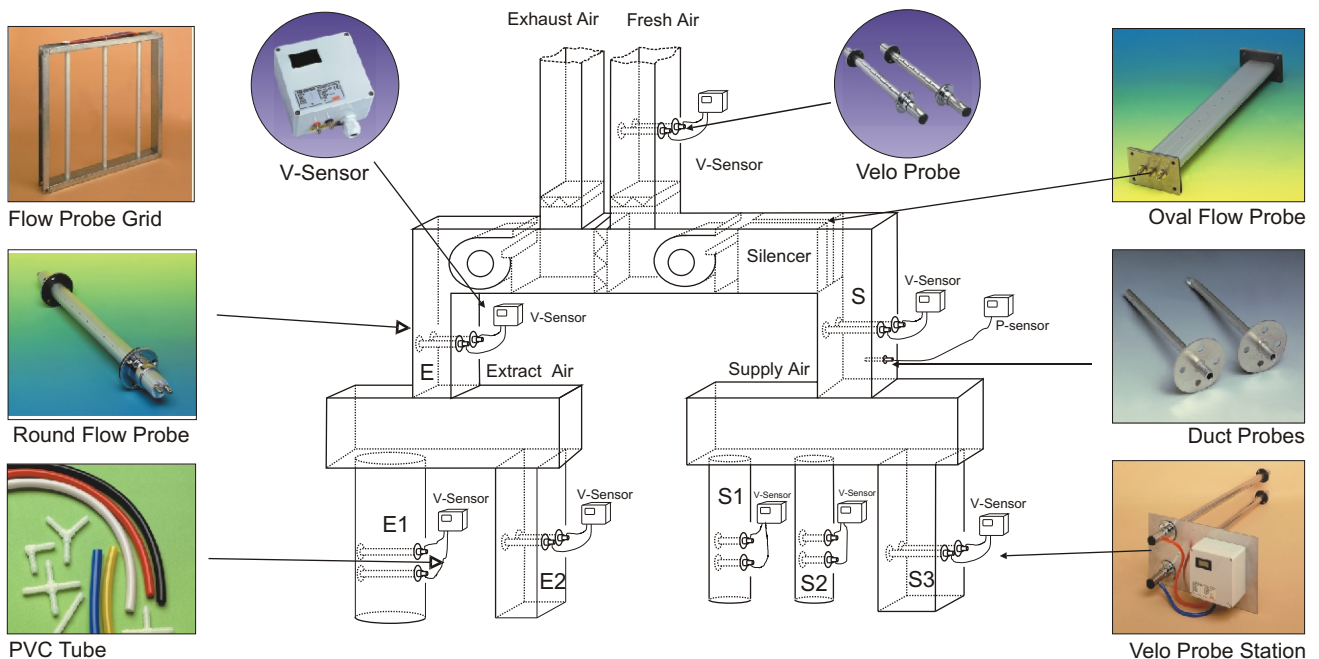
Venturi Duct Volume Station

The Velo Probes are the most popular duct velocity sensors and work in conjunction with all CMR Velocity Sensors. The electronic sensors are factory calibrated. When installing the Velo probes just simply connect the red and blue PVC tube and adjust the Velo Probe to read the same volume as measured by the commissioning engineer.

The Oval Flow Probes for Silencers are used substantially in Air Handling Unit Applications. The Oval Probes are supplied individually and each silencer air passage way can be equipped with a probe which means it is better than a conventional flow grid and the air is already straightened. The CMR Velocity Sensor converts the velocity pressure from the probes into an air volume.

The CMR Venturi volume measurement stations are manufactured in standard duct sizes up to 400mm and are pre-calibrated this means, the CMR Velocity Sensors convert the velocity pressure directly into an accurate linear volume flow. The duct venturis are used in small or large scale clean room, industrial and commercial applications.

