

## PHV Series Designer. Horizontal and Vertical



## INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

**English**

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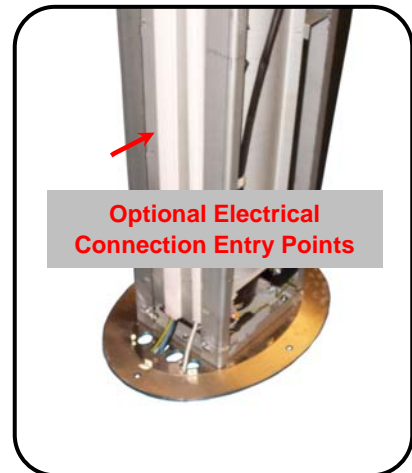
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## 2. ELECTRICAL SAFETY

### Electrical Supply and Wiring to the Air Curtain

All electrical wiring and connections **MUST** be carried out by a competent qualified electrician in accordance with the latest edition of IEE wiring regulations and local statutory regulations if applicable.

- A 1 phase or 3 phase local isolator having a contact separation of at least 3mm on all poles must be fitted in the electrical supply to the air curtain and located in an accessible position adjacent to the unit.
- The appliance must be connected by cables having an appropriate heat resistant temperature rating. Electrical connection entry point for horizontal Designer PHV air curtain is from the left hand side of the air curtain, refer Appendix 1. The adjacent picture details optional electrical connection entry points for vertical Designer PHV models. Power and control cables for vertical units should be separately threaded up via the cable trunking provided (see insert).



- All supply cables, circuit breakers and other electrical installation equipment must be correctly sized for the air curtain model being installed; see section 3: Specifications.
- Models operating on a 3 phase electrical supply - see section 3: Specifications - require a neutral connection (3N~).
- A 25mm size cable gland or conduit connector of IP21 rating or above should be used for the Electrical Supply into the air curtain.
- See Wiring Diagrams for connecting electrical supply and control cables to the air curtain. The air curtain must be earthed.

### 3 SPECIFICATIONS

Table 1

| Air Curtain                | Electrical Supply (V/ph/Hz) | Rated Power Input (kW) | Current per phase (A) | Heat Output [Low/High] (kW) | Weight (kg) |     |
|----------------------------|-----------------------------|------------------------|-----------------------|-----------------------------|-------------|-----|
| PHVD1000A                  | 230/1/50                    | 0.30                   | 1.5                   | -                           | 54          |     |
| PHVD1500A, PHVD1500A V     | 230/1/50                    | 0.40                   | 1.8                   | -                           | 67          |     |
| PHVD2000A, PHVD2000A V     | 230/1/50                    | 0.60                   | 2.9                   | -                           | 93          |     |
| PHVD2500A V (Stacked Unit) | Top air curtain             | 230/1/50               | 0.30                  | 1.5                         | -           | 121 |
|                            | Bottom air curtain          | 230/1/50               | 0.40                  | 1.8                         | -           |     |
| PHVD3000A V (Stacked Unit) | Top air curtain             | 230/1/50               | 0.30                  | 1.5                         | -           | 147 |
|                            | Bottom air curtain          | 230/1/50               | 0.60                  | 2.9                         | -           |     |
| PHVD1000W                  | 230/1/50                    | 0.30                   | 1.3                   | 6.0/12.0                    | 61          |     |
| PHVD1500W, PHVD1500W V     | 230/1/50                    | 0.40                   | 1.8                   | 9.0/18.0                    | 82          |     |
| PHVD2000W, PHVD2000W V     | 230/1/50                    | 0.60                   | 2.7                   | 12.0/24.0                   | 107         |     |
| PHVD2500W V (Stacked Unit) | Top air curtain             | 230/1/50               | 0.30                  | 1.3                         | 15/30       | 143 |
|                            | Bottom air curtain          | 230/1/50               | 0.40                  | 1.8                         |             |     |
| PHVD3000W V (Stacked Unit) | Top air curtain             | 230/1/50               | 0.30                  | 1.3                         | 18/36       | 168 |
|                            | Bottom air curtain          | 230/1/50               | 0.60                  | 2.7                         |             |     |
| PHVD1000E                  | 400/3/50                    | 12.30                  | 18.7                  | 6.0/12.0                    | 57          |     |
| PHVD1500E, PHVD1500E V     | 400/3/50                    | 18.40                  | 27.9                  | 9.0/18.0                    | 71          |     |
| PHVD2000E, PHVD2000E V     | 400/3/50                    | 24.60                  | 37.5                  | 12.0/24.0                   | 99          |     |
| PHVD2500E V (Stacked Unit) | Top air curtain             | 400/3/50               | 12.30                 | 18.7                        | 15/30       | 128 |
|                            | Bottom air curtain          | 400/3/50               | 18.40                 | 27.9                        |             |     |
| PHVD3000E V (Stacked Unit) | Top air curtain             | 400/3/50               | 12.30                 | 18.7                        | 18/36       | 156 |
|                            | Bottom air curtain          | 400/3/50               | 24.60                 | 37.5                        |             |     |

## 4. INTRODUCTION

Established in the 1960s, Thermoscreens is a leading air curtain manufacturer that exports to over 60 countries worldwide.

As with all our products, the Designer PHV range of air curtains is designed with energy efficiency in mind.

Designer PHV models suffixed E, W or A are designed to be surface mounted inside a building, located horizontally over a doorway or vertical close to door opening.

They must not be installed on the outside of a building or built into a cabinet or recessed in any way.

Please complete the following details for your reference:

Date of Purchase .....  
Place of Purchase .....  
Serial Number .....

Proof of purchase is required to make a claim under warranty.



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## 5. DELIVERY CONTENTS

The following items are supplied in the box at delivery.

**NOTE:** If any parts are missing or damaged contact your place of purchase.

### Designer PHV Air Curtain



Horizontal or vertical plus fittings

### Ecopower Remote Control



Supplied with 6m  
RJ Control Cable

### Accessories

Spare M4 socket button screws  
2.5mm hexagon key wrench  
M10 stainless steel dome nuts  
(vertical unit)  
M8 stainless steel dome nuts  
(horizontal unit)  
Fixing kits (if applicable)  
RJ extension lead (vertical unit)

### Outdoor Air Thermostat (Optional – supplied by Installer)



Used for simple weather  
compensation control  
(disables heating on a warmer day)

## 6. TOOLS REQUIRED

The following tools are required for installation:

- Flat blade screwdrivers
- Pozi head screwdrivers
- 10mm spanner
- Adjustable spanner
- Electric drill
- Ladders
- Appropriate lifting equipment

## 7. INSTALLATION

The Designer PHV air curtain should be surface mounted horizontally over a doorway and not exposed to the external environment or moist conditions. It should not be built-in or recessed in any way.

### 7.1 Horizontal Installation

Ensure that the unit is mounted within its height specification of 1.8m to 3.5m maximum (from floor level to the underside of the unit) with the air discharge grille positioned nearest to the door.

- The air curtain should be located as close to the door opening as possible for best performance, obstructions such as door opening devices, structural beams etc. will reduce the efficiency of the air curtain.
- There must be at least 200mm clearance at the air inlet for air to enter the unit, see Appendix 1a and Appendix 1b.

**NOTE:** For the air curtain to work well the width of the open doorway should be less than the length of the air curtain.

#### 7.1.1 Wall or Ceiling Fixing

Using the 2.5mm hexagon key wrench supplied, unfasten and remove casing screws from the Designer PHV unit and carefully detach the back and inlet grille panels. All screws should be kept safe as they will be required later in the installation.



Fig 1

Designer PHV horizontal air curtains are supplied with two stainless steel wall or ceiling brackets fitted to each end of the unit. Refer to Appendix 1A and Appendix 1B for mounting details. Drill the wall accordingly and secure the unit above the door. Ensure all fixings are correctly fitted and tightened.

**NOTE:** Use suitable fixing bolts (not supplied) to fix the unit to the wall or ceiling, taking into account the type of wall/ceiling and the weight of the unit (see section 3: Specifications).



Fig 2

**ATTENTION:** For stainless steel units the inlet grille and back panels are coated in an easy to peel protective film. Please ensure all the protective film is removed before the air curtain is put into service. For clarity, all photographs in the instructions show the stainless steel sheet with the protective film already removed.

For multiple air curtains joined together over a doorway an additional wall bracket (T6811940) or ceiling bracket (T6811950) must be fitted at each joining point, see Fig 3. Back and inlet grille panels should only be fitted after all functional tests have been completed and verified (See Commissioning).

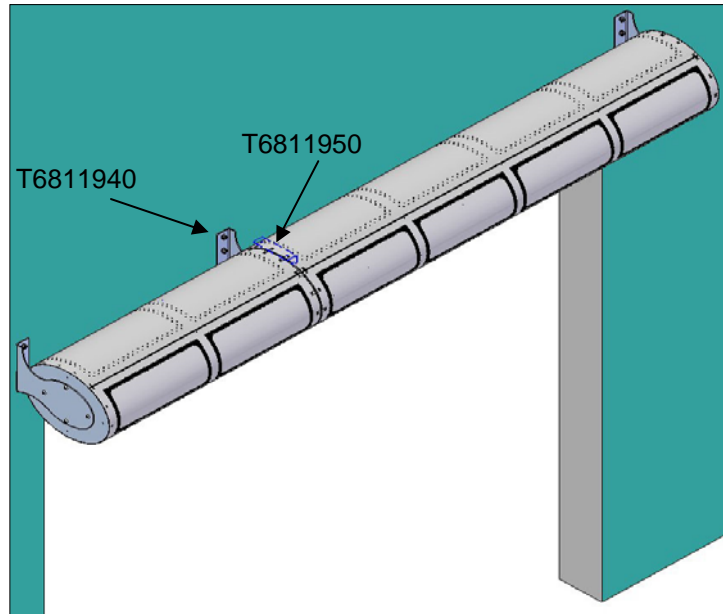


Fig 3

## 7.2 Vertical Installation

Prior to commencing any vertical installation it is essential to ensure the correct handing Designer PHV unit(s) have been selected.

