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Installation, Operation and Maintenance Manual

CPW-1, ECO-W & ECO-E



**PLEASE ENSURE THAT THIS INSTRUCTION
 IS PASSED ON TO THE USER OF THE UNIT**



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Your Unit comprises of the following:

Lockable Door Isolator
 Panel Live Indication
 Fan and Heater Switches
 Fan Run and Trip Indication
 Heater Run and Trip Indication
 Internal Temperature Setting
 MCBs for all Requirements
 Sensor (s) c/w 10m Cable



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Warnings

- Do Not** run the fan without the boiler on in cold weather.
- Do Not** drill holes in the panel enclosure with the chassis in place
- Do Not** leave swarf in the panel
- Always** Leave the heating on in the CPW1 and ECOW panels
to ensure the frost thermostat is operational

For Information or Assistance

Telephone our Service Department on 08702 404340 with the following information to hand:

- 1 VES Sales Order Number
- 2 Control Panel Type
- 3 Nature Of Problem



Design, Concept and Operation

To compliment the extensive range of small air handling units, the VES control packages provide an effective and easy to install solution to heater control. They come complete and ready to install. All that is required is a mains supply to the door isolator and wiring to the various external components. Sensors are supplied with the panels.

ECOPOWER panels are designed to operate the various ECOVENT heat recovery units.

- 1 ECO-E for use with an electric heater up to 18 kw.
- 2 ECO-W for use with modulating hot water .

CPW-1 is for use with a non heat recovery unit and a modulating hot water valve.

Standard Features

CPW-1

Door isolator which may be locked in the OFF position.

Separate switches to provide isolation of fans and heating.

Provision for remote switching.

All outputs are protected by appropriate MCB's.

Fully modulating hot water control, 0 – 10 volt signal output, allowing the panel to operate most 3 or 4 port heating valves.

Temperature control 0 – 40 C.

Fan output 220 volt 50Hz 1 phase, max full load current 10 amps.

A frost thermostat is provided to give warning through terminals 29 – 30 that the heating coil needs protection. This could be by :

- 1 Start heating system.
- 2 Close outside damper.
- 3 Bring in frost heater.

NB: the Control panel must be energised at the door isolator and the heating switch engaged for the frost thermostat to operate and the valve to open. No other standard provision is made to safeguard the coil. It is the customers responsibility to ensure the coil is protected.

Relay with volt free contacts for on / off output.

Transformer provides 24 V ac power supply .

Temperature sensor complete with 10 metres of cable.

Optional Features at time of order:

VES can supply valve and actuator to match the coil duty.



ECO-W

As for CPW-1 with the addition of :-

- 1 Controls for an extract fan and,
- 2 Damper control for the face and bypass damper. This is operated by a duct sensor positioned in the fresh air intake. The temperature is set so that when the outside temperature is high, the return air is by-passed and therefore adds no extra heat to the space supply temperature.
- 3 A 7 day time clock.

ECO-E

As for ECO-W but is for use with Electric Heating and has the following

- 1 6 steps of heating up to 18 kw.
- 2 Heater interlocked to prevent operation without fans running.
- 3 A run-on timer is provided to maintain air supply after heater has been switch off. This ensures residual heat is dissipated from heater.

Optional Features available at time of order:

Overloads for 3 phase fans.

Fitted speed controllers.

Room temperature sensor.

Airflow switches.

Remote temperature control.

9 steps of heating for ECO-E

Time clock for CPW-1.

Extract fan for CPW-1

Cooling control for DX or chilled water.

Remote failure indication.

Fire alarm relay.

Twin extract with auto change over.

Filter indication.

Humidifier control.

BMS contacts (please specify type).

Others if required.



Installation, Operation and Maintenance Manual for CPW-1, ECO-W & ECO-E

Performance Data

Power Requirements 400 volt 3 phase 50Hz plus neutral or 230 Volt 1 phase.

	CPW-1	ECO-W	ECO-E
Heater Max Load (kw)			18
No. of heat steps	1	1	6
Supply Phase	1	1 or 3	1 or 3
Incoming fuse rating (A)	20 - 1ph	32 - 1 or 3ph	50 - 3 ph
Fan Phase	1	1	1
Fan M.C.B (Amps)	10	2x10	2x10
Heater M.C.Bs	2	2	16
Run on timer (secs)	-	-	120
Heating Sensor Type	(D) for Duct or (R) for Room		
Sensor Cable Length	10		
Max sensor cable length	30		
Cable type	2182Y		
Damper sensor type	Duct.		