Typical Application for CMR Velo Probes, Round Flow Probes and Oval Flow Probes



MADE TO MEASURE VELOCITY SENSORS FROM 0.5 TO 28.8M/S BY CMR

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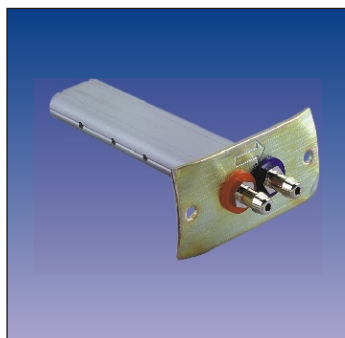
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CMR PROBES AND ACCESSORIES

CUSTOM MADE DUCT PROBES FOR ANY APPLICATION



CMR Single End Duct Probe



CMR Multi Point Probe



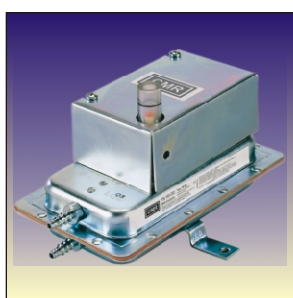
CMR Static and Total Probes

The single side multi point flow probes are normally used for air volume measurement in small ducts and variable air volume units. They are used in attenuator passage ways to measure accurate air volume at low velocity. It is an ideal air probe to be used in conjunction with the CMR PS ultra low pressure switches for air flow proving. The Duct Probe is also used as a flow measurement system with the CMR Velocity Sensor to transmit air volumes.

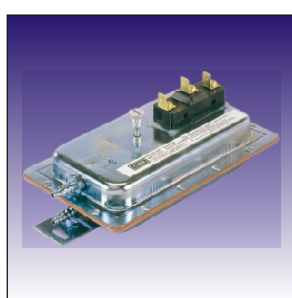
The double ended multi point Flow Probe are used substantially in Air Handling Unit Applications where the passage way is only up to 35mm in width. The probe is manufactured to any length to suit the application. If each passage way has a probe it works better than a conventional flow grid as the air is already straightened. The CMR Velocity Sensor provides a linear air volume output signal. The Multi Point Probe can also be fitted into inlet louvres of fresh air grilles to measure the fresh air content if ducts cannot be fitted.

The CMR duct probes are used for many applications in the HVAC field ie. fan proving in electric heater battery control, boiler control, AHU control and in many other fields. The probes are manufactured from aluminium as static or total impact air pressure sensors. When used as static and total probe, they can read velocity pressure, which means the duct probes can be used as single point flow measurement stations in conjunction with the CMR Velocity Sensors.

Ultra Low Pressure Switches for Air Flow Proving

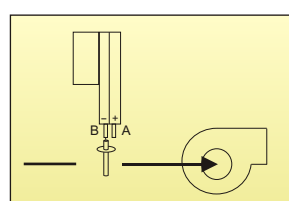


PS505 Pressure Switch

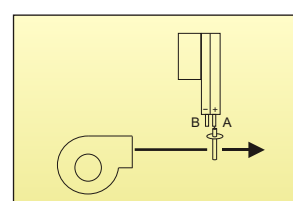


PS250 Pressure Switch

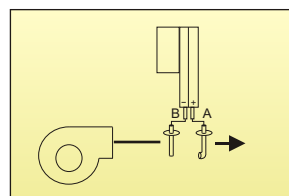
The PS pressure switches work in conjunction with the duct probes and are used for low differential pressure or velocity proving when operating electric heater batteries, fan run and filter monitoring.



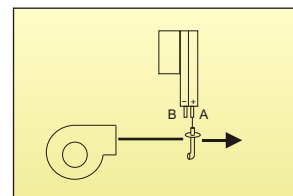
Suction Static Pressure



Supply Static Pressure



Velocity Pressure Supply



Total Pressure Supply

CMR CAN MEASURE ULTRA LOW AND HEAVY DUTY INDUSTRIAL AIRFLOW

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DPC150 AIR SYSTEM CONTROL

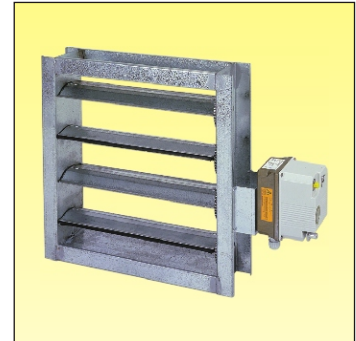
COMPACT WITH BUILT IN P-SENSOR OR V-SENSOR



