



VES Ref I.D.170
ISSUE C

USER MANUAL

for
Heating Control Panels
models
CPW-1/STD
and
CPW-1/CZ
with CZ Comfort Zone
Room Controller

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



VES Andover Ltd.
Eagle Close
Chandlers Ford Ind. Est.
Chandlers Ford
Eastleigh
Hampshire
SO53 4NF

Tel.: 08702 404340
Fax: 08702 404550
E-mail:
vesltd@ves.co.uk
www.ves.co.uk

INDEX

DESIGN CONCEPT AND OPERATION	3
ENCLOSURE AND DIMENSIONS	5
CUSTOMER CONNECTIONS	6
INTERNAL WIRING DIAGRAMS	7-8
PERFORMANCE DATA	9
SENSOR CHARACTERISTICS	9
SENSOR POSITIONING	10
INSTALLATION INSTRUCTIONS	11
SWITCH ON AND TEST PROCEDURE	12
FAULT FINDING	13
DON'TS	14

All details correct at time of going to press.

We reserve the right to alter specifications without notice. E.&.O.E.

DESIGN CONCEPT AND OPERATION

To compliment the extensive range of small air handlers supplied with hot water heater batteries, the VES heater control package provides an efficient, cost effective and easy to install solution to heater control. They come complete and ready to install. All that is required is a mains supply and wiring to the modulating valve, frost thermostat, sensor (supplied) and fan.

Standard Features

- Fully modulating hot water heating control, 0-10 volt signal output, making the panel compatible with most 3 or 4 port heating control valves.
- Temperature control range 0-40°C.
- Fan output 230 volt, 1 phase, maximum full load current 10 amps.
- A frost thermostat is provided to give warning through terminals 20-21 that the heating coil needs protection. This could be by:
 - i) Start heating system
 - ii) Close outside damper
 - iii) Bring in electric frost heater.

NB: The Control Panel must be energised at the door isolator for the frost thermostat to operate. No other standard provision is made to safeguard the coil. It is the customers responsibility to ensure the coil is protected.

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

- Relay with volt-free contacts for on/off output.
- Transformer provides regulated ac power supply and 0-10 volt output.
- Separate push button switches are provided for fan and heater on/off control.

Optional Features

- Overload for three phase supply fan instead of single phase fan.
- Starter for extract fan, complete with overload, switch and neon on panel.
- Fitted fan speed controller.
- Seven day time clock. This could also be used to operate night set back with low fan speed setting using additional PCB.
- Two position mixing box damper control via relay, or fully modulating damper control using additional PCB.
- Interface with B.M.S.

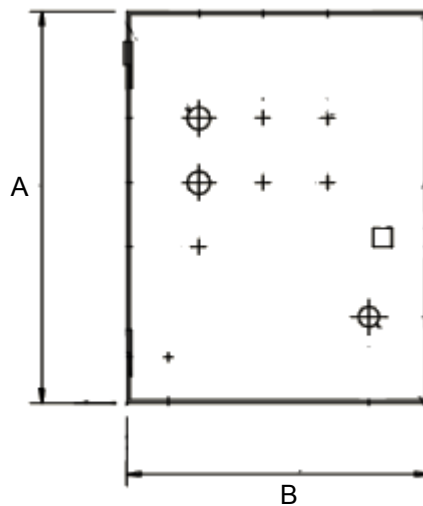
CPW-1/CZ Control Panel

For use with the Comfort Zone remote wall mounted controller. The panel has a seven day time clock as standard, terminals for the CZ remote controller, plus terminals for BMS or fire alarm.

ENCLOSURE AND DIMENSIONS

Each unit is supplied in a steel enclosure with epoxy polyester powder coat finish in colour RAL 7032. Units are suitable for internal use only. The finished product meets IP44.

Panels with a number of optional extra features may be supplied in a larger enclosure.



NOT TO SCALE

Dimensions in mm. - Tolerance ± 2 mm.

CPW 1/	A	B
	426	328

The isolator protrudes by 33mm.