The air curtain is located close to the door opening with the base plate touching the wall (see Fig 4) and with the air discharge grille positioned nearest to the door (see "Handing Guide" in Appendix 2). Maximum doorway width = 2m per air curtain. For maximum effectiveness it is essential to ensure the height of the air curtain is slightly higher than the opening height of the door. Obstructions such as door opening devices, structural beams etc. will reduce the efficiency of the air curtain. There must be at least 200mm clearance at the air inlet for air to enter the unit, see Appendix 2.

### 7.2.1 Floor Fixing

Using the 2.5mm hexagon key wrench supplied, unfasten and remove casing screws from the Designer PHV unit and carefully detach the back and inlet grille panels. All screws should be kept safe as they will be required later in the installation.

Before installing the Designer PHV unit obtain four suitable fixing bolts, taking into account floor type and unit weight (see section 3: Specifications). Rawplug<sup>®</sup> M10 Projecting Rawlbolt<sup>®</sup> 44356 type may be suitable. For dimensional details refer to the general assembly drawing, see Appendix 2.

Designer PHV vertical air curtains are supplied with the base plate fitted. Determine and place the unit at its most favourable position. A wall bracket must be fitted to the top of the unit for PHVD2000V and PHVD2500V air curtains to tether the top of the unit to the wall. In order to use the wall bracket supplied ensure the back of the base plate touches against the wall.



Using the base plate as a template, mark the location of the four holes, as indicated in the adjacent picture.

Using a suitable masonry drill bit correctly drill the four marked out holes. Place M10 fixing bolts into each hole, ensuring all bolts are upright.



Fig 4

Reposition the air curtain base plate over the projecting bolts. Tighten each M10 nut as indicated in the adjacent picture. Ensure the vertical unit is secure, level and square.



Fig 5

Using a hacksaw carefully cut the projecting bolt flush with the nut, ensuring the base plate is not damaged or marked in any way.



Fig 6

Remove only one M10 nut and refit and secure bolt with a stainless steel M10 dome nut supplied. Repeat for each of the other three projecting bolts one at a time.

Back and inlet grille panels should only be fitted after all functional tests have been completed and verified (See Commissioning).



Fig 7

## 7.2.2 Stacking Air Curtain

Only a single 1.0m stacking vertical air curtain should be mounted on top of another vertical unit. The maximum overall height for stacking is 2.78m (1.5m + 1.0m vertical). All units higher than 1.5m must be secured with a wall bracket at the top of the stack.

Using fixing kit components supplied the vertical stack frames are joined together using M8 x 25mm hexagonal bolts and M8 nyloc nuts (see Fig 8).

**ATTENTION:** For stainless steel units the inlet grille and back panels are coated in an easy to peel protective film. Please ensure all the protective film is removed before the air curtain is put into service. For clarity, all photographs in the instructions show the stainless steel sheet with the protective film already removed.

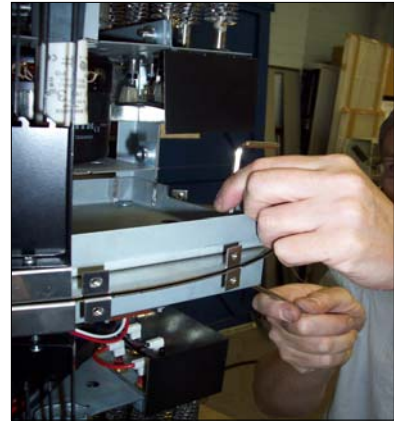


Fig 8

## 8. LPHW MODELS

For the design of the water pipework system and pump, water flow rates and pressure drops for maximum heat output of the air curtain are given in Table 2 below.

Table 2

| Air Curtain | 2 row coil (based on 82/71°C) |                           | 3 row coil (based on 60/40°C) |                           |
|-------------|-------------------------------|---------------------------|-------------------------------|---------------------------|
|             | Water Flow Rate (l/min)       | Water Pressure Drop (kPa) | Water Flow Rate (l/min)       | Water Pressure Drop (kPa) |
| PHVD1000W   | 15.6                          | 4.9                       | 8.6                           | 9.8                       |
| PHVD1500W   | 23.4                          | 9.3                       | 12.9                          | 10.0                      |
| PHVD2000W   | 31.2                          | 14.9                      | 17.1                          | 18.4                      |

**NOTE:** Water flow rates and pressure drops at different water temperatures can be calculated using the Thermoscreens coil calculation programme. Visit the Thermoscreens website for details.

For LPHW models ensure suitable water mains isolation valves, as Fig 9, are fitted to both the flow and return pipework

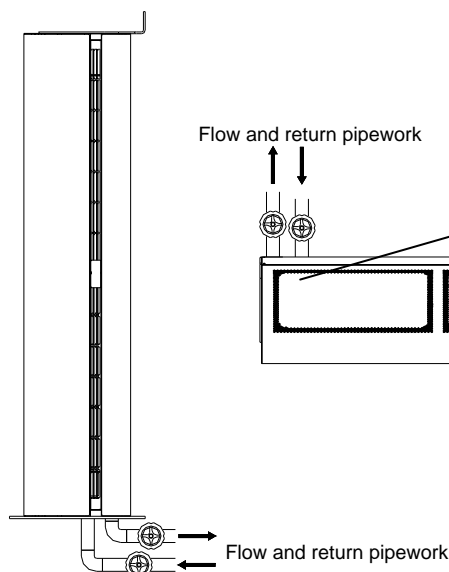


Fig 9

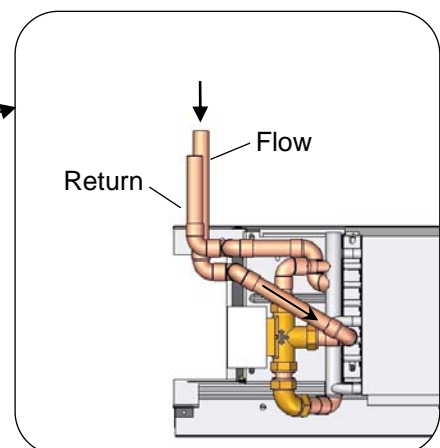


Fig 10

## 9. REMOTE CONTROL INSTALLATION

Mount the Ecopower remote control in a convenient position directly to the wall or onto a switch box.

### 9.1 Wall mounting

- Step 1** Using a screwdriver undo the screw on the top of the remote control case and pull the back case away (see Fig 11).
- Step 2** Feed one end of the RJ control cable through the back case, secure it, then screw the back case to the wall using suitable fixings (not supplied).
- Step 3** Connect the RJ plug to the RJ socket on the PCB in the remote control.
- Step 4** Refit the front case.

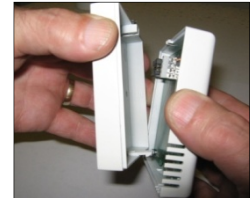


Fig 11

### 9.2 Switch box mounting

- Step 1** Using a screwdriver undo the screw on the top of the remote control case and pull the back case away (see Fig 11).
- Step 2** Feed one end of the RJ control cable through the switch box, feed and secure the RJ control cable through the back case and secure back case to switch box using 2 mounting screws (not supplied) (see Fig 12).
- Step 3** Connect the RJ plug to the RJ socket on the PCB in the remote control.
- Step 4** Refit the front case.



