POWER STATION Control Panels

Control solutions for ventilation systems

Off the shelf...

...or built to order

Small panels...

...and large panels

VES Andover®

Creating the right environment

The Power Station Control Panel

Introduction

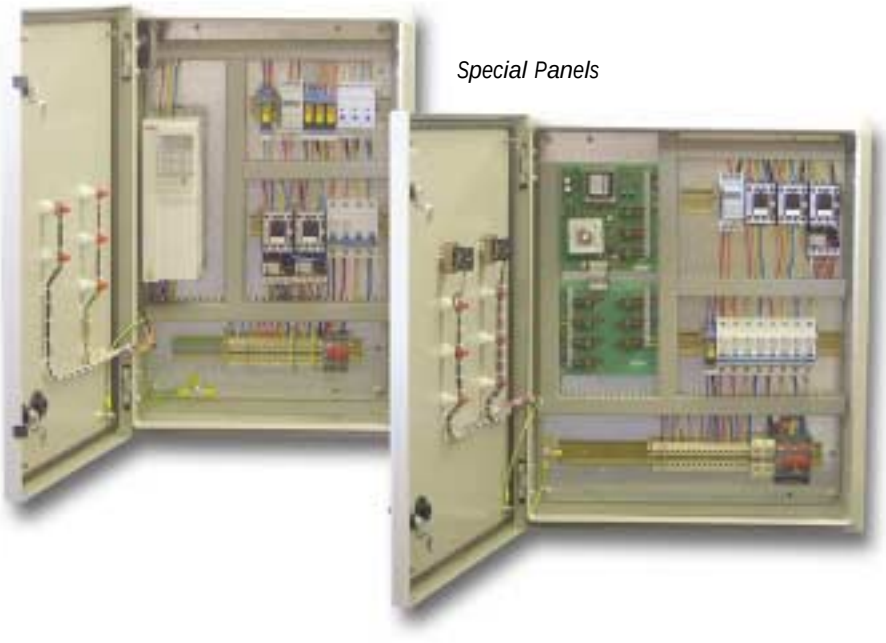
VES have developed a range of pcbs using digital technology with a programmed micro controller. These provide a wide spectrum of control options, and linked together offer tremendous flexibility, giving the designer the opportunity to specify exactly what functions are required. All panels can be designed to interface with your building management system (BMS).

The panels are built by VES to the highest industry standards, are economic in price and easy to install.

Many standard panels are available from stock, and the optional room controllers are available with most units. Building a special panel is no problem, delivery is usually two weeks.

The pcb's

Standard Panels



Special Panels

Airflow Pressure Switch

Frost Stat

Check List of Functions Available

Check List

- Supply fan 1 or 3 phase ☐
- Extract fan 1 or 3 phase ☐
- Stepped electric heating from 1 to 9 steps ☐
- Thyristor control electric heating ☐
- Hot water heating - fully modulating ☐
- Cooling control - DX or chilled water ☐
- Gas heating control ☐
- Humidifier control ☐
- Mixing box operation ☐
- Plate heat exchanger face and bypass damper control ☐
- Thermal wheel operation ☐
- Filter alarm ☐
- Fan speed control - electronic, transformer and inverter ☐
- Remote failure indication ☐
- Remote room controller with low voltage wiring ☐
- BMS volt free contacts for any number of signals ☐
- Fire alarm relay ☐
- Time clock ☐
- Twin fan autochangeover ☐
- P I R operation ☐
- Weatherproof IP65 enclosure c/w anti-condensation heater ☐