DPC150 Precision Controller



Fast Venturi Venturi Valve



Fast Heavy Duty Damper

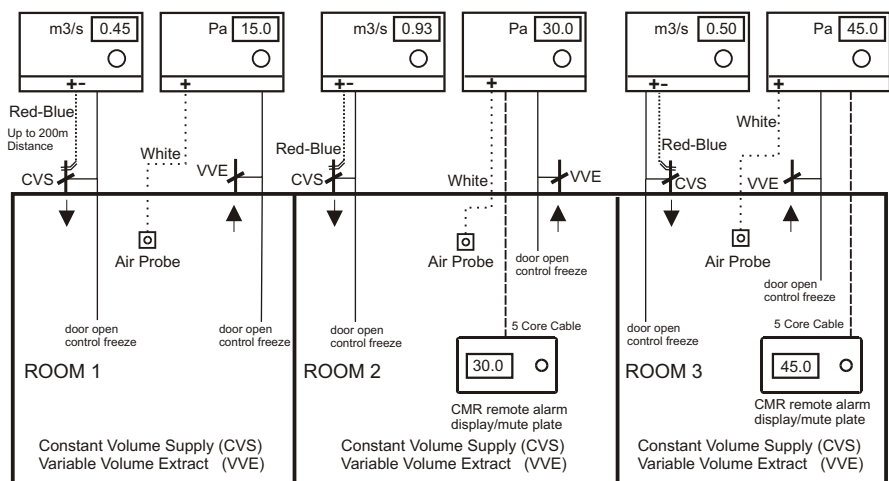
The DPC150 is compact and has a built in P-Sensor or V-Sensor. There is a positive and negative pressure connection nipple to measure either static, differential or velocity pressure. A set point for the automatic control can be adjusted and the DPC can either control the CMR valves or fan speed controllers. A manual override is provided to set the damper to a fixed position. A low and high alarm can be adjusted.

The CMR galvanised valve can be supplied with or without a venturi air volume measurement device built in. The valve has a neoprene seal and can therefore be shut off. The actuator is normally factory fitted and tested and the rotation speed is 15s as standard, but 4s, 30s, 60s or 100s for 0-90° are also available as option. The valves are rugged and are made in sizes of 100,150,160,200,250,315 and 400mmØ. The valve and actuator is factory commissioned.

The CMR galvanised dampers are manufactured to individual dimensional requirements and are supplied in increments of 10mm in height and width internal dimensions. The mounting frame is the industry's standard. Each damper blade is driven by a cast aluminium wheel and a sturdy connection holds the CMR fast acting actuator. The speed is 15s up to 20NM and 30s for 50NM up to sizes 4m x 4m.

Typical Clean Room Supply Air Volume and Room Pressure Extract Control

Each room has a constant volume supply venturi valve and a DPC150 controls a constant air volume into the rooms providing the required air changes. The room pressures are adjusted by means of measuring the room pressure via the air probe and driving the extract valve until the set point of each room is achieved. A remote alarm plate is installed to warn the operator of a deviation in air pressure in the room. Door interlock switches are timed to lock the dampers in position when opened.



ACCURATE AIR VOLUME AND PRESSURE DAMPER CONTROLS

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DPC200 AIR SYSTEM CONTROL

PANEL MOUNT DPC200 WITH SEPARATE SENSORS



DPC200 Controller

Panel Mount Control System

The DPC200 has no built in pressure sensor and is normally used with sensors mounted in the field or with DPM instruments in standard CMR control panels as illustrated here. The DPC200 has an automatic set point adjustment and can control damper actuators or fan speed controls. A manual override set point can be adjusted to position the damper to a fixed position in case of maintenance or emergency breakdown. A calibration or door interlock switch locks all dampers in position.