Fig 12

**NOTE:** For optional remote control settings see Section 10.

## 10. REMOTE CONTROL SETTINGS

On the back of the PCB inside the Ecopower Remote Control you will find four DIP switches that provide the following optional features, see Table 3:

Table 3

| DIP | Feature                      | Explanation  | Default | Notes   |
|-----|------------------------------|--|---------|---|
| 1   | Reset on power-up            | On restoring power after an electrical interruption all Remote Control settings are retained | ON      | <b>WARNING!</b> – Fans start on their own after power is restored |
| 2   | Stop fan on cold             | Fans are switched off when heating level is achieved (AUTO mode only)                        | OFF     |   |
| 3   | Never blow cold              | Air curtain always heats in AUTO mode  | OFF     | Will not go to ambient mode                                       |
| 4   | Room air temperature control | Enables the room air sensor in the Remote Control  | OFF     | Disables all other temperature sensors                            |

# 11. EXTERNAL CONTROLS

## 11.1 Remote switch contacts IN0, IN1

Terminals IN0 and IN1 on the Ecopower PCB inside the air curtain can be used to provide different control strategies using remote volt-free contacts (see Fig 13). This could be to provide remote On/Off from a timer or BMS Digital/Output contact, to work with a door switch or for simple weather compensation control to disable heating when outdoor air temperatures become warmer. Table 4 describes the different functions:

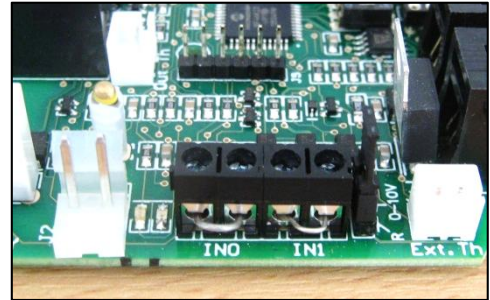










Fig 13

Table 4

| Function                | IN0   |   | Notes   |
|-------------------------|---|---|---|
|                         |  |  |   |
| Remote On/Off (INHIBIT) | Unit operates normally in MANUAL Mode or AUTO Mode from the Remote Control        | Unit switches off after 15s, with fan run-on at Medium fan speed if DIP 2 = OFF   | Use the Remote Control to set up unit and then hide it away if required. *<br><br>On/Off is then done via IN0 using a remote volt-free contact. |

| Function            | IN1   |   | DIP 4 | IN0   | Notes  |
|---------------------|---|---|-------|---|--|
|                     |            |                        |       |   |  |
| Door Switch Control | After 30s the heating is disabled and the fan goes to low speed                               | Unit operates normally in MANUAL Mode or AUTO Mode from the Remote Control                                | ON    |  | Door Open:- <br>Normal Control<br><br>Door Closed:- <br>Heating Off<br>Low Fan Speed |
| Summer<br>Winter    | Unit operates normally in MANUAL Mode or AUTO Mode from the Remote Control<br><i>COLD DAY</i> | Heating is disabled straight away, Fan speeds operate normally from the Remote Control<br><i>WARM DAY</i> | OFF   |  | Simple weather compensation control using an outdoor air thermostat with volt free contacts (see Section 11.3)   |

**NOTE:** Wire volt-free, remote switch contacts to 2-way screw terminals IN0 and IN1 using 2-core cable.

**WARNING:** Do not apply any voltage to terminals IN0 and IN1 as this will damage the Ecopower PCB inside the air curtain.

\* **NOTE:** The Ecopower Remote Control must stay plugged-in for the air curtain to keep working. An optional plug-in EEPROM is available from Thermoscreens so the Remote Control can be unplugged and the air curtain stay working. Visit the Thermoscreens website for details.

## 11.2 Overheat safety cut-out indication

For electric heated air curtains the Ecopower PCB includes a fault indication signal for if the overheat safety cut-out on the electric heater operates.

Volt free changeover contacts (6A 250VAC 30VDC) can be wired via the 3-way screw terminal “HEALTHY” (see Fig 14).

Refer to Section 18.1: Overheat Safety cut out, for how to reset a overheat safety cut-out situation.

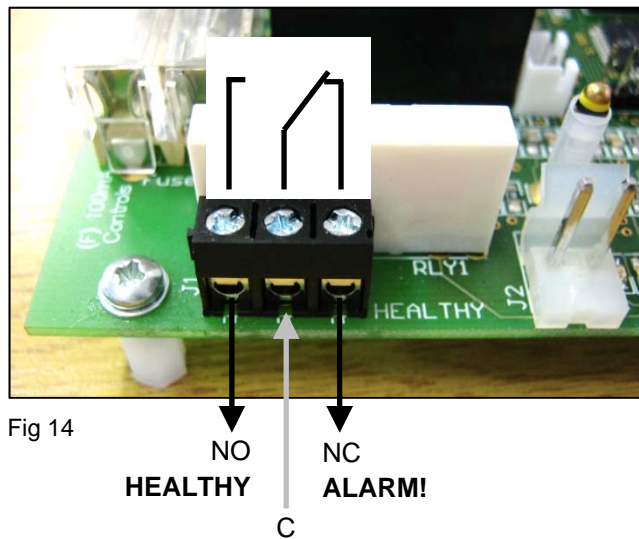


Fig 14

## 11.3 Weather compensation control (Summer/Winter)

To save heating energy on warmer days a simple weather compensation (Summer/Winter) heat control strategy can be used. Fit an outdoor air thermostat with volt-free contacts (supplied by the installer) to a north facing wall.

Use a 2-core cable to connect the outdoor air thermostat to 2-way terminal IN1 on the Ecopower PCB (see Fig 15)

On the Ecopower PCB, set DIP 4 to OFF as per Table 4, (see Section 11.1: Remote switch contacts IN0, IN1).

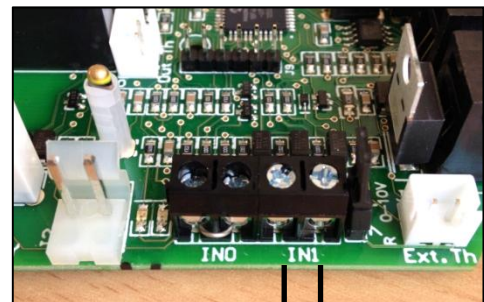
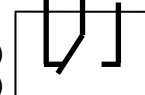


Fig 15

Switch Contact Closed = Heating Enabled (cold day)  
Switch Contact Open = Heating Disabled (warm day)



Outdoor Air  
Thermostat

**WARNING:** Do not apply any voltage to terminal IN1 as this will damage the Ecopower PCB.

**NOTE:** To promote increased energy saving a more advanced weather compensation control strategy is available from Thermoscreens. Using a heating curve, the discharge air temperature of the airstream coming from the air curtain is controlled against the outside air temperature. Visit the Thermoscreens website for details.

## 12. MULTIPLE AIR CURTAIN SYSTEMS

To Master/Slave two or more air curtains together, or if there are two air curtains in a vertical stack, the remote control is plugged into the first unit (the Master) and a RJ extension lead then connected from the Master to the Slave unit(s).

Horizontal application air curtains may be connected as indicated below. Thermoscreens 3m RJ extension leads are available and should be ordered separately.

For horizontal Master/Slave configuration an independent mains supply as per Table 1 must be supplied to each air curtain.

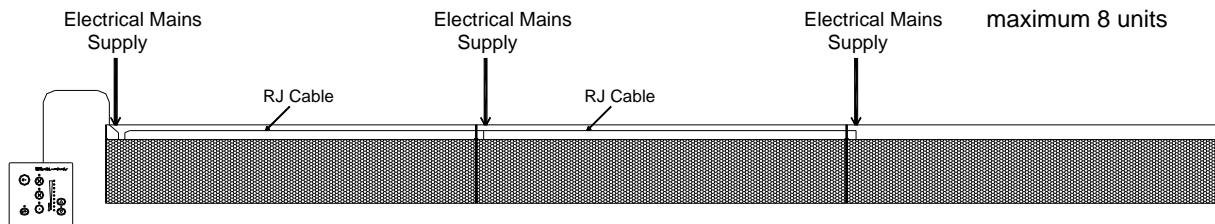


Fig 16

The maximum height for a vertical stack is 2.78m (1.5m + 1.0m vertical). An RJ extension lead and in-line RJ connector is supplied with vertical stack units.

Ensure all incoming electrical mains supply cables are suitable for the total power rating of the air curtain stack (see D2500).

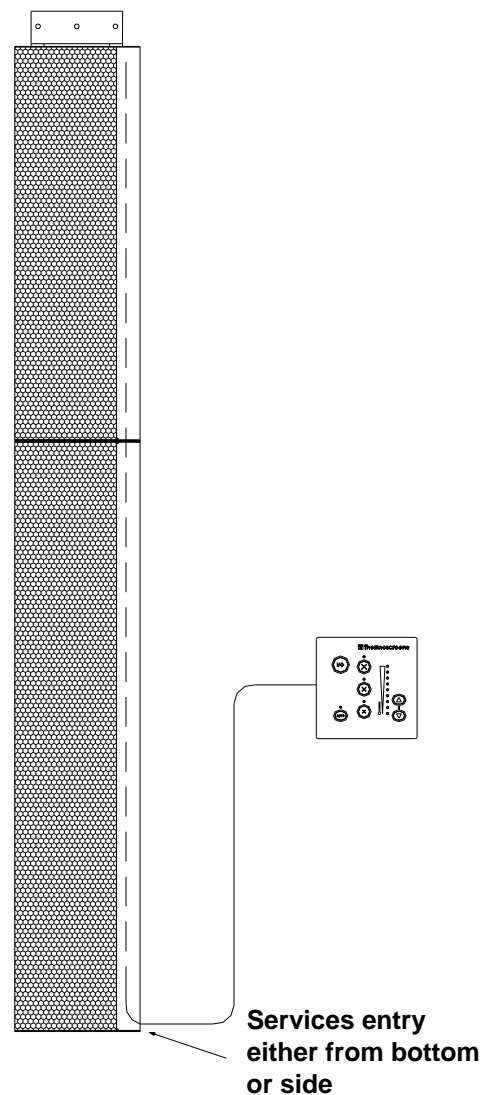


Fig 17

# 13. SYSTEM CONFIGURATION

## 13.1 Optional features

**WARNING:** Isolate and disconnect air curtain from the power source before making any changes.

DIP switches on the air curtain Ecopower PCB (see Fig 18) provide the following optional features, as explained below:

- Fan heat interlock
- Disable fan run-on
- Thermostat master (for master/slave installations)
- Weather compensation heat control (Summer/Winter)
- Door switch control



