



ECOPLUS Control Panel

Installation, Operation and Maintenance Manual

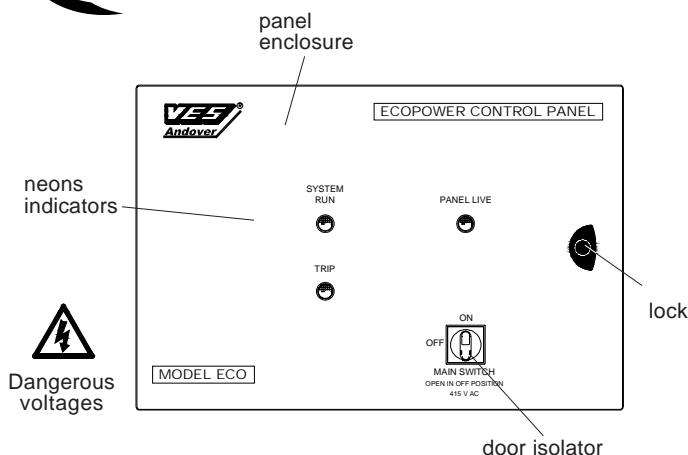


Fig. 1 Typical control panel layout

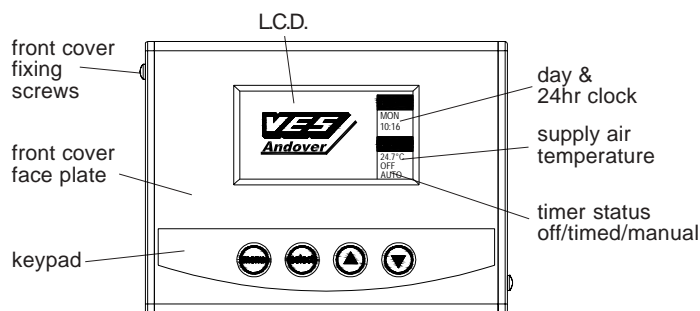


Fig. 2 Room remote layout

IMPORTANT This manual must be read in full before Installation, Operation and Maintenance of the unit/s supplied

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- Remote Control unit
- Three duct sensors c/w 10m twisted pair cable
- Run-on timer
- MCBs
- Remote switching (volt free contact)

1 Design, Concept and Operation

To compliment the extensive range of ECOPLUS heat recovery air handling units, and supply/extract fan combinations, the ECOPLUS control panel provides an efficient, cost effective and easily installed solution to unit operations. They come complete and ready to install. All that is required is a mains supply and wiring to heater battery* or water control valve, heater cut-out* or frost stat*, duct sensors*, damper motor*, remote control panel and fan motors*.

Note: * indicates items pre-wired if control panel is factory fitted (excluding supply sensor).

Please Note: the details contained in this document reference a standard control panel arrangement: For special ecoplus control panels, please refer to the wiring diagram as supplied with the unit for details of deviation.

Fitted Control System

A remote wall-mounting controller is supplied for temperature adjustment, time clock programming and required set point temperature display. The controller requires a 4-wire low voltage screened cable connection to panel and is designed to fit onto a single gang wall box or to be surface mounted, using the bracket supplied.

The air temperatures are monitored using sensors, which constantly check the fresh air intake, supply duct and extract duct temperatures. From this the face and bypass damper on the plate heat exchanger is automatically adjusted for heat recovery, free cooling or cooling recovery.

Your ECOPLUS control panel comprises the following:

- Lockable door isolator
- Panel live indicator
- System run and trip indicators

2 Electrical Safety

The entire system must be considered for safety purposes and it is the responsibility of the installer to ensure that all of the equipment is installed in compliance with the manufacturer's recommendations, with due regard to the current HEALTH AND SAFETY AT WORK ACT and conforms to all relevant statutory regulations.

Where a unit is installed so that a failure of components could result in injury to personnel, precautions should be taken to prevent such an injury.

CAUTION



Only competent electricians should be allowed to affect any electrical work to our control panels.