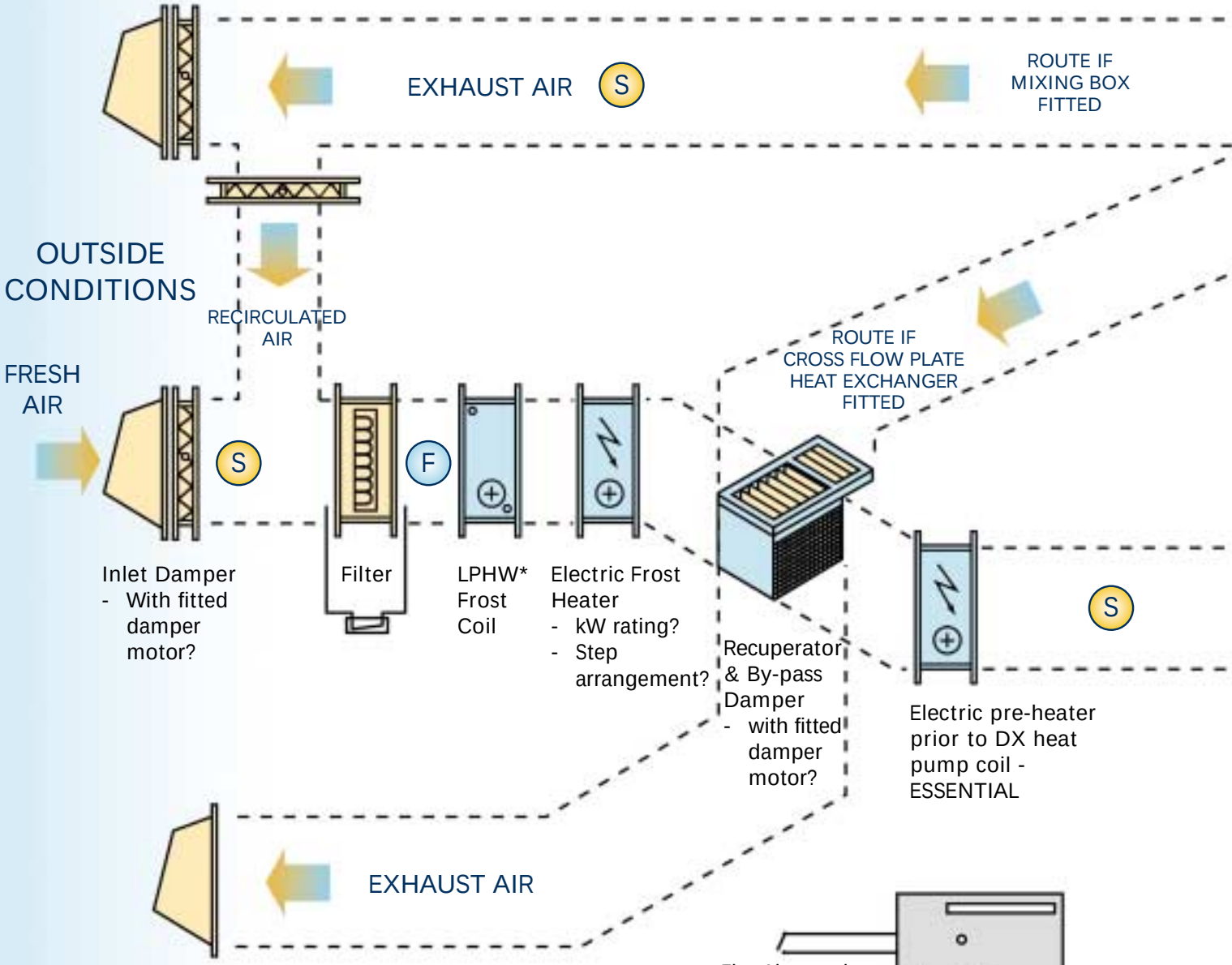
Use the controls route map on the next page

Standard Panel Model	Features	Panel Size (mm)
CPE 1	Up to 3.0kW of electric heating	205h x 145w x 70d
CPE 2	Up to 6.0kW of electric heating	500h x 400w x 150d
CPE 4	Up to 12.0kW of electric heating	500h x 400w x 150d
CPE 6	Up to 18.0kW of electric heating	500h x 400w x 150d
CPE 9	Up to 27.0kW of electric heating	600h x 500w x 150d
ECO E/STD	Up to 18.0kW of electric heating Supply and extract fans, damper control, seven day time clock	600h x 500w x 150d
CPW 1/STD	Fully modulating hot water heating	500h x 400w x 150d
ECO W	Fully modulating hot water heating Supply and extract fans, damper control, seven day time clock, plus other outputs	500h x 400w x 150d

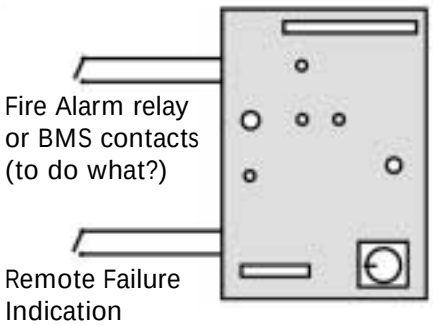
S Possible Sensor Positions

F Frost Thermostat

Three way mixing box. Each damper can be fitted with a damper motor.



FILTER PRESSURE
- Differential pressure switch & tubes required, one per filter section if a dirty filter indicator light is required.