Fig 18

| Feature  | DIP setting         | Default   | Notes   |
|--|---------------------|---|---|
| <p><b>Fan heat interlock</b><br/>Allows fan speed to govern heat output on electric heated units.</p> <p>If low or medium fan speed is selected, a lower heat output results. High heat operates only on high fan speed.</p>             | <p><b>DIP 1</b></p> | <p><b>ON</b></p> <p>Heat output is governed by fan speed.</p>                             | <p>This feature is only used with electric heated air curtains to limit very high air temperatures.</p> <p>Set DIP1 to OFF if unit is water heated or ambient.</p>                        |
| <p><b>Disable fan run-on</b><br/>The 2 minute fan run-on after switch off is enabled or disabled on electric heated air curtains.</p>  | <p><b>DIP 2</b></p> | <p><b>OFF</b></p> <p>Fan run-on at medium speed enabled.</p>                              | <p>Must only be used for water heated or ambient air curtains. Each air curtain must have DIP2 set to ON for no fan run-on.</p>   |
| <p><b>Thermostat master</b><br/>For master/slave installations. Only the air sensor in the thermostat master air curtain is used to measure air temperature.</p> <p>Set DIP 3 to ON in the air curtain that will be the master unit.</p> | <p><b>DIP 3</b></p> | <p><b>OFF</b></p> <p>Air curtains in master/slave systems all act independently.</p>      | <p>Air sensor thermistors in all slave air curtains will be ignored.</p> <p>Stops some units blowing cold air and others blowing warm air in master/slave systems on larger doorways.</p> |
| <p><b>Weather compensation control or Door switch control</b></p> <p>Simple weather compensation control to save heating energy.</p> <p><u>or</u><br/>Door switch control.</p>   | <p><b>DIP 4</b></p> | <p><b>OFF</b></p> <p>IN1 Weather compensation</p> <p><b>ON</b></p> <p>IN1 Door switch</p> | <p>See section 11.1 Remote Switch Contacts IN0 and IN1 for details</p> <p>Weather compensation control is the same as Summer/Winter control</p>   |

**NOTE:** ■ — Black rectangle is moveable head of DIP switch.

**NOTE:** A range of advanced factory fitted and plug-in control options are available from Thermoscreens to enhance the performance of the Ecopower PCB controller inside the air curtain. These include advanced weather compensation control using a heating curve, outlet air temperature control, ECObus® Modbus BMS control, modulating heater outputs and EEPROMs for non-standard control strategies. Visit the Thermoscreens website for details.

## 14. FAN SPEED SELECTION

Factory settings for the 3 fan speeds are shown in Table 5 below:

(refer also to wiring diagrams in Appendix 3)

Table 5

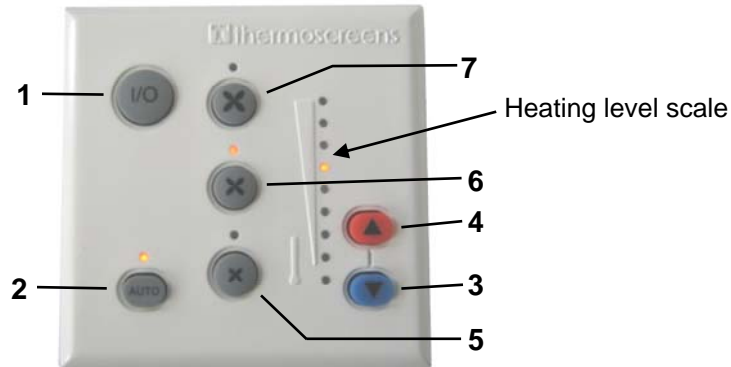
| Fan Speed                    | Maximum air velocity at outlet grille (m/s) | Maximum air curtain mounting height (m) | Sound Pressure Level of air curtain [dB(A) at 3m] | Air Volume Flow Rate (m <sup>3</sup> /h) [for A] |
|------------------------------|---|---|---|--|
| <b>HIGH</b><br>(black wire)  | 11.0  | 3.5                                     | PHVD1000 - 59<br>PHVD1500 - 60<br>PHVD2000 - 61   | 2050<br>3645<br>4145                             |
| <b>MEDIUM</b><br>(blue wire) | –   | –                                       | PHVD1000 - 57<br>PHVD1500 - 57<br>PHVD2000 - 59   | 1840<br>3455<br>3720                             |
| <b>LOW</b><br>(red wire)     | –   | –                                       | PHVD1000 - 56<br>PHVD1500 - 53<br>PHVD2000 - 58   | 1720<br>3345<br>3480                             |

Sound pressure levels dB(A) at 3m distance are for a single air curtain mounted at its maximum mounting height, operating in a room with average acoustic characteristics as defined in CIBSE Guide B5 (reverberation time 0.7s at 1kHz) and a room size equivalent to 8 air changes per hour (ac/h). Care needs to be taken when selecting air curtains for an installation as noise levels can be several dB higher if the mounting height is reduced, if the room is more 'live' (i.e. hard surfaces, no furnishings or absorbent materials), if the room is smaller than 8 ac/h equivalent or a combination of these factors. Noise levels will also increase if more than one air curtain is installed at the same doorway (e.g. +3dB(A) for 2 equal point sources: direct field).



# 15. REMOTE CONTROL OPERATION

## 15.1 Ecopower Remote Control



Use the Remote Control to operate the air curtain as follows:

### 1 On/Off

Turns the air curtain On or Off.

**NOTE:** If an electric heated air curtain is heating when switched off the fan will run-on for approximately 2 minutes to dissipate excess heat.

### 2 Manual/Automatic

Switches between Manual and Automatic modes.

The Auto On indicator LED is lit for "Auto Mode" and unlit for "Manual Mode".

### 3 & 4 Heating level controls

#### Manual mode

Select heating level from zero, to half heat, to full heat by stepping up or down with the heating level controls. The heating level scale shows the level selected.

#### Automatic mode

Heat output is controlled automatically according to:

- Inlet air temperature, or
- Room air temperature

This is dependent on the settings made in Section 10: Remote Control Settings (DIP switch 4).

### 5, 6 & 7 Fan speed

Switch fan speed between Low, Medium and High respectively. The appropriate LED illuminates.

# 16. COMMISSIONING THE SYSTEM

## 16.1 Verify system operation

To commission the system, verify the following conditions are met:

- All fans are working.
- Fans operate at Low, Medium and High speeds.
- There is no excessive mechanical noise coming from the fans.
- When heating is selected, the air stream from the discharge grille warms up across the whole length of the air curtain.
- When set to manual with fans set to high speed, heating increases as higher heat is selected.
- Warm air reaches across the doorway with door open or closed.
- Ecopower Remote Control operates correctly in both manual and auto modes.

## 16.2 Instruct customer and hand over

Before leaving site, hand over the installation to the customer/end user or their representative.

**Explain** that any person operating the air curtain must be given supervision and instruction by the person responsible for their safety, concerning the safe use of the unit and to understand any hazards involved. Children and those with reduced physical, sensory or mental capabilities should not operate the air curtain.

**Recommend** that the doorway should be closed whenever possible but that during times of high pedestrian use it will become an 'open doorway'. The air curtain then serves an essential purpose by saving energy and providing comfort to occupants.

**Explain** that the inlet grilles and air filters (if fitted) must be cleaned regularly and the unit serviced at schedule intervals – see section 19: Service & Maintenance.

**NOTE:** Leave these instructions with the customer/end user or their representative!!

# 17. SIGN OFF

Complete the following once commissioning is completed:

|                     |  |                    |  |
|---------------------|--|--------------------|--|
| Installer signature |  | Customer signature |  |
| Installer name      |  | Customer name      |  |
| Installer company   |  | Customer company   |  |
| Date                |  | Date               |  |

## 18. FAULT CONDITIONS

### 18.1 Overheat Safety cut-out

An overheat fault in electric heated units may cause the overheat safety cut-out(s) to operate.

This is indicated by flashing LEDs on the Remote Control and a red status LED on the Ecopower PCB inside the air curtain.

Before resetting ensure there is adequate air flow from the air curtain and the unit has been commissioned as per section 16.

To reset a overheat safety cut-out:

- Step 1** Switch off the electrical supply to the air curtain.
- Step 2** Allow time for the air curtain to cool down, typically 10 minutes.
- Step 3** Switch on the electrical supply to the air curtain.
- Step 4** Press the Auto button on the Ecopower remote control 4 times.

Air curtain heaters will then operate and after 30 seconds the LEDs on the remote control will stop flashing and the status LED on the Ecopower PCB in the air curtain will flash green.

### 18.2 Fuses

In the event of an electrical fault internal electrical fuses may operate.

There are two internal fuses located on the Ecopower PCB inside the air curtain:

- Fuse 6.3A(T) supplies the fan motors within the air curtain
- Fuse 100mA(F) controls the circuitry of the Ecopower PCB

### 18.3 Ecopower PCB status indication

There is a status LED on the Ecopower PCB inside the air curtain (See LED shown on Wiring Diagrams in the Appendix).

This indicates the status of the Ecopower Control system as follows:

1. LED flashing green – operation normal
2. LED flashing red – low supply voltage, remote control not plugged in or RJ cable fault
3. LED permanently red – overheat safety cut-out(s) open circuit from an overheat situation (see Section 18: Fault Conditions for how to reset)

## 19. SERVICE & MAINTENANCE

**WARNING:** Failure to adequately maintain the unit and provide a suitable cleaning schedule will result in a loss of performance and reduced life expectancy of the air-curtain and possible overheating and fire risk with electric heated units.