All electrical connections to any unit must be carried out in accordance with the current edition of the I.E.E. Regulations. No modifications may be made to these units without written authorisation from VES, as this will invalidate the unit warranty.

3 On Receipt of Goods

Immediately upon receipt of goods, check for possible damage in transit paying particular attention to any loose components. Also check to ensure that any ancillary items are included. These will normally be supplied fitted or, in the case of small items taped to the unit or inside the control panel. In the event of any damage having occurred or if any item is found missing, it is essential to inform VES Andover Ltd. within **7 days** of delivery quoting sales order (SO) number and the unit type as found on the unit nameplate. After this period we will be unable to accept any claim for damaged or missing goods.

Storage Humidity Operating Range is 10 to 80% RH

Each unit is supplied in a steel enclosure with a Pebble Grey RAL 7032 powdercoat finish and the finished product meets IP54, suitable for plantroom mounting. For the standard panel size see fig.3. Details regarding the remote unit can be found in document 'ID622 Ecovent Plus Remote', also available from our website.



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4 Installation

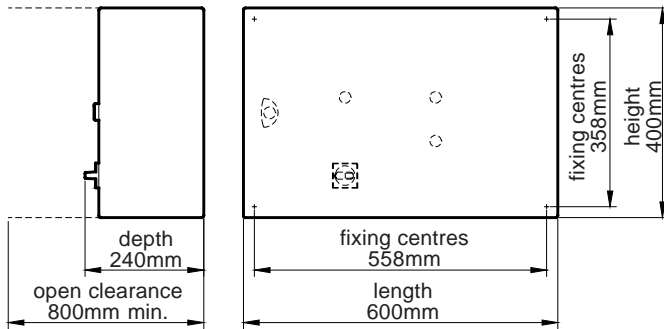


Fig.3 Standard Panel dimensions

Mounting the control panel:

(For fitted panels, refer to wiring details only)
 Select a suitable location to mount the control panel to allow easy access for wiring and servicing. All standard panels are designed to be mounted indoors unless specifically requested. Please refer to your order acknowledgment and the part number breakdown on page 4 of this document for confirmation of plantroom/weatherproof status. Ensure that there is adequate illumination and 50mm clearance should be left around the enclosure to allow for heat dissipation. The ambient temperature should not exceed 30°C.

The door and chassis can be easily removed to ease the enclosure fixing.

CAUTION Ensure the control panel and internal components are kept free of all swarf and other contaminants at all time. A removable gland plate is also provided to assist with installation.

Connect the control panel in accordance with the appropriate wiring diagram. Again particular care must be taken to ensure all wiring complies with current IEE Regulations and Health and Safety at Work Act.

The relevant sensors should be positioned as shown in *fig.5*. For factory fitted control panels, sectional AHUs will require reconnection of numbered wires to the control panel. Please refer to the appropriate control panel wiring diagram for details. The ECOPLUS Remote is solely designed for use with the ECOPLUS range of control panels.

Mounting:

To remove the front cover, take care to gently part the sides of the enclosure (remove the side fixing screws if required). This can be done by hand and tools are not normally required.

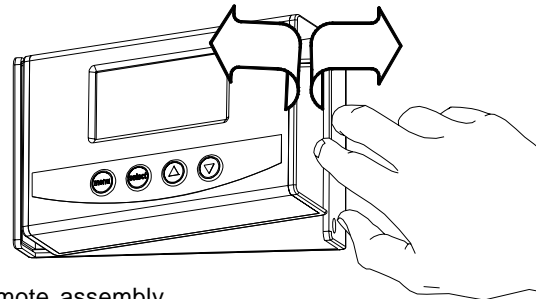


Fig.4 Remote assembly

A variety of fixing positions has been provided for surface mounting, or flush mounting to standard knockout or conduit boxes. Side knockouts have also been provided, for Ø20mm conduit or 16x16 mini trunking. Using the appropriate fixings (not supplied) secure the back plate to a flat surface; use packers to level if necessary. Ensure that sufficient cable has been pulled through and make the connection as shown below.