DPM50/55 Sensor

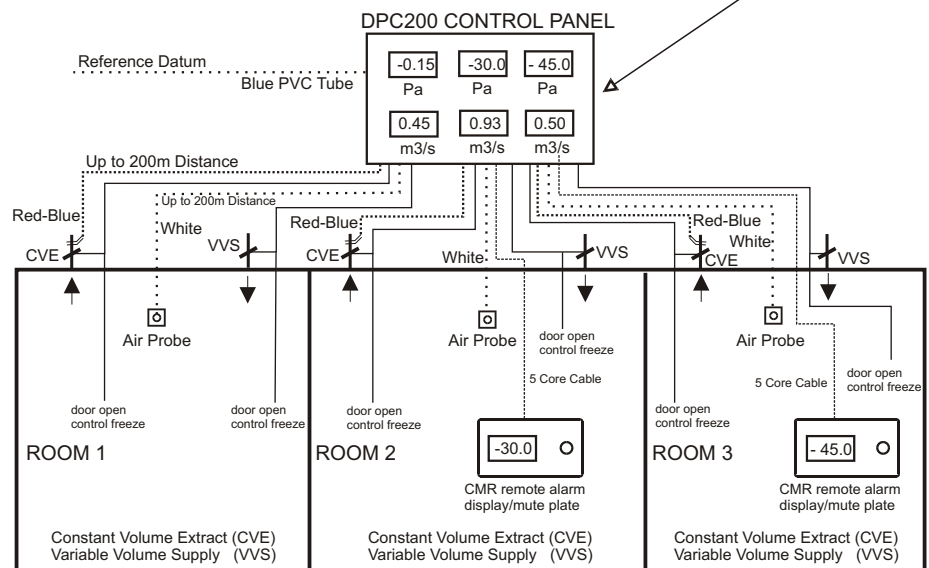
Central Control Panel

The CMR DPC control panel has been designed to make installations of clean room control extremely easy. The DPCs are mounted on the backplate and the DPM50 or DPM55 are mounted into the door. All pressure connections are on the top and the CMR PVC tube can run up to 200m to the actual rooms and ducts. The remote valve or damper motors are wired with six core cable to the terminals. The panel is fitted with a power supply and fuses ready for connections to the mains. There are six control loops per panel and three complete rooms can be controlled. Additional terminals are provided to connect the CMR panel to a PLC or BMS system, which can interface to provide remote set points, auto or manual setting, read in the actual pressure or velocity and read in the position of the Damper actuator. The Panel is factory tested and comes complete with calibration certificates and installation instructions. The DPMs on the front door shall be engraved to specifications supplied. A standalone system which can easily be validated.



Typical Clean Room Supply Pressure and Room Extract Volume Air Control

Each room has a constant volume extract venturi valve which is measured by a DPM and a DPC200 controls the constant air volume out of the rooms providing the required air changes. The room pressures are adjusted by means of measuring the room pressure via the air probe connected to a DPM and driving the supply valve with a DPC until the set point of each room is achieved. Pressure Alarm plates warn the operator of a failure. Door interlock switches are fitted to lock the dampers in position when opened.



DPC200 PANEL FOR CENTRALISED PRESSURE AND VOLUME CONTROL

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DPC 250 DAMPER - FAN CONTROL

WITH BUILT IN RUGGED PRESSURE-VOLUME SENSOR



DPC250 Compact Controller



Fast Modulating Damper



0-100Hz Fan Speed Control

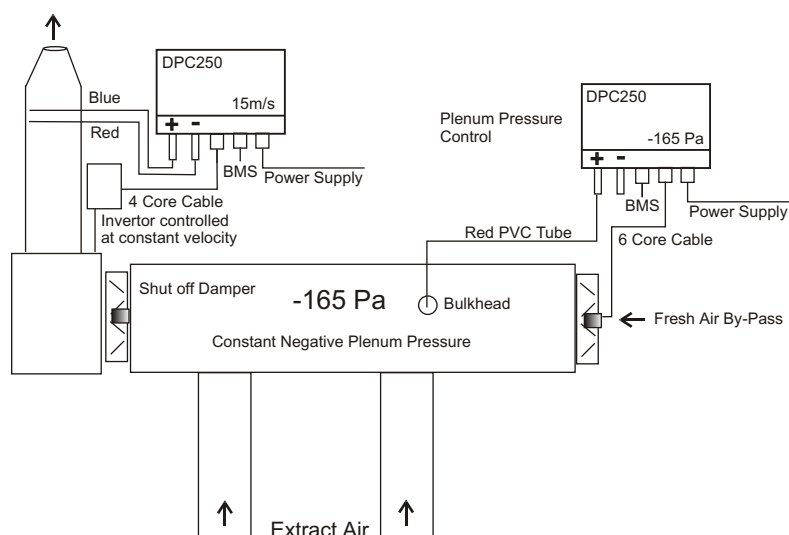
The DPC250 has a built in rugged pressure sensor. A positive and negative pressure connection nipple can measure either static, differential or velocity pressure. A set point for the automatic control can be adjusted and the DPC can either control dampers or fan speed controllers. A manual override is also provided to position the damper. A low and high alarm can be adjusted.

The CMR galvanised dampers are manufactured to individual dimension requirements and are supplied in increments of 10mm in height and width using internal dimensions. The mounting frame is the industry's standard. Each damper blade is driven by a cast aluminium wheel and a sturdy connection holds the CMR fast acting actuator. The speed is 15s up to 20NM and 30s for 50NM up to sizes 4m x 4m.