### 19.1 Every week

**NOTE:** Weekly maintenance can be carried out by the Cleaner or Janitor from floor level.

Turn off the air curtain to prevent entry of dust then clean the face of the air inlet grilles using a vacuum cleaner with an extension tube and brush.

### 19.2 Every 3 months

**WARNING:** Before servicing, isolate and disconnect the air curtain from the electrical power.

**WARNING:** The following servicing and maintenance must be carried out by a competent electrician or a Thermoscreens appointed technician.

Clean and inspect the inside of the air curtain as follows:

**Step 1** Remove the back and inlet grille panels.

**Step 2** Clean and remove any build-up of dust and dirt within the air-curtain (back/inlet grille panels, electric heaters (if fitted), fan impellers, housings and motors) using a vacuum cleaner and soft brush.

**NOTE:** Build-up of dirt on fan impellers can cause vibration, noise and excessive wear on the motor bearings.

**Step 3** Check within the unit to ensure all electrical connections and crimped terminals are tight and that all cables are in good condition.

Refit air inlet grilles after servicing. Reconnect electrical supply and test to ensure correct operation (see Section 16: Commissioning).

## 20. WARRANTY

All units are covered by a two year warranty.

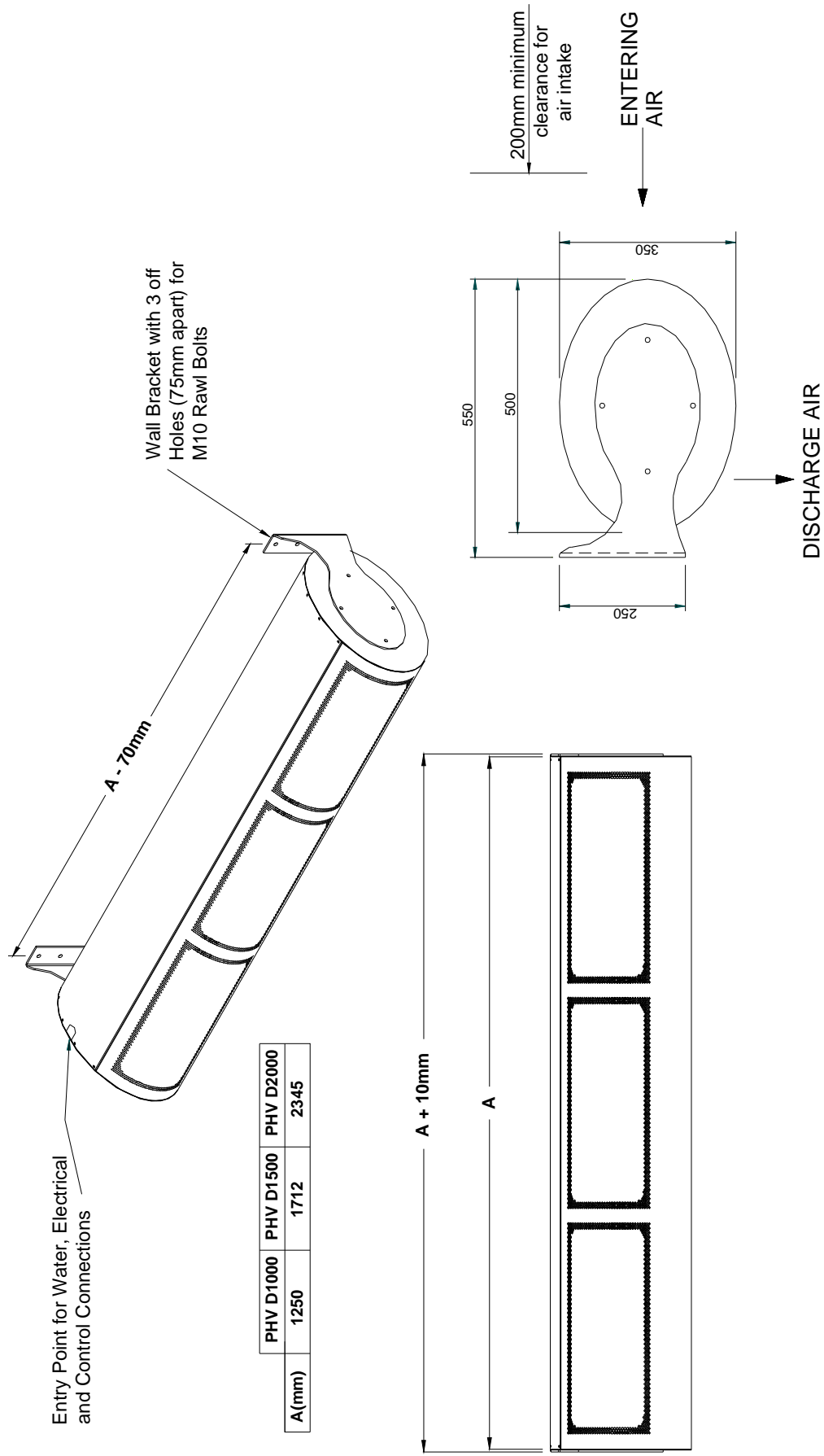
Failure to adequately maintain the unit may void the warranty. If any problems are encountered, please contact your installer/supplier.

Failing this please contact the Thermoscreens warranty department.

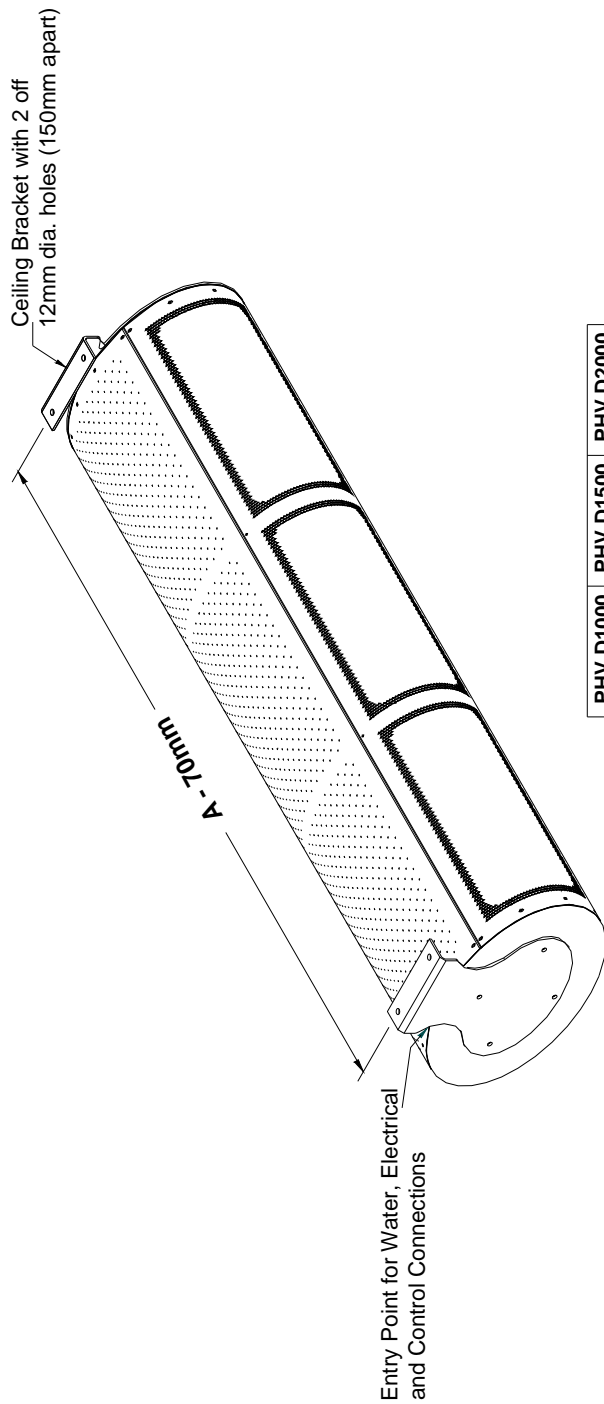
Care has been taken in compiling these instructions to ensure they are correct. Thermoscreens Ltd. disclaims all liability for damage resulting from any inaccuracies and/or deficiencies in this documentation. Thermoscreens Ltd. retain the right to change the specifications stated in these instructions.