Connect the remote unit to the control panel using 4 Core Screened 16/02mm (0.5mm²) cable e.g. RS 367713, referring to the appropriate wiring diagram for connection details. Carefully replace the front cover and secure into place using the fixing screws provided, again ensuring the remote is kept free of all swarf and other contaminants.

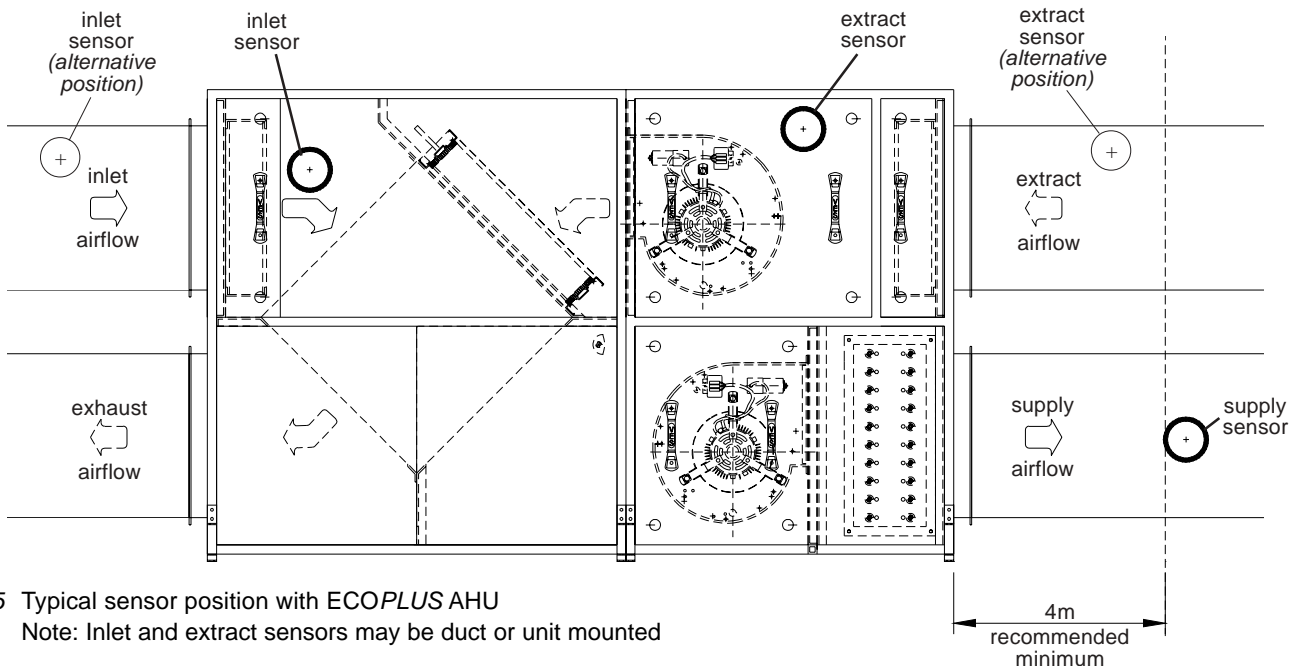


Fig.5 Typical sensor position with ECOPLUS AHU
 Note: Inlet and extract sensors may be duct or unit mounted



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5 Set-up

Connection:

To PS41 control board only.

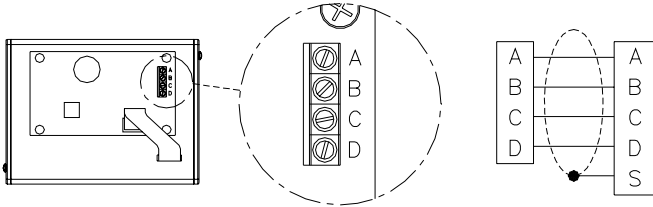


Fig.6 Remote connection

Before Switch On...