The DPC250 can also be supplied with a 0-10V or 4-20mA output signal to drive any type of actuator or fan speed inverter or electronic controller. The built in pressure sensor can read in the velocity pressure produced by the inlet ring of the fan, which means the DPC 250 and the fan make up a complete system providing accurate volume control calibrated at the factory.

Typical Plenum Fresh Air By Pass Pressure and Stack Velocity Extract Control

The schematic shows a typical plenum pressure control system. The DPC250 measures the stack velocity and controls the fan inverter to provide a constant stack discharge. As the extract volume varies, the fresh air bypass damper is controlled by measuring the plenum pressure and adjusting the damper to maintain a constant pressure within the plenum, which means the static pressure is kept constant in the extract duct, whilst maintaining constant stack discharge velocity. Any PLC or BMS system can be interfaced to adjust the set points from remote.



AIR PRESSURE OR AIR VOLUME DAMPER AND FAN SPEED CONTROLS

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DPC250 INDUSTRIAL AIR CONTROL

DRIVES ANY KIND OF ACTUATOR OR INVERTOR



DPC250L Pressure Controller



VMS Damper Motor



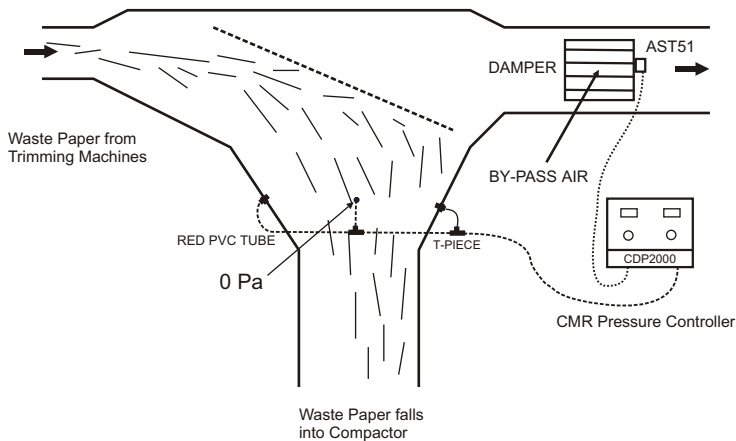
AST51 Damper Motor

The DPC250L has a built in rugged pressure sensor and has a larger power supply to drive a stronger motors. The DPC250L can measure static, differential or velocity pressure. A set point can be adjusted to control damper or fan speed controller. Hand/Auto override is provided. Low and high alarms can be adjusted.

The VMS damper motor is a 24VAC synchronous motor which has rotation of 30s, 60s and 100s for 0...90° and a torque of 4, 6 or 10NM. It is used for small venturi valves up to 400mm Ø with less than 500 Pa duct pressure. It has extra end switches and position feed back. This motor is normally used for indoor light industrial duties.

The AST51 is an actuator designed mainly for heavy duty applications. The damper produces 50NM at 30s rotation speed for 0-90° and is only used for large industrial dampers up to 4m x 4m or high pressure dust extract pressure systems. The AST51 is IP65 protected and can be used in harsh environments.

The DPC250L controls the waste paper separator pressure with a By-Pass Air Control Damper



Waste Paper Separator

The above schematic shows a typical application for the DPC250L. The waste paper trimmings are sucked up by a fan which cuts the paper into smaller pieces and are then blown into the separator. An extract fan maintains a constant suction pressure. The CMR heavy duty damper with an AST51 actuator balances the incoming and outgoing air volume by means of controlling a by pass air to maintain 0 Pa within the separator. The 0 Pa pressure is measured at dedicated locations within the separator so that the waste paper can fall into the compactor where is baled and ready for re-cycling.

The AST51 is fitted to a heavy duty damper which is mounted to the extract plenum of the separator as shown in the picture on the top left hand side. The Damper and the actuator is designed for this heavy duty applications to work 24 hours a day. The damper actuator produces 50NM at 30s rotation speed for 0-90° and is completely enclosed IP65 for outdoor use.