Thermoscreens Ltd  
St. Mary's Road Nuneaton  
Warwickshire England  
CV11 5AU

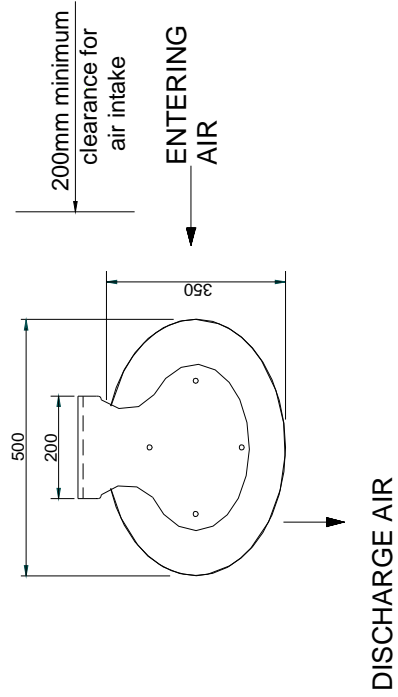
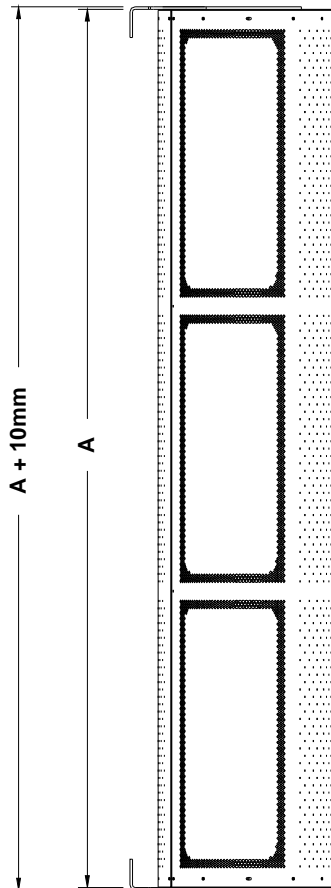
Email: [sales@thermoscreens.com](mailto:sales@thermoscreens.com)  
Tel: + 44 (0) 24 7638 4646  
Fax: + 44 (0) 24 7638 8578  
[www.thermoscreens.com](http://www.thermoscreens.com)



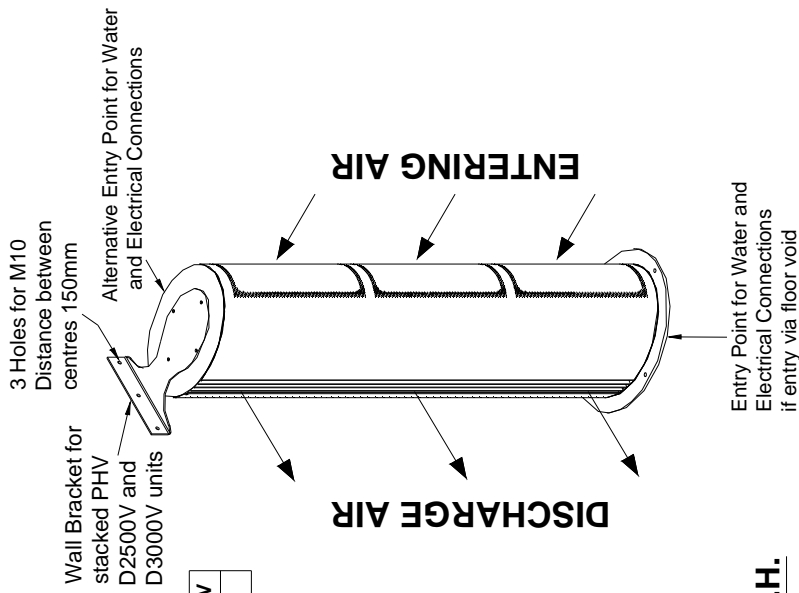
**APPENDIX 1A — DIMENSIONS OF HORIZONTAL AIR CURTAIN (WALL MOUNTED)**



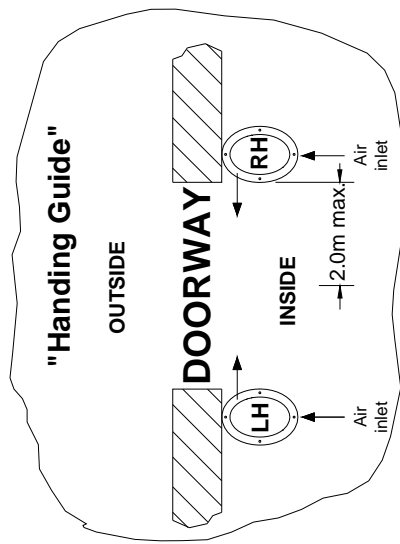
| A(mm) | PHV D1000 | PHV D1500 | PHV D2000 |
|-------|-----------|-----------|-----------|
|       | 1250      | 1712      | 2345      |



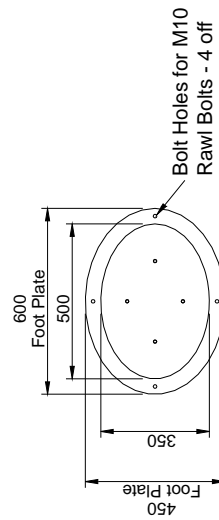
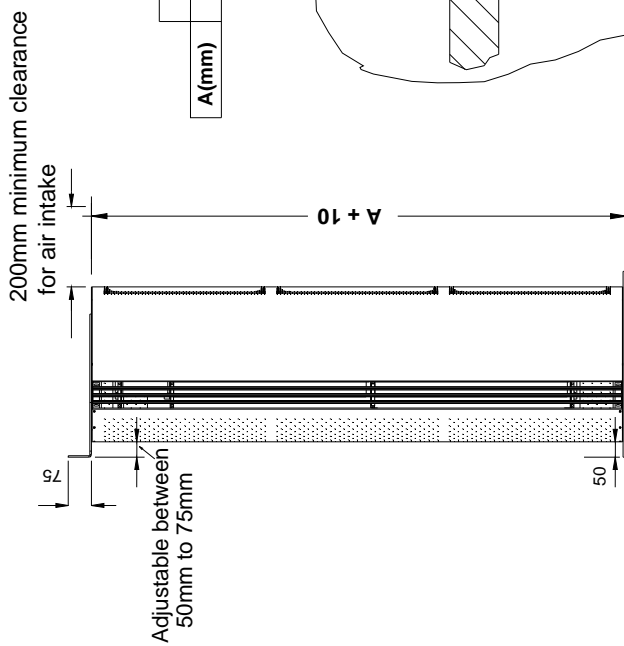
**APPENDIX 1B — DIMENSIONS OF HORIZONTAL AIR CURTAIN (CEILING MOUNTED)**



| A(mm) | PHV D1500V | PHV D2000V | PHV D2500V | PHV D3000V |
|-------|------------|------------|------------|------------|
|       | 1712       | 2345       | 2962       | 3609       |