- Check all interconnecting wiring is correct and strictly installed to IEE regulations.
- Carry out electrical safety checks and record results
- Check all safety cut-outs are correctly positioned and set.
- Check sensors are correctly positioned. (Refer to sensor positioning *fig.5*)

The ECOPLUS software has been designed so as to require minimum instructions for set-up. Power up the control panel, check the red 'Panel Live' indicator neon is on, confirming an electrical supply and proceed with the remote set-up.

Keypad buttons



steps to the next menu screen



confirms the setting for alteration

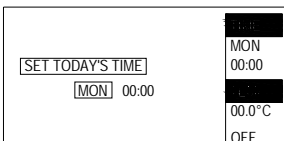


changes the setting
 press once - single increments
 press & hold - scrolls

Real time set-up

On initial start-up, or following a prolonged power failure, set the system clock. This feature can also be accessed under the timer menu 'system time' for adjustment as necessary.

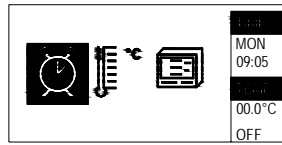
NOTE: manual adjustments must be made for summer/winter daylight saving times.



Scroll up/down for correct day
 press 'Select'
 Scroll up/down for correct time
 press 'Select'
 press 'Menu' to return



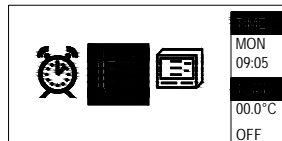
Under normal operation, after 30 seconds of inactivity the remote will revert to the VES logo screen as shown. To access the main menu simply press 'menu'



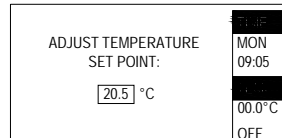
main menu screen

Set point temperature set-up

A set point temperature is required for the system. This is a target figure for the supply air temperature and not the room air temperature. An ideal setting for this might be several °C higher than the required room temperature (lower for a cooling system). During commissioning of the unit it may be necessary to adjust this setting to optimise the system.



press 'Menu'
 Scroll for temperature icon
 press 'Select'



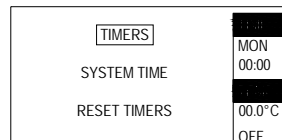
Scroll up/down for correct setting
 press 'Select'
 press 'Menu' to return

Daily timer set-up

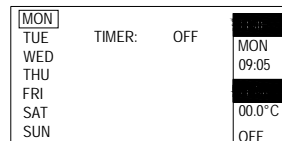
7 day set-up, adjustable in 15 minute increments.



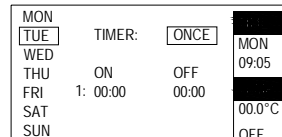
scroll for timer icon
 press 'Select'



scroll up/down for 'TIMERS'
 press 'Select'



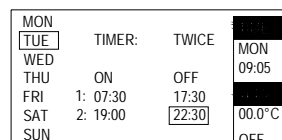
scroll up/down for day
 press 'Select'



scroll for timer 'ONCE' or 'TWICE' daily settings as required
 press 'Select'



scroll up/down for 1st 'ON' time
 press 'Select'
 scroll up/down for 1st 'OFF' time
 press 'Select'



if required, scroll for 2nd 'ON' time
 press 'Select'
 scroll for 2nd 'OFF' time
 press 'Select'
 scroll up/down for next day as required & repeat as before
 press 'Menu' to return



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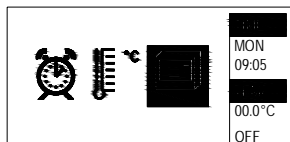
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5 Set-up continued

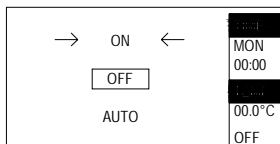
Note: To erase all the timer settings select 'RESET TIMERS' and select YES