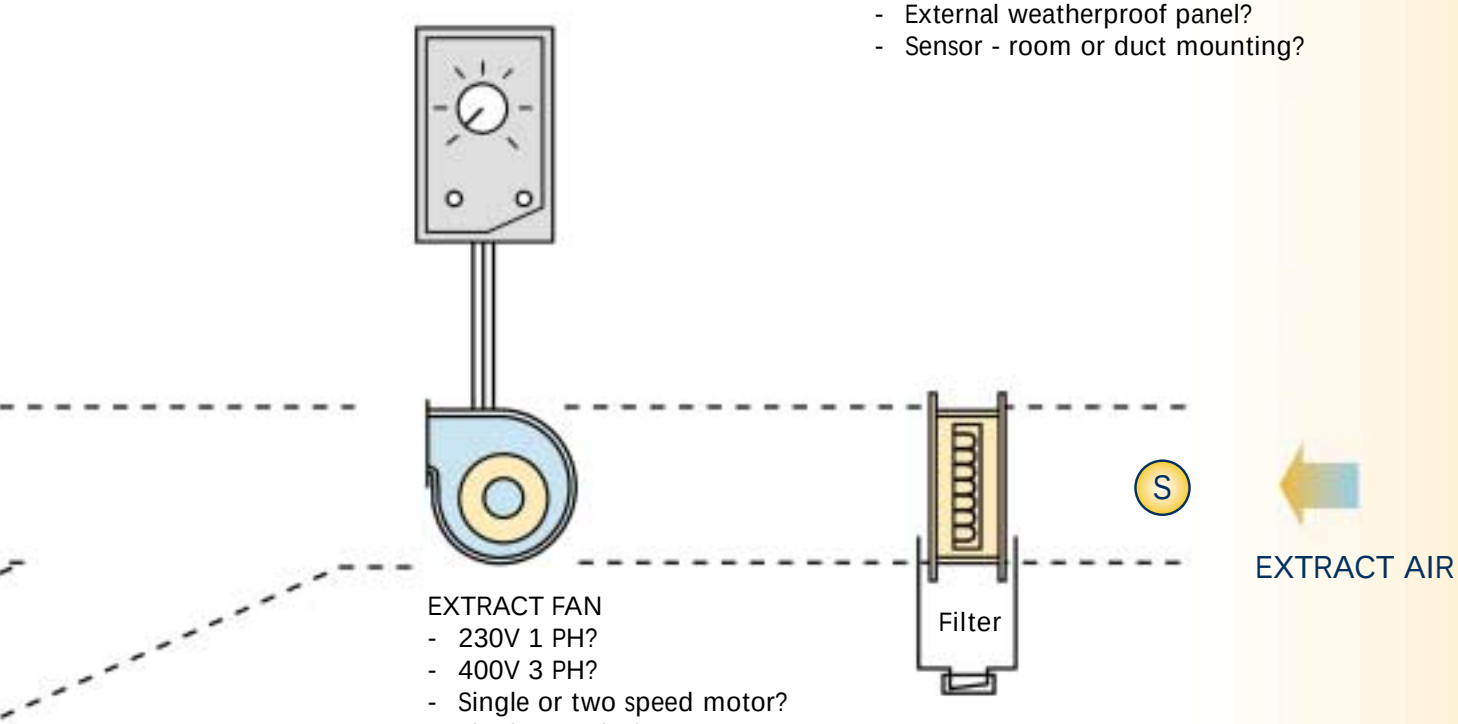
Fire Alarm relay or BMS contacts (to do what?)

Remote Failure Indication

CONTROL PANEL
- Single or 3 phase?
- Seven day time clock required?

SPEED CONTROLLER
- Fitted or separate?
- Inverter, Thyristor or Transformer type?

CONTROL PANEL CHECKLIST
- Fan motors - 1ph Fan FLC
- 3ph rating - FLC - D.O.L. or ⅄△- 2 speed
- External weatherproof panel?
- Sensor - room or duct mounting?