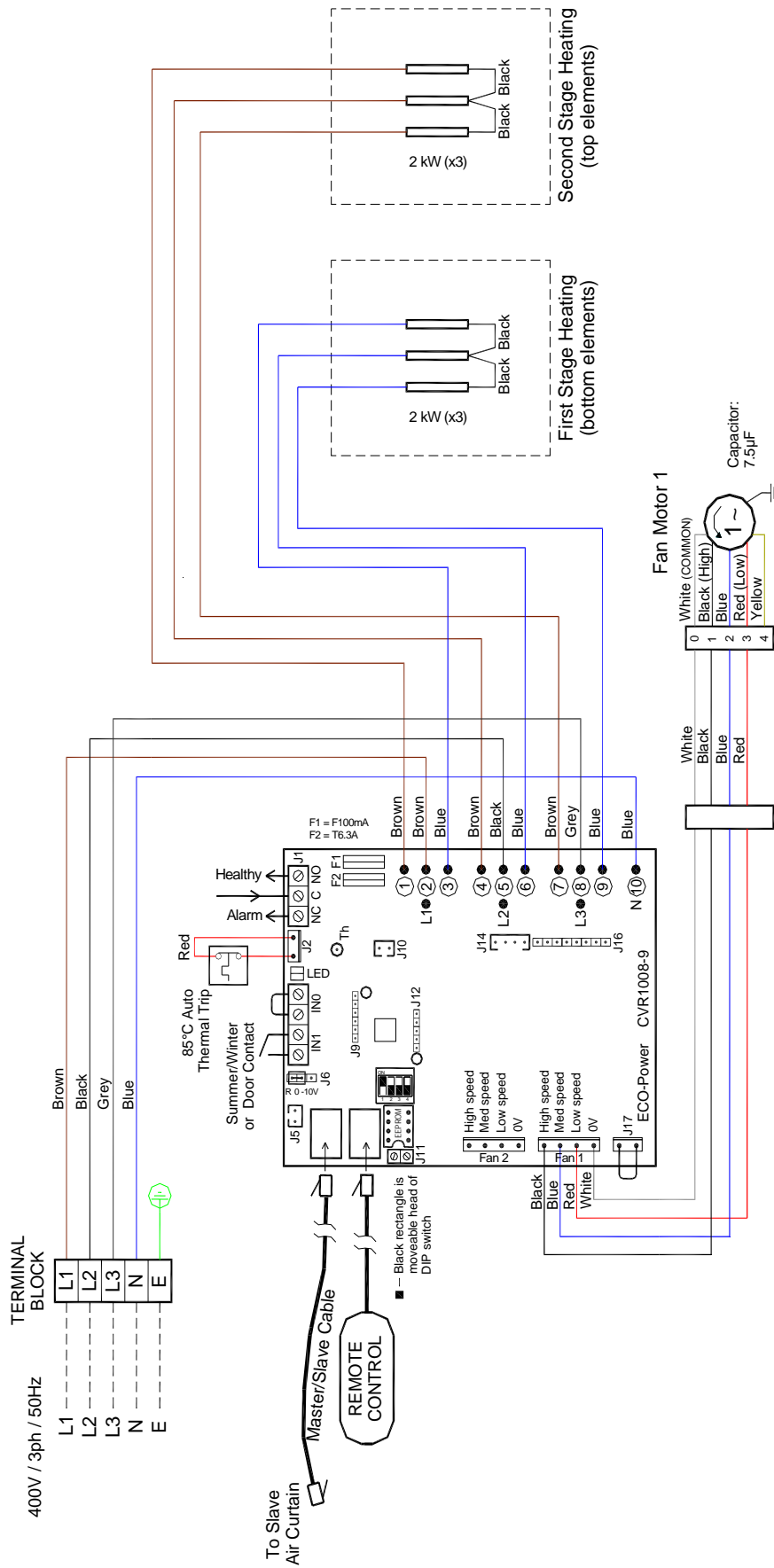


**As Drawn for R.H.  
Opposite Hand for L.H.**



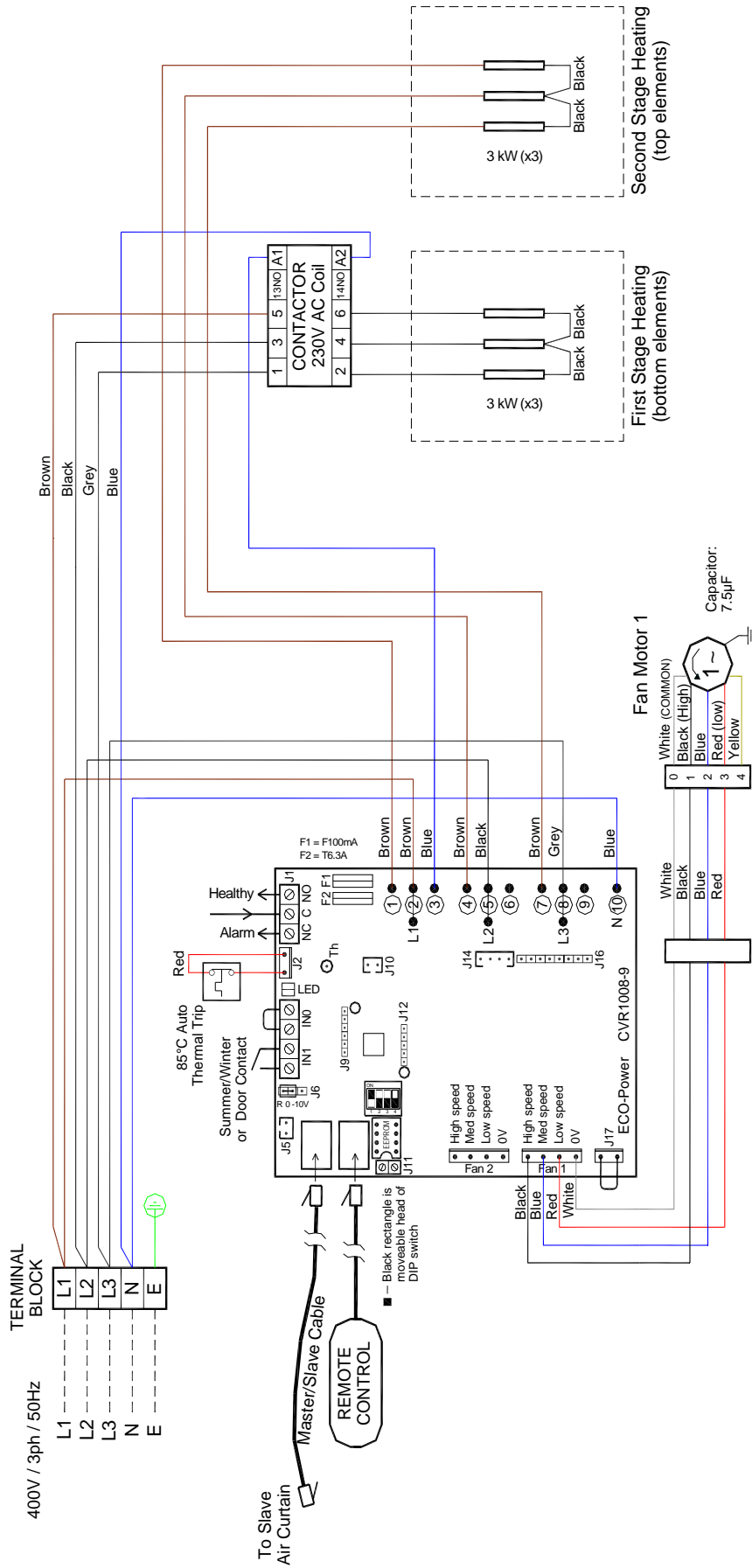
## APPENDIX 2 — DIMENSIONS OF VERTICAL AIR CURTAIN