Start the program

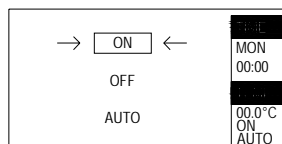
To initiate the daily timer or set to manual 'on':



press 'Menu'
 scroll for 'system' icon
 press 'Select'



scroll to highlight required position (the arrows indicate current setting)
 press 'Select'



the current status is now highlighted & is indicated on the main screen status display

press 'Menu' to return

6 Standard Performance Data

Performance data	ECO/-2/STD/D	ECO/-4/STD/D	ECO/-6/STD/D	ECO/-W/STD/D
Power Requirement	230V 1ph 50Hz	230V 1ph 50Hz	230V 1ph 50Hz	230V 1ph 50Hz
	400V 3ph 50Hz	400V 3ph 50Hz	400V 3ph 50Hz	
Heater max load kW	6	12	18	
Number of heater steps	2 (Max)	4 (Max)	6 (Max)	
Supply phase	1 or 3	3	3	1
Recommended incoming fuse rating at panel, amps				
Fan phase	1	1	1	1
Fan MCBs (amps)	10	10	10	10
Heater MCB (amps)	16	16	16	N/A
Run on timer (secs)	120	120	120	120
Duct Sensor Cable length (metres)	10	10	10	10
Max cable length (metres)	40	40	40	40
Cable type	Twisted Pair	Twisted Pair	Twisted Pair	Twisted Pair
Remote Control Cable type	Screened Twisted Pair	Screened Twisted Pair	Screened Twisted Pair	Screened Twisted Pair

* Assumes maximum load including fans. supply requirement may reduce if smaller fans and heaters are used

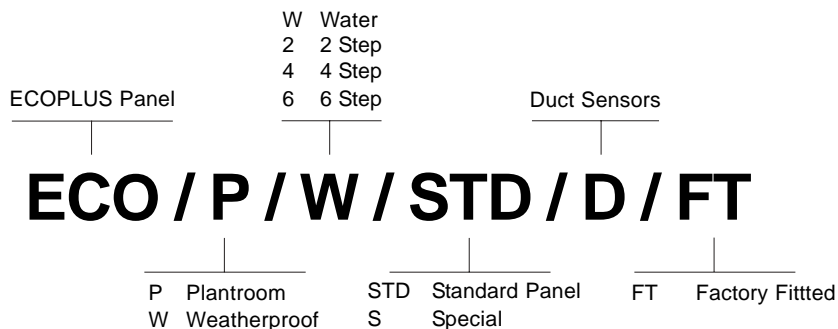
** Screened four core 16/02mm or 0.5mm²

Sensor Characteristics

NTC Thermistor sensor 4K7 @25°C

Temperature (°C)	Sensor Resistance (K ohms)	Tolerance (± 10%)
0	16.2	10
10	9.7	10
20	6	10
30	3.7	10
40	2.4	10