THE DPC RANGE OF CONTROLLERS CAN INTERFACE WITH ANY PLC

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DPC300 LOW VELOCITY CONTROL

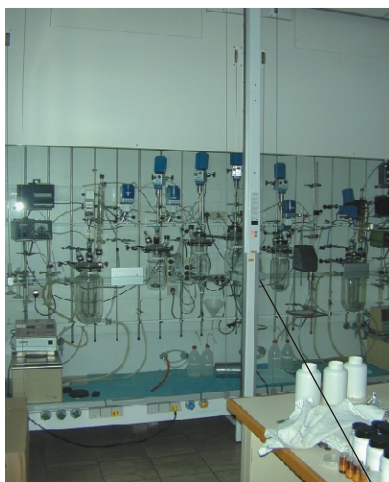
WITH BUILT IN ULTRA LOW VELOCITY F-SENSOR

The CMR Fume Cupboard Face Velocity controller maintains 0.50 m/s linear face velocity at all times regardless of the sash type, vertical or horizontal. This means the sash can be closed down to 10mm or opened to 500mm and the face velocity will remain at 0.50 m/s. The set point is user adjustable from 0.35 to 1.00 m/s. All alarm levels can be adjusted and remote mute, total shut off, hand position can be connected to the BMS. An emergency exhaust panic button is standard in case of chemical spillage to provide user safety. The DPC300 can be supplied in 24, 110 and 230VAC and is delivered ready as a kit to be installed by anybody. The CMR PPS Valves are airtight and the venturi tracking sensor provides exhaust volume measurement for the CMR make up air controller. The Valves are supplied in sizes 100, 150, 200, 250, 315 and 400 mm diameter with or without venturi and flanges.



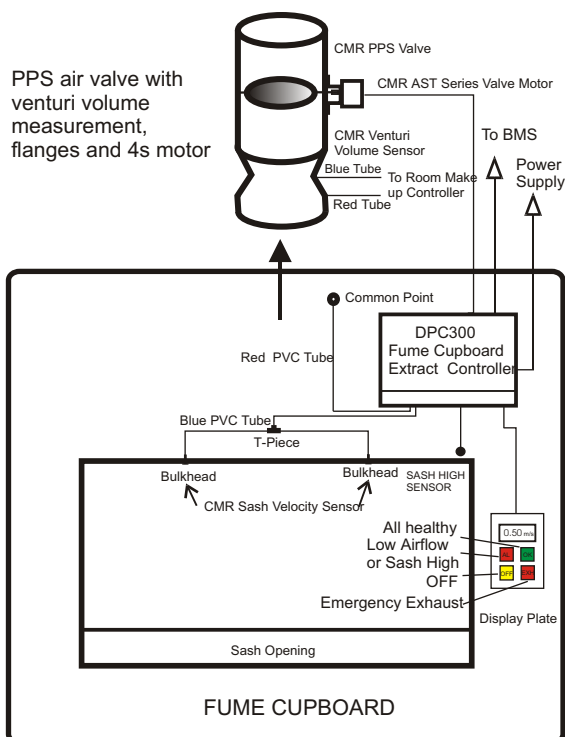
DPC300 Fume Extract Controller

The PPS air valve is airtight. A venturi extract volume measurement is built in. The valve has a response time of milliseconds. The valve can be shut off airtight.



A typical fume extract system in a chemical laboratory. The large sash is almost a walk in cupboard. CMR controls the extract volume to provide safety for the operator and energy saving.

CMR manufactures alarm fascia plates, channels or enclosures to suit the clients environment and aesthetics. The display shows the actual face velocity in m/s. and there are indicating LEDs:
Green = healthy
Red = flow/sash alarm.
Yellow = extract off.
Red = Panic emergency exhaust button.



FAST ACTING FUME CUPBOARD FACE VELOCITY AIR DAMPER CONTROL

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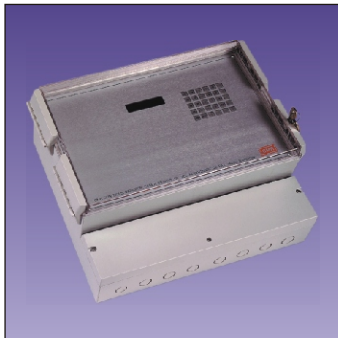
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MPC SERIES AIR SYSTEM CONTROL

COMPACT INDIVIDUAL INDEPENDENT CONTROL



MPC Series Controller

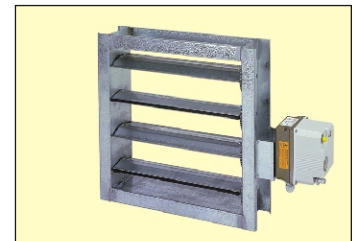
The MPC series controllers can have built in pressure, velocity or ultra low velocity sensors. Alternatively, remote sensors or panel mount DPM transmitters can be utilised. The controller is compact and ready to control one complete clean room suite. A keyboard allows the operator to change parameters and an LCD display indicates the set points and actual achieved values. Alarm and monitoring facilities are all built in. The units are custom manufactured to suit the application.