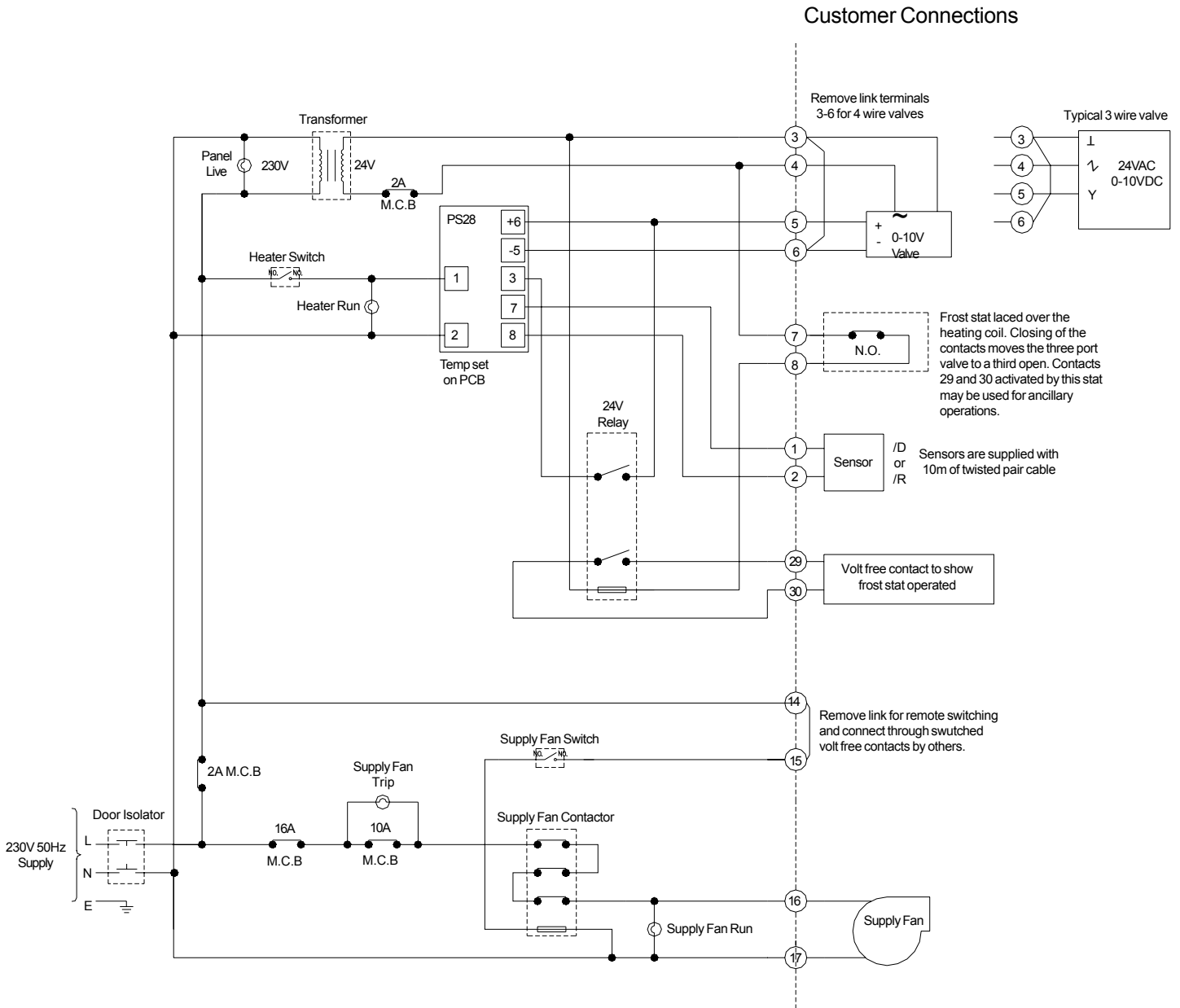
Sensor Characteristics

The sensors supplied are standard N.T.C non linear thermistor, normally 4.7 KOhms at 25 deg C (Measured out of circuit)

Temperature (°C)	Sensor Resistance (K Ohms)	Tolerance (+/- 10%)
0	18 K	10
10	10 K	10
20	6 K	10
30	3 K 7	10
40	2.K 3	10