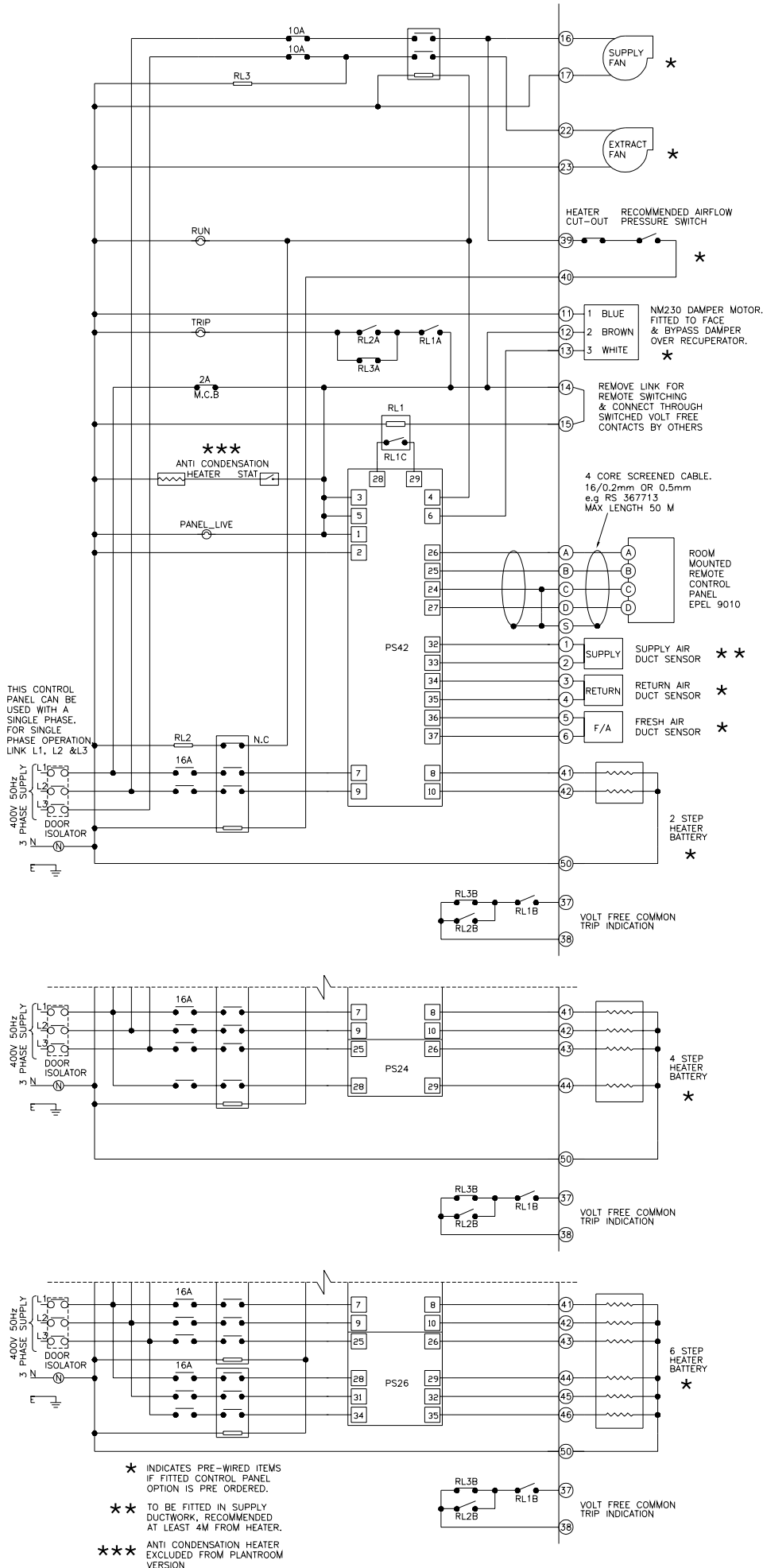
Part number breakdown



For clarity, earth wiring is not shown.
Fans and EHBs must be connected to earth.