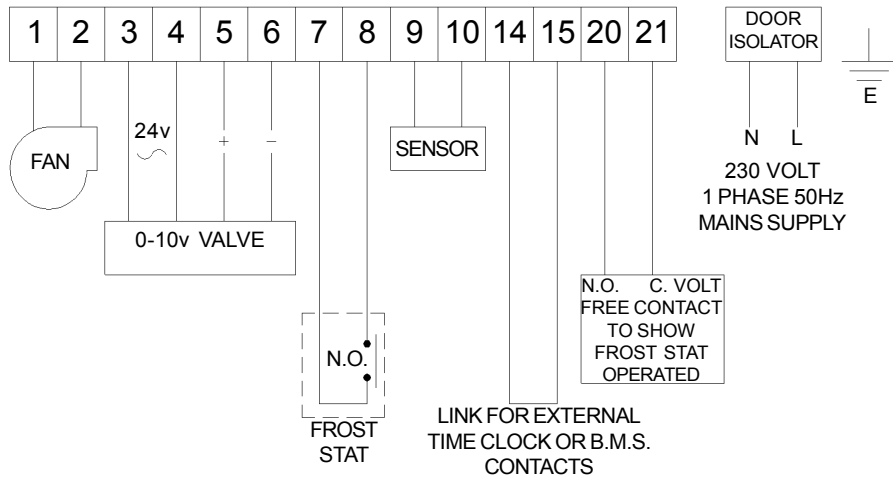
STORAGE

Store unit in a dry area.

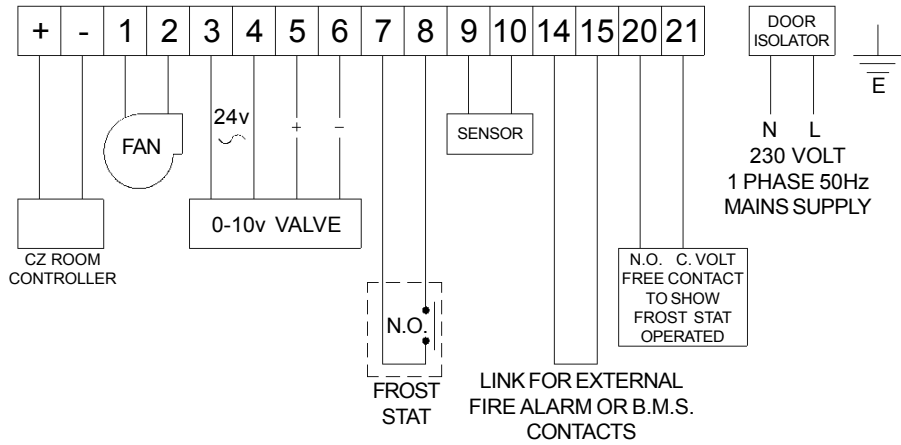
Maximum ambient 30°C.