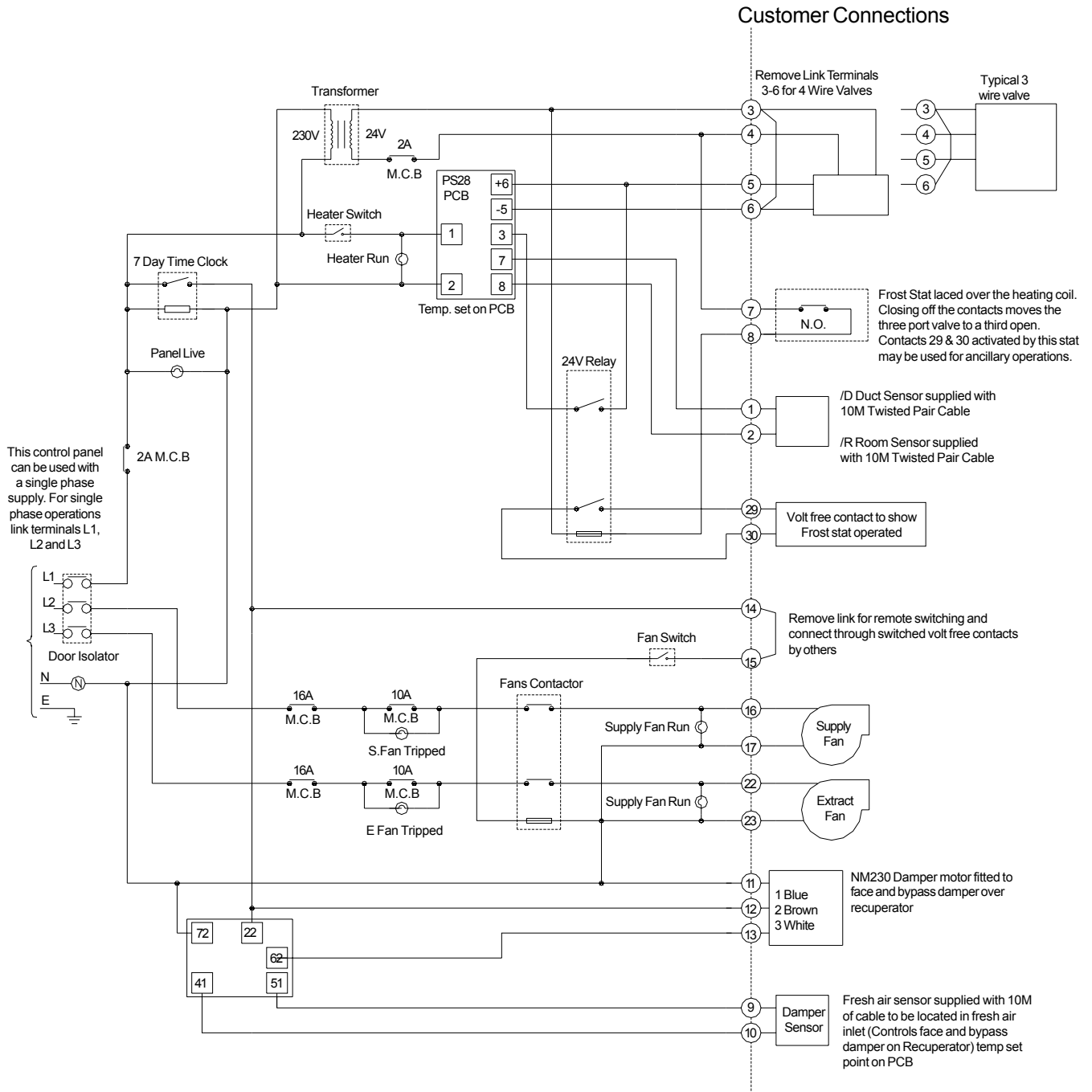
Internal Panel Wiring CPW-1



Note: Frost stat will only work with heater switch on and panel energized



Internal Panel Wiring ECO-W



This control panel can be used with a single phase supply. For single phase operations link terminals L1, L2 and L3