INTERNAL
PANEL WIRING

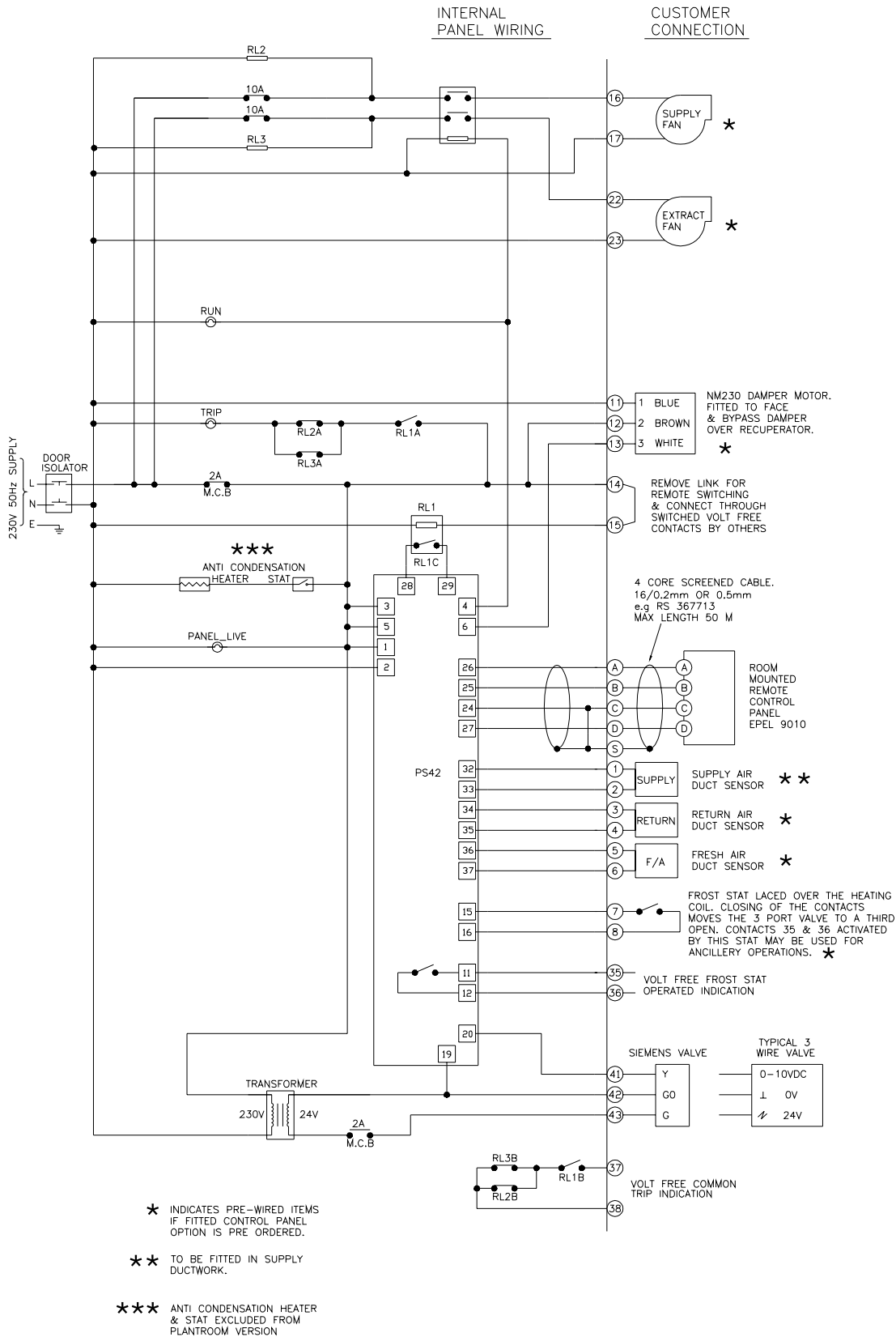
CUSTOMER
CONNECTION



- * INDICATES PRE-WIRED ITEMS IF FITTED CONTROL PANEL OPTION IS PRE ORDERED.
- ** TO BE FITTED IN SUPPLY DUCTWORK, RECOMMENDED AT LEAST 4M FROM HEATER.
- *** ANTI CONDENSATION HEATER EXCLUDED FROM PLANTROOM VERSION

TITLE: ECO/-/-/STD/D 2, 4 & 6 STEP		DRAWING No.		ISSUE	
CHECKED: CH	21.02.05	S/O No.			
DRAWN: JHP	DATE: 08.02.05	SERIAL No.			
DATE & INITIAL	DESCRIPTION	REV.			
2004 PRODUCT PROTECTED BY DESIGN RIGHT					
VES ANDOVER LTD. EAGLE CLOSE, CHANDLERS FORD INDUSTRIAL ESTATE, CHANDLERS FORD, EASTLEIGH, HAMPSHIRE, ENGLAND, SO53 4NF TEL: (0870) 40 43 40 FAX: (0870) 40 45 50 E.MAIL: ves@td@ves.co.uk WEB SITE: www.ves.co.uk					
		ID.444 ISSUE: C			

For clarity, earth wiring is not shown.
Fans and EHBs must be connected to earth.