DPM50/55 Sensor

Typical Clean Room Supply and Extract Air Control using three MPCs

The CMR MPC controller has been designed to make installations of clean room control extremely easy. One MPC contains a pressure sensor for room pressure control and a volume sensor to control the air change rate. A further pressure sensor is fitted to measure from one room to another to monitor and alarm the differential pressure between two areas. The controller can either control constant supply or constant extract or both. The room pressure can be controlled either on the supply or on the extract depending on the design. The MPC is complete with 1.5m lead to plug into 230V or it can be powered by 110 or 24VAC. The power for the external sensors and any of the CMR valve or damper motors are provided by the MPC. In addition, the MPC can monitor and control room temperature and humidity and provide a facility to indicate alarms on remote colour coded LED display plates. The MPCs can be installed either in the field above a clean room or centrally within a CMR MPC Control panel.



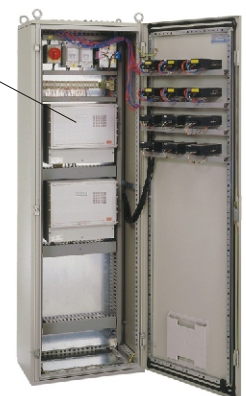
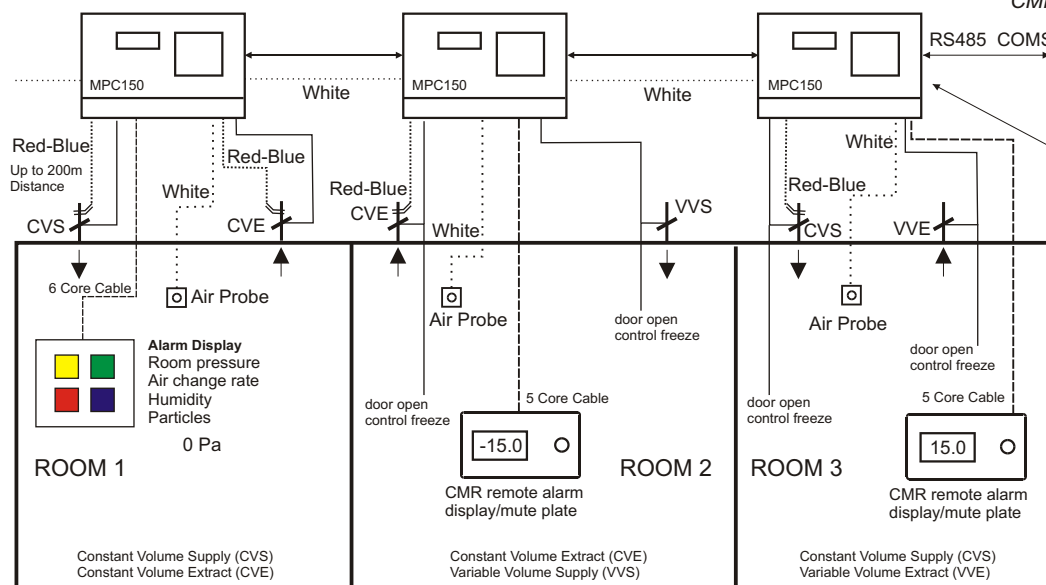
CMR Damper with AST20



CMR Venturi Valve with AST21

MPC Compact Air Pressure - Volume Controller

The reference (-) port of the controller is left open on the VVE and VVS controllers to the plant room.



Central MPC Panel with DPM Sensors can be supplied

CAN BE USED AS INDIVIDUAL REMOTE OR CENTRALISED INSTALLATION

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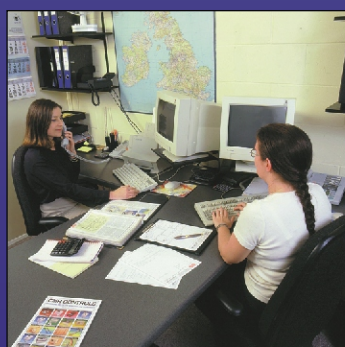


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PRECISION COMPONENTS FOR VENTILATION AND PROCESS AIR CONTROL

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