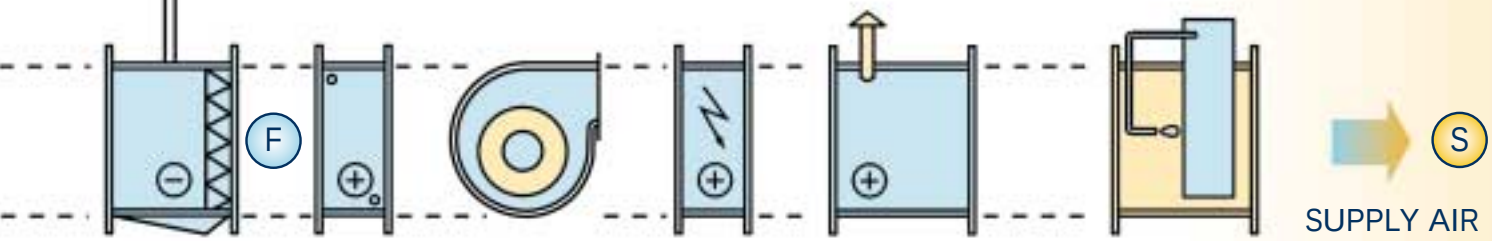


EXTRACT AIR

EXTRACT FAN
- 230V 1 PH?
- 400V 3 PH?
- Single or two speed motor?
- Single or twin fans?
- Fitted Autochangeover?

AIR CONDITIONED SPACE

CONDENSING UNITS
- How many? - What type?
- Cooling only or heat pump?
- Mains power supply is normally direct to condenser from local distribution board with 24 volt signal wiring from panel to condenser.



SUPPLY AIR

Chilled water* or DX coil
- If DX how many sections?
- Is it a heat pump?

LPHW*
- Main heater

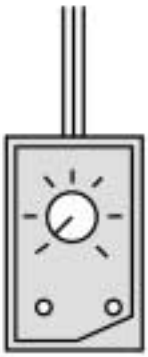
SUPPLY FAN
- 230V 1 PH?
- 400V 3 PH?

ELECTRIC
- Main heater?
- kW rating?
- Step arrangement?

INDIRECT GAS HEATER
- How many?
- Pulse or PPVC control?

HUMIDIFIER
- Where is power supply source?
- What is the power requirement?

**LPHW & chilled water cooling coils are normally fed from the panel with a 24V driving signal & 0-10V modulating signal.*



SPEED CONTROLLER
- Fitted or separate?
- Inverter, Thyristor or Transformer type?

Standard Panel Performance Data

Electric Heating Panels

Model	CPE 1	CPE 2	CPE 4	CPE 6	CPE 9	ECO E/STD
Power Requirement	230V 1ph 50Hz	230V 1ph 50Hz	230V 1ph 50Hz 400V 3ph 50Hz	230V 1ph 50Hz 400V 3ph 50Hz	230V 1ph 50Hz 400V 3ph 50Hz	230V 1ph 50Hz 400V 3ph 50Hz
Heater max load	3kW	6kW	12kW	18kW	27kW	18kW
Steps of heating*	1	2 (Max)	4 (Max)	6 (Max)	9 (Max)	6 (Max)
Supply phase	1	1	1 or 3	1 or 3	1 or 3	1 or 3
Fan M.C.B.	5 amp (fuse)	6 amps	10 amps	10 amps	25 amps MCB 8.5 A overload	10 amps MCB 8.5 A overload
Fan phase	1 ph	1 ph	1 ph	1 ph	1 ph	1 ph
Fan run on timer +/- 20 seconds	None	120 Seconds	120 Seconds	120 Seconds	120 Seconds	120 Seconds
Sensor type	Duct (D) or Room (R)	Duct (D) or Room (R)	Duct (D) or Room (R)	Duct (D) or Room (R)	Duct (D) or Room (R)	Duct (D) or Room (R)
Cable length (m)	10 (twisted pair)	10 (twisted pair)	10 (twisted pair)	10 (twisted pair)	10 (twisted pair)	10 (twisted pair)
Max cable length (m)**	30	30	30	30	30	30

Notes:

* All steps are single phase which can be split over a 3 phase supply.

**To extend sensor, screened cable or a twisted pair 2187Y must be used.

Temperature control range 0-40°C.

Heater steps automatically switched to maintain the preset temperature.
CPE 2, 4, 6 and 9: Separate switches provided for mains isolator, fan and heater.

Standard options include extract fan switching and seven day time clock.

ECO E/STD: Extract fan switching, damper control, seven day time clock.