Customer Connections

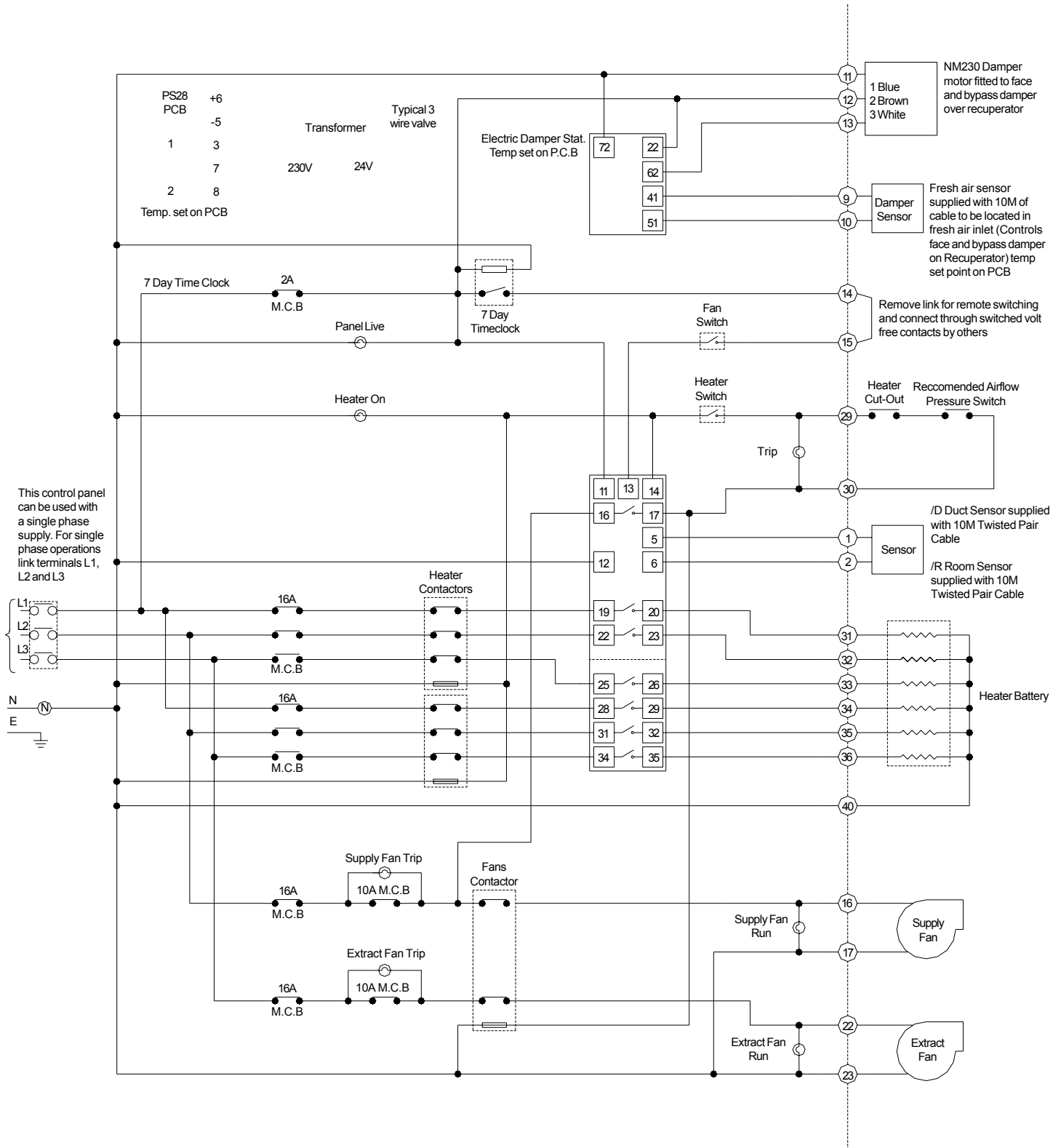
- Remove Link Terminals 3-6 for 4 Wire Valves
- Typical 3 wire valve
- Frost Stat laced over the heating coil. Closing off the contacts moves the three port valve to a third open. Contacts 29 & 30 activated by this stat may be used for ancillary operations.
- /D Duct Sensor supplied with 10M Twisted Pair Cable
- /R Room Sensor supplied with 10M Twisted Pair Cable
- Volt free contact to show Frost stat operated
- Remove link for remote switching and connect through switched volt free contacts by others
- Supply Fan
- Extract Fan
- NM230 Damper motor fitted to face and bypass damper over recuperator
- 1 Blue
2 Brown
3 White
- Damper Sensor
- Fresh air sensor supplied with 10M of cable to be located in fresh air inlet (Controls face and bypass damper on Recuperator) temp set point on PCB

Note: Frost stat will only work with heater switch on and panel energized



Internal Panel Wiring ECO-E

Customer Connections





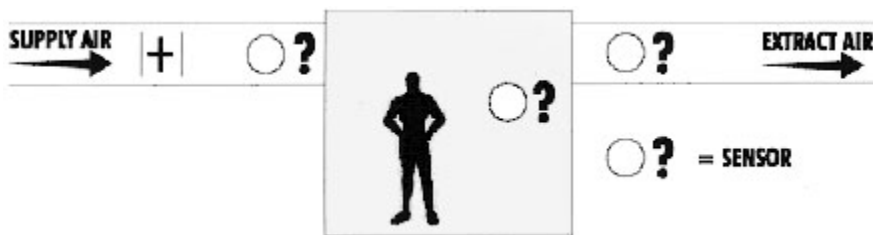
Installation Instructions

Complete installation must comply with current Health & Safety legislation

Select a convenient dry position to mount the panel and allow easy access for wiring and servicing. 50mm clearance should be left around the enclosure to allow for heat dissipation, ambient temperature should not exceed 30° centigrade. When using mineral insulated cable allow plenty of room for cable entry glands. Fix enclosure to the wall. If chassis is removed for fixing or entry cutting, ensure chassis is well supported and does not pull on the cables. Replace chassis and carefully align with door isolator. All swarf must be removed before power is applied to the unit. Wire up control panel in accordance with enclosed wiring diagram. Particular care must be taken to ensure that all wiring complies with current IEE regulations and Health & Safety at work Act.