CUSTOMER CONNECTIONS

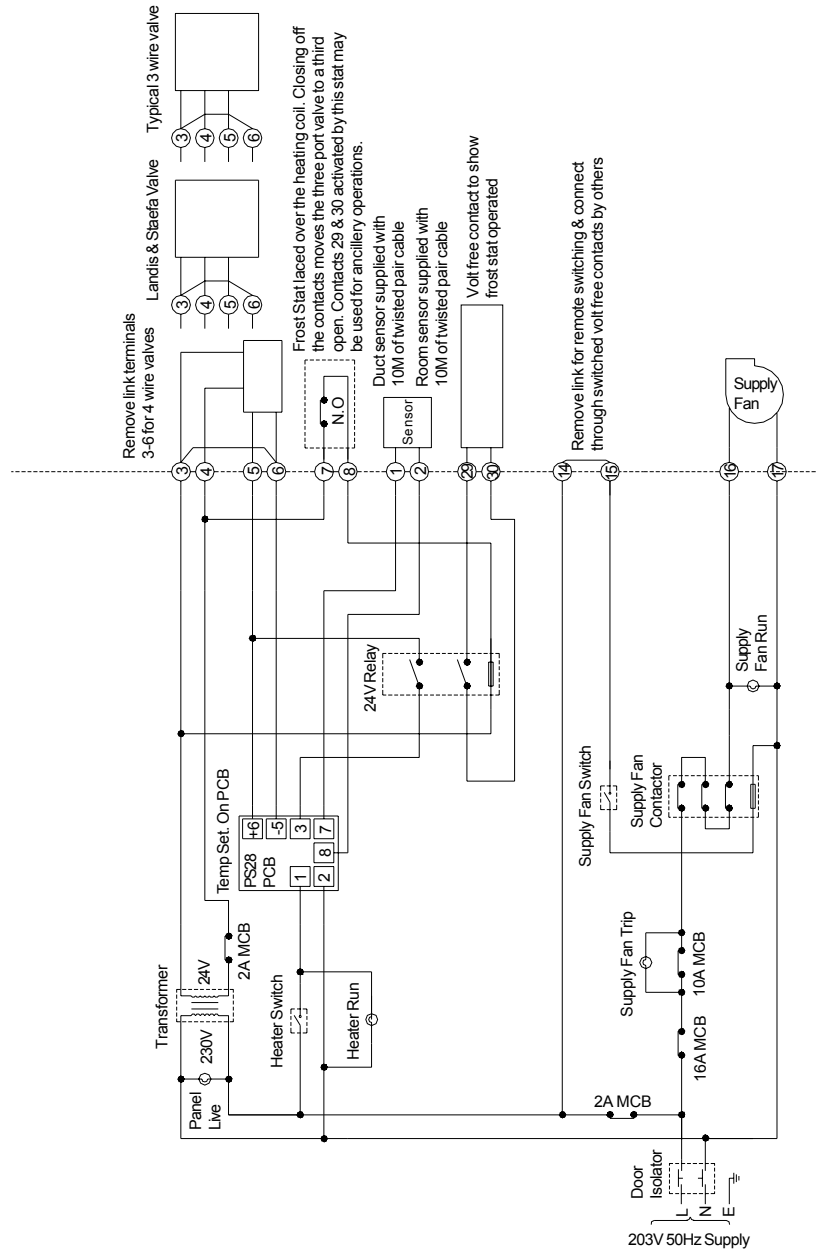
CPW-1/STD



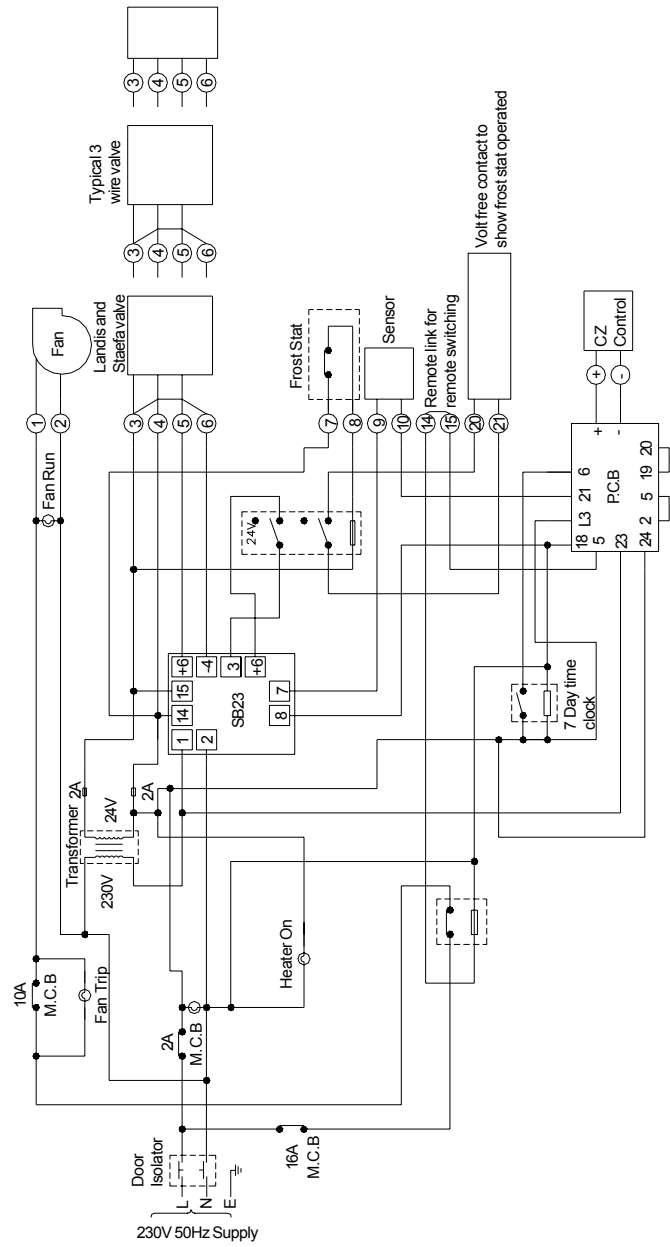
CPW-1/CZ



CPW-1 INTERNAL WIRING DIAGRAM



CPW-1/CZ INTERNAL WIRING DIAGRAM



PERFORMANCE DATA

Power Requirement	240v 1 phase 50Hz	
Heater Valve Max. Load	40 Watts	
Fuse Rating	2 amps	
Fan	* 1 phase	
MCB	Max 10 amps	
SENSOR Type	Duct	Room
Cable Length m.	10	10
Max. cable length m.	‡ 40	40

* 415v, 3 phase, 50 Hz fan output will have been incorporated if required at time of order

‡ Extend using twisted pair or screened cable.

SENSOR CHARACTERISTICS

The sensor supplied is standard N.T.C non linear thermistor, nominally 4.7kΩ at 25°C (Measured out of circuit).

TEMPERATURE	SENSOR RESISTANCE	TOLERANCE
°C	kΩ	±%
0	13.3	10
10	8.6	10
20	5.7	10
30	3.8	10
40	2.7	10

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 direct radiated heat.