Hot Water Heating Panels

Model	CPW 1/STD	ECO W/STD
Power Requirement	230V 1ph 50Hz	230V 1ph 50Hz
Heater Valve max load	40 watts	40 watts
24 Volt Valve fuse rating	2 amps	2 amps
Fan M.C.B.	10 amps	Max 10 amps
Fan phase	1 phase	1 phase
Heater sensor type	Duct (D) or Room (R)	Duct (D) or Room (R)
Cable length (m)	10 (twisted pair)	10 (twisted pair)
Max cable length (m)	30	30
Damper sensor type	-	Duct
Heating frost sensor	Fitted to heating coil by VES	

Notes:

These panels provide fully modulating hot water heating control, with a 0-10 volt signal output and 24 volt driving signal, making the panel compatible with most 3 or 4 wire heating control valves.

Temperature control range 0-40°C.

We advise that the frost thermostat is specified to ensure heating coil protection in freezing temperatures. The closing of the frost stat relay contacts moves the 3 port valve to open 30% to avoid damage to the coil, and can return a voltage through two terminals in the control panel to either start the heating system, close an outside damper, or bring in an electric frost heater. The control panel must be energised at the door isolator for the frost thermostat to operate.

Model CPW 1/STD is available with extract fan switching and seven day time clock options. These are standard features on the ECO W/STD along with the damper control.

To extend sensor, screened cable or twisted pair 2187Y must be used.

Download the operating and maintenance instructions for the above panels from the VES website: www.ves.co.uk

Room Controllers

To compliment your control panel

The CZ Comfort Zone Controller and the Ventilation Controller can be supplied with any VES control panel excluding the CPE 1. The CZ is not available for use with the Electroline Airline fitted controls.

The Ventilation Control room controller has the following functions:

- Temperature control - manual adjustment.
- 3 position switch- on/off
  - Fan only
  - Fan & heating
- Digital room temperature display.
- Low voltage wiring.

The CZ Comfort Zone controller has been designed to avoid the need for untrained people to disturb the control setting at the main panel. Functions:

- System switch - auto, manual override, off.
- Fan only / heating on switch.
- Heating switch - normal as set in panel, warmer or cooler adjusts temperature by 2°C up or down from normal.
- Digital room temperature display.
- Low voltage wiring.

Both controllers manufactured from ABS, colour ivory, size 145mm wide, 105mm high, 33mm deep.

MS 10 Controller

The MS 10 speed controller will operate on 0-10 volt providing automatic fan speed control via signal from BMS, i.e. air quality sensor.

The MS 10S is an electronic 10 amp speed regulator with manual dial.

The MS 10T is an automatic temperature controlled fan speed control via a sensor.

Panel size 200mm wide, 300mm high x 150mm depth.

Energy Saving Information

Carbon Tax.
Document L2 of the Building Regulations 2000.
Enhanced Capital Allowance Scheme.

Saving energy in ventilation systems is good for the environment and offers financial incentives both with lower running costs and tax relief on purchases of new equipment.

Specify an inverter for an air handling unit and the client can claim back 100% tax relief for the inverter in the first year, including some installation costs. The inverter can be supplied as part of the VES control system. To make a claim under the Enhanced Capital Allowance Scheme check the website: www.eca.gov.uk for full details.

To help get the best energy saving from your system, VES can offer the following features:

- Inverters - both on single and three phase supply. The benefits include 0-100% stepless control matching output to demand; control options include temperature, air quality, humidity, BMS, manual, also variable airflow with constant pressure. Please be aware that all inverters have the potential to cause interference to nearby electronic equipment if not installed to suitably minimise electromagnetic compatibility problems. The cables between the inverter and fan need to be fully screened and bonded or laid in earthed cable trays bonded directly to the inverter cabinet if there is sensitive equipment nearby.
- PIR detectors to monitor room occupancy. This could reduce ventilation to low or trickle volume, or shut it off.
- Two speed motors. The lower speed has a quarter of the power consumption of full speed, and there may be additional energy savings from lower heating output. Ideal for night set back or low occupancy.

Inverters for motors up to and including 2.2kW have IP20 housings as standard. These must be located in a control panel or safe enclosure. Larger inverters may have IP54 housings if requested.

- Other fan speed controllers do not qualify for tax relief under the ECAS, but do offer valuable energy savings. These include tapped transformer and electronic types. They can be used manually, with PIR, or driven by a 0-10 volt signal in the case of type MS10.
- VES products are generally fitted with EFF2 motors. EFF1 motors can be supplied and are the highest efficiency available and qualify for Enhanced Capital Allowance. They are only available in 400 volt 3 phase, from 1.1kW and above, and totally enclosed fan cooled.
- All indirect gas fired heaters used in VES air handling units also qualify for Enhanced Capital Allowance.

For the air that we breathe

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