Heater Sensor Positioning

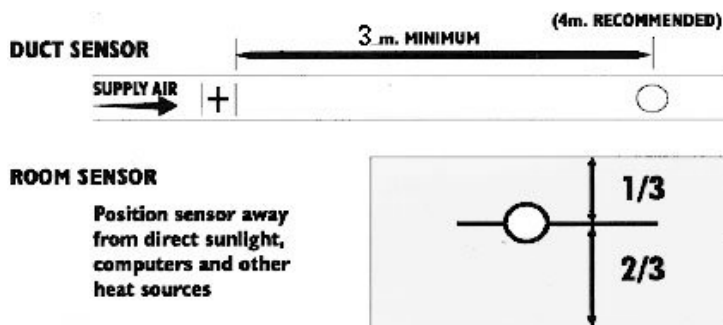
Duct or Room



If the supply is for "make up" air, with background heating in the area being served, then a duct sensor should be used. The sensor must be mounted in the supply duct away from the radiated heat. The control panel will then maintain a constant duct air temperature by switching the voltage to the heating control device. If the supply is for total area heating then a room sensor should be used. In some installations a duct sensor mounted in the extract / re-circulation air duct may be used. In this type of installation the system response time is longer and may cause the supply air to enter at very low or very high temperatures for some time.

Damper Sensor Positioning

Locate in fresh air intake duct or within ECOVENT unit, immediately before the filter. A two position damper unit is supplied, fitted in all ECOVENT units. It will be a BELIMO NM230 or equal. The sensor operates the damper when the fresh air temperature exceeds the temperature set on the damper PCB. This by-passes the extract air and therefore no additional temperature is added to the supply air.





Switch on and Test Procedure

Before Switch On

- 1 Check all interconnecting wiring is correct and strictly to IEE regulations
- 2 Carry out electrical safety checks and record results
- 3 Check all safety cut outs are correctly positioned and set
- 4 Check sensors are correctly positioned (refer to sensor positioning).
- 5 Select heating control temperature required
- 6 Select damper operating temperature
- 7 Set time clock (ECOVENT) - See Internet for DS1800 Instructions
- 8 Ensure all switches are off and close the door

Switch On

- 1 Turn door isolator on Panel neon will light
- 2 Turn fan switch on Supply and extract 'run ' neon will light
- 3 Check fan rotation is correct and correct airflow is obtained
- 4 Switch fans off fans should stop
- 5 Turn fan switch on
- 6 Switch heating switch on Heater neon will light
- 7 Ensure leaving air temperature complies with design criteria
- 8 Switch fans off - leave heater switch on - heating will cease immediately in the ECOE - fans will run on for approximately 120 seconds to dissipate the heat and then stop the fans
- 9 Switch heater switch off

Adjustments

The only user adjustments in the panel are for the time clock (if fitted) and temperature (on PCB's).



Fault Finding

Only qualified electricians should carry out fault finding procedures!

Problem	Cause	Action/Cure
Unit not functioning	No Supply Door Open Time Clock Off Fan MCB Off	Check distribution board and local isolator Close door and switch isolator on Set time clock Set MCB
Fan(s) not running	Not switched on Fan MCB off Fan motor burnt out Fan not connected Local Isolator off	Switch on Reset Replace Check all wiring Switch on
Heating not functioning (ECO-E)	Heater not switched on Fan not switched on Thermal cut-out tripped (manual) Airflow pressure switch not activated Heater not wired correctly Heater MCB Tripped Faulty control board	Switch on Switch on Reset and check reason for failure Check switch position setting wiring and airflow Check all wiring Reset and identify cause Contact VES
Heating not functioning (CPW-1, ECO-W)	Temperature set too low Boiler or pump not operational Too much air Incorrect heater rating Incorrect valve selection Faulty control board	Increase setting Check Commission air volume Check design calculations Check selection Consult VES
Rapid changes in heat	Sensor is too close to output heat Incorrect heat rating Modulating output set too low Faulty Control Panel	Move sensor Check heater design and rating Adjust Consult VES