The control panel will then maintain a constant duct air temperature, by modulating the voltage feed to the heating valve.

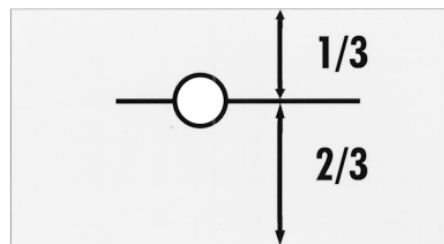
If the supply is for total area heating then a room sensor should be used. In some installations a duct sensor mounted in the extract/recirculation air duct may also be used.

In this type of installation the system response time is very large and may cause the supply air to enter at very low or very high temperatures for some length of time. In some installations a duct sensor mounted in the extract or recirculation air duct may be used.



ROOM SENSOR

Position sensor away from direct sunlight, computers and other heat sources



INSTALATION INSTRUCTIONS

Select a convenient dry position to mount the control 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°C.

When using mineral insulated cable allow plenty of room for cable entry glands.

Fix enclosure to the wall, refer to enclosure and dimensions for fixing centres. If the chassis is removed for fixing or entry hole 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 all wiring complies with current IEE regulations and health and Safety at Work Act.

No modifications should be made without written authorisation from VES as this will invalidate the warranty.

CZ Comfort Zone Wall Mounted Room Controller

The unit snaps onto a steel backplate which is mounted on the wall. Wire to the main panel in 12 volt S.E.L.V. twisted pair cable, length up to 40 metres. Cable can be in surface mounted conduit or covered behind plaster in the conventional manner.

It should be run separate to other mains cables to reduce interference.

SWITCH ON AND TEST PROCEDURE

Warning: Heating Coil Frost protection is essential. During cold weather boiler must be operating and providing hot water to heater battery. Always leave heater switch on in cold weather.

BEFORE SWITCH-ON:

1. Check all interconnecting wiring is correct and strictly to IEE regulations.
2. Check all safety cutouts are correctly positioned and set.
3. Check sensor is correctly positioned. (Refer to sensor positioning).
4. Select modulating output temperature required.
5. Ensure all switches are off and close the door.
6. If a CZ Comfort Zone room controller is being used. Set heating switch to normal, fan switch to heating, and system switch to auto.

SWITCH-ON:

1. Turn door isolator to on
2. ... Panel live neon will light.
3. Push fan switch to on ...
4. ... Fan 'run' neon will light.
5. Check fan rotation is correct and the correct air flow is obtained.
6. Push heater switch to on...
7. ... Heater neon will light...
8. ... Ensure temperature rise across heater complies with design criteria, having allowed boiler to heat water to design temperature.

Note: Ensure end user is familiar with controls and operation. Please leave this manual with the unit.

FAULT FINDING

PROBLEM/SYMP TOM	CAUSE	ACTION/CURE
Unit not functioning	No Supply	Check distribution board and local isolator
	Door Open	Close door & switch isolator on
Fan not running	Not switched on	Switch on
	MCB tripped	Reset, identify cause if fault reoccurs.
	Fan motor burnt out	Replace motor
	Fan not connected	Check all wiring
	Local isolator off	Switch on
Heater not functioning	Heater not switched on	Switch on
	CZ Comfort Zone controller set to fan only	Reset to Heating
	Boiler or pump not operational	Check
	Heater control circuit	Reset, identify cause if fault reoccurs
	Hot water valve 24 volt fuses blow	Replace and identify cause
Incorrect heat output	Temperature set too low	Increase temperature setting
	Incorrect sensor position	Reposition sensor
	CZ Comfort Zone controller heating switch set to "cooler"	Reset to normal
	Too much air	Commission air volume
	Incorrect heater rating	Check design calculations
	Modulating valve faulty	Check operation
	Faulty control board	Consult VES
	Incorrect valve selection	Check selection

<u>PROBLEM/SYMPTOM</u>	<u>CAUSE</u>	<u>ACTION/CURE</u>
Rapid changes in heat	Sensor is too close to the output heat	Move sensor
	Incorrect heat rating	Check heater design and rating
	Modulating output set too low	Adjust
	Faulty control board	Consult VES

DON'T...

- Don't** Run the fan without the boiler on in cold weather
- Don't** Drill holes in the panel enclosure with the chassis in place
- Don't** Leave swarf in the panel
- Warning:** Heater switch must be on at all times during cold weather. If a seven day time clock is fitted, this must be adjusted during cold weather to ensure frost thermostat is operational.

IF IN DOUBT

Telephone 08702 404340 and ask for the Service Department.

The following information will save time.

1. VES works order number and panel serial number.
2. Control panel type.
3. Nature of problem.

Please have this information with you when calling.