TITLE: ECO/-/W/STD/D		DRAWING No.	
CHECKED: CH	21.02.05	S/O No.	ISSUE
DRAWN: JHP	DATE: 14.02.05		
C/NOTE No.	DATE & INITIAL	DESCRIPTION	
2004 PRODUCT PROTECTED BY DESIGN RIGHT			
VES ANDOVER LTD. EAGLE CLOSE, CHANDLERS FORD INDUSTRIAL ESTATE, CHANDLERS FORD, EASTLEIGH HAMPSHIRE, ENGLAND, SO63 4NF TEL: (08702) 40 43 40 FAX: (08702) 40 45 50 E-MAIL: veslid@ves.co.uk WEB SITE: www.ves.co.uk			
VES		Andover	



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8 Fault Finding & Warnings

Problem	Cause	Action/Cure
Unit not functioning	No Supply	Check distribution board and local isolator
	Door Open	Close door and switch isolator on
	Control MCB tripped	Investigate Cause & Reset MCB
	Remote set to Off or AUTO	Reset as required
Fan not running	Not switched on	System on
	MCB tripped	Investigate Cause & Reset MCB
	Fan motor burnt out	Replace motor
	Not connected	Check all wiring
	Local isolator off	Switch on
	Remote set to Off or AUTO	Reset as required
Heater not functioning	Thermal cut-out tripped	Check reason for failure then reset
	Airflow pressure switch not activated	Check switch position setting, wiring and airflow
	Heater MCB tripped	Identify cause and reset MCB
	Heater not wired correctly	Check all wiring
	Remote set to Off or AUTO	Reset as required
	Remote temperature set point below supply sensor temperature	Reset as required
Low heat output	Temperature set too low	Increase temperature setting
	Incorrect sensor position	Reposition sensor using <i>fig. 5</i> as reference
	Too much air	Commission air volume
	Incorrect heating rating	Check design calculations
	Some heater MCBs tripped	Identify cause and reset
	Heater thermal cut-out trips	Low/No airflow
Filters blocked		Change filters
Speed control set too low		Commission air volume
Ductwork obstructed		Clear obstruction
Door isolator turned off before fan stops		It is unnecessary to turn door isolator off except for servicing
Faulty thermal cut-out		Remove, test and replace
Fan remains on when system status is OFF		No fault
Fan stop immediately when system status is OFF	No Fault	Run on timer only operates if heater has been selected

Warnings

Don't allow the air volume across the heater to fall too low **

Don't short out the heater thermal cut-out or airflow switch if fitted

Don't use standard or unsheathed wiring in the heater battery terminal box

Don't get swarf in the panel or remote

Don't omit the neutral feeds to the heater battery

** If the minimum air volume is not known, the following calculation may be used to obtain an approximate volume.

$$\text{m}^3/\text{sec} = \frac{\text{kW}}{49.2}$$

IF IN DOUBT, ASK

When enquiring after or ordering spares contact VES Customer Services Department, quoting the sales order (SO) number and unit type as found on the unit nameplate.

Telephone 08702 40 43 40
Fax 08702 40 45 50



PLEASE ENSURE THAT THIS DOCUMENT IS PASSED ON TO THE END USER.

We reserve the right to alter the specification without notice



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Declaration of Conformity

Date: 2nd January 2005
Product: ECOPLUS Control Panels
Type: ECO/
Manufacturer: VES Andover Limited

The product above is produced in accordance with EC Council Directives:

89/336/EEC and amendment 92/31/EEC (Electromagnetic Compatibility Directive)

73/223/EEC and amendment 93/68/EEC (Low Voltage Directive)

The European Harmonised Standards applied are:

BS EN ISO 12100, EN 294, EN61000, EN 60204-1

Basis of Self attestation:

Quality Assurance to ISO 9001-2000, BSI Reg. Firm Cert. No. Q5375

Signature of Manufacturer:

A handwritten signature in black ink, appearing to read 'C. White'.

Position of Signatory:

Technical Director