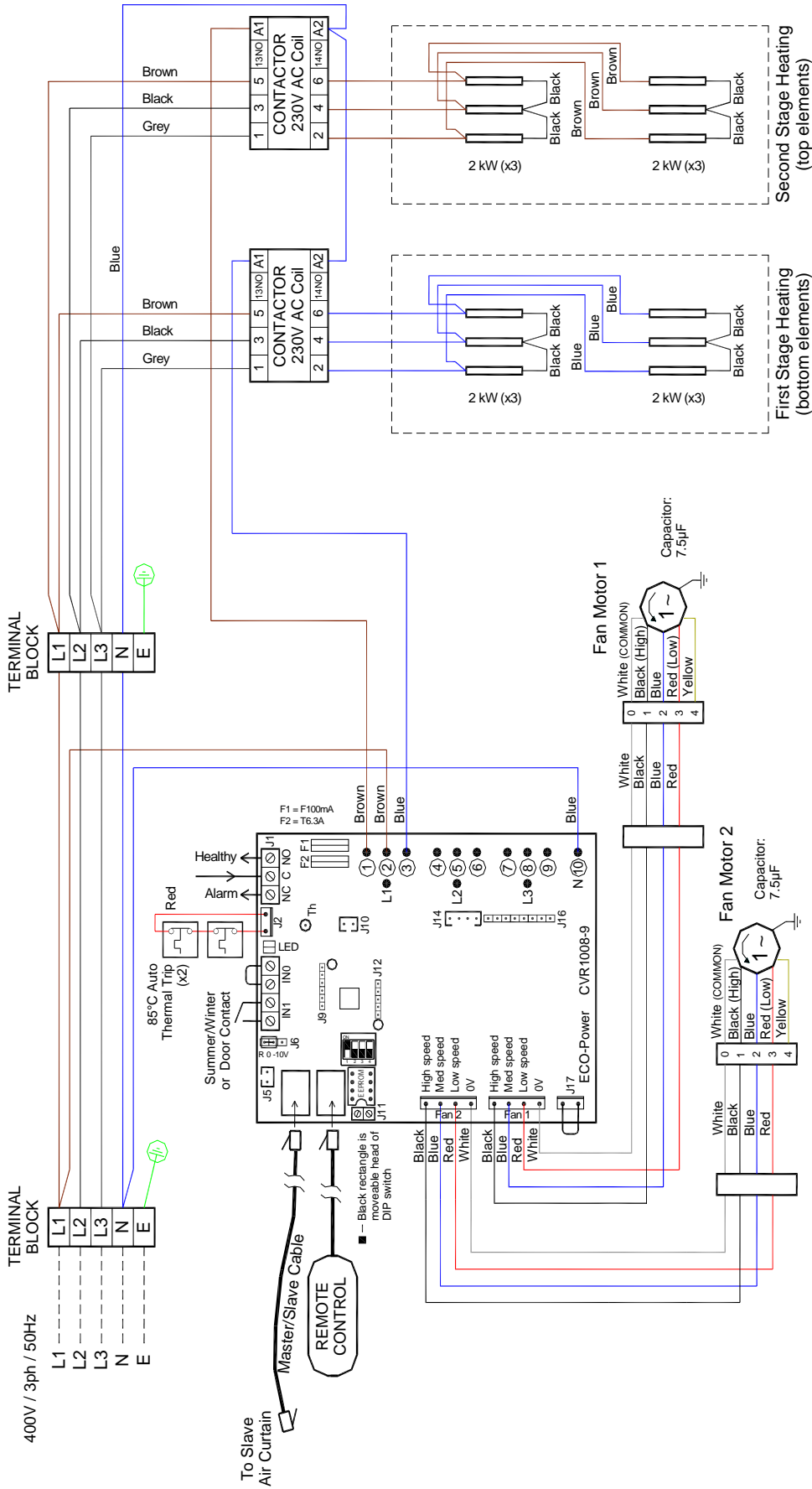


**APPENDIX 3A — WIRING DIAGRAM PHVD1000E and PHVD1000E V\***

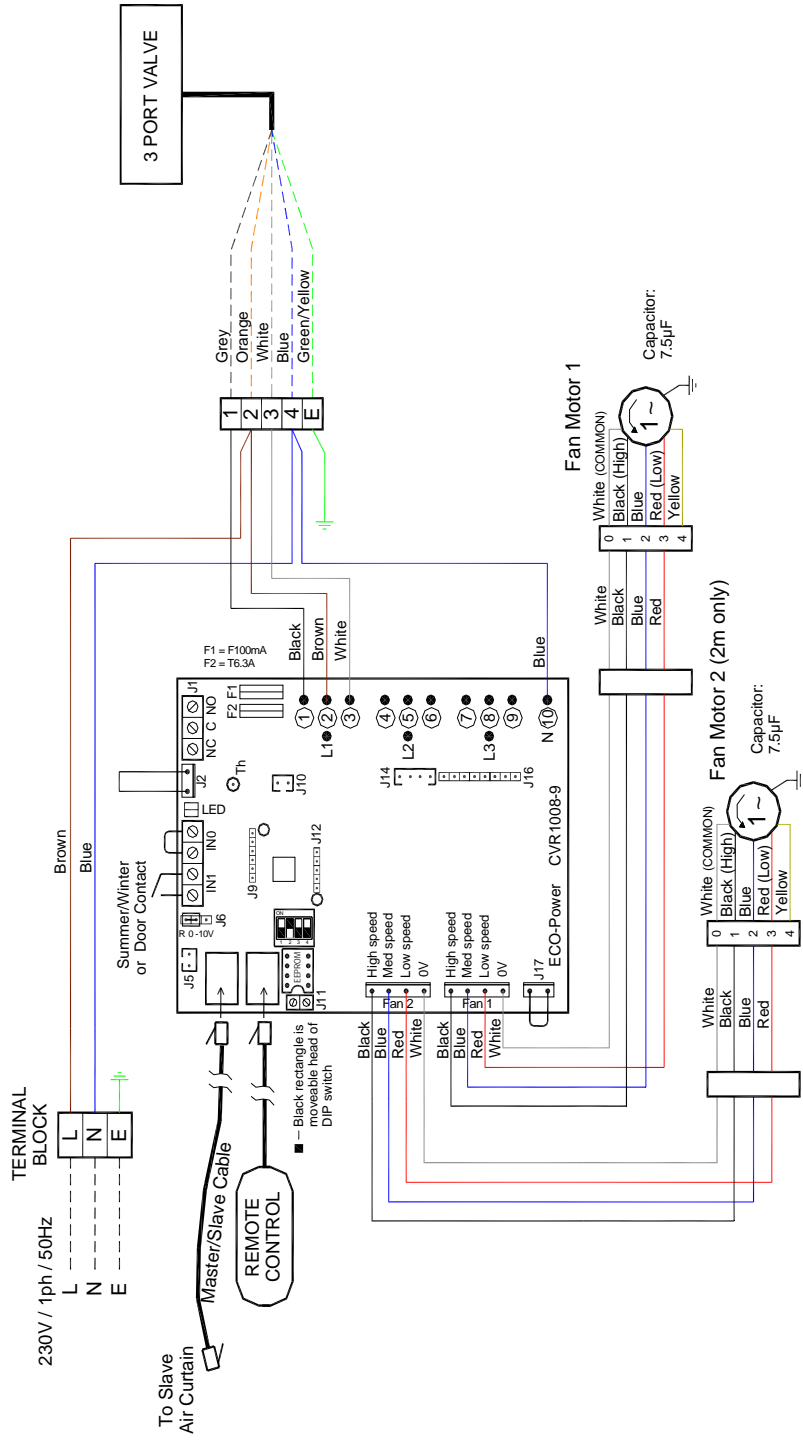
\* used as top air curtain for vertical stacking only



## APPENDIX 3B — WIRING DIAGRAM PHVD1500E and PHVD1500E V

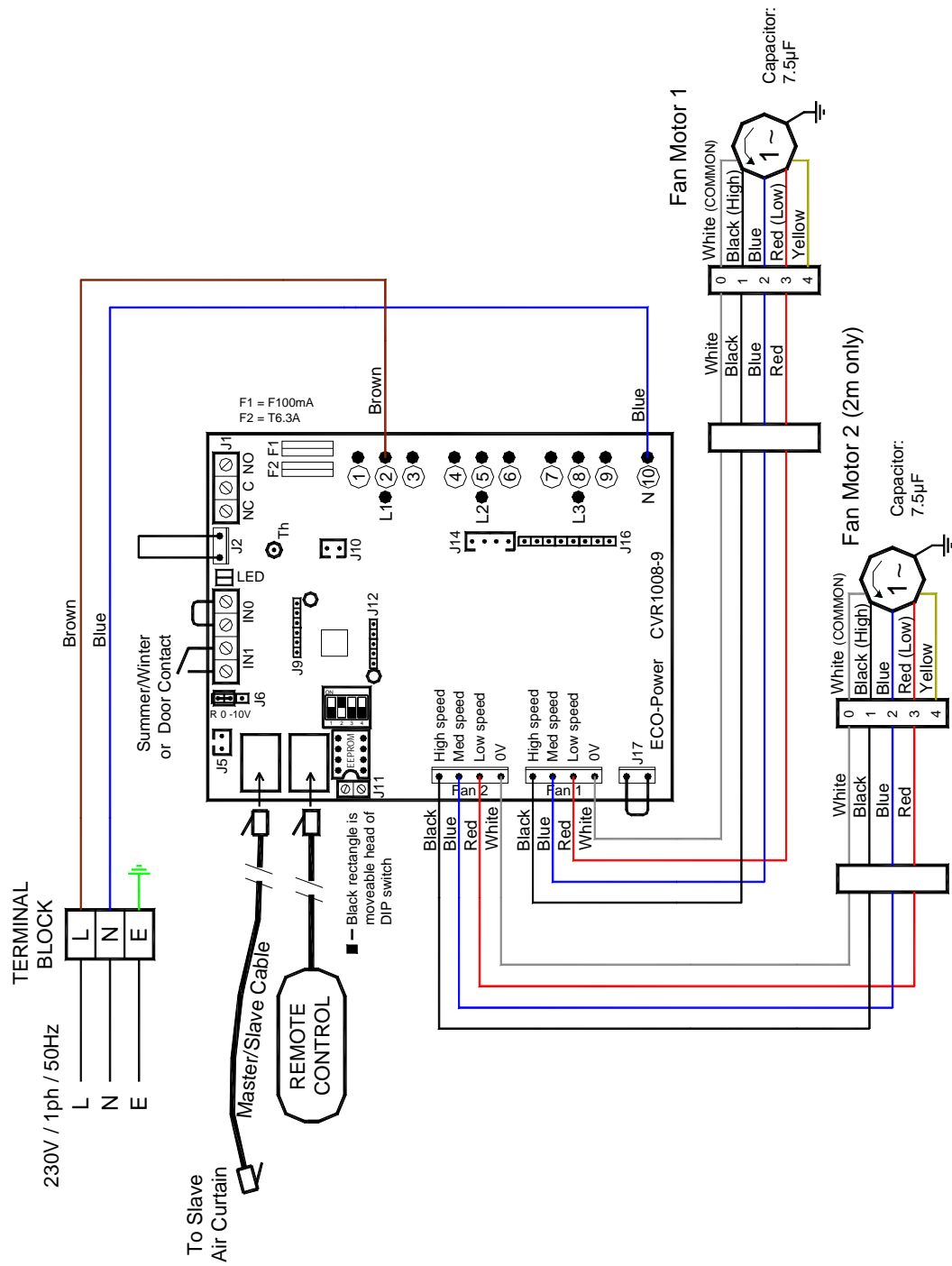


**APPENDIX 3C — WIRING DIAGRAM PHVD2000E and PHVD2000E V**



**APPENDIX 3D — WIRING DIAGRAM PHVD1000W, PHVD1500W, PHVD2000W, PHVD1000W V\*, PHVD1500W V and PHVD2000W V**

\* used as top air curtain for vertical stacking only



**APPENDIX 3E — WIRING DIAGRAM PHVD1000A, PHVD1500A, PHVD2000A V, PHVD1000A V\*, PHVD1500A V and PHVD2000A V**  
 \* used as top air curtain for vertical stacking only

## 21. DECLARATION OF CONFORMITY

Thermoscreens Ltd.  
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CV11 5AU  
United Kingdom  
Telephone: +44 (0)24 7638 4646  
www.thermoscreens.com



**EC DECLARATION OF CONFORMITY**  
**as defined by the EC Council Directive on Machinery 2006/42/EC,**  
**the Low Voltage Directive 2006/95/EC, Electromagnetic Compatibility Directive 2004/108/EC,**  
**the Energy related Products Directive 2009/125/EC**

Herewith we declare that the air movement equipment designated below, on the basis of its design and construction in the form brought onto the market by us in accordance with the relevant safety, health and performance requirements of the Machinery.  
If alterations are made to the machinery without prior consultations with us, this declaration becomes invalid.

**Designation of Equipment:** AIR CURTAINS

**Series Type:** PHVD1000A; PHVD1000E; PHVD1000W; PHVD1500A;  
PHVD1500E; PHVD1500W; PHVD2000A; PHVD2000E;  
PHVD2000W; PHVD1500A V; PHVD1500E V; PHVD1500W V;  
PHVD2000A V; PHVD2000E V; PHVD2000W V

**Relevant EC Council Directives:** the Machinery Directive (2006/42/EC)  
the Low Voltage Directive (2006/95/EC)  
the Electromagnetic Compatibility Directive (2004/108/EC)  
the Energy related Products Directive (2009/125/EC)

**Applied Harmonised Standards:** Machinery - EN ISO 14121-1:2007, EN 294:1992, EN 414:2000  
LVD - EN 60335-1:2012, EN 60335-2-30:2009+A11:2012  
EMC - EN 61000-6-1:2007, EN 61000-6-3:2007+A1:2011,  
EN 61000-3-2:2006+A2:2009, EN 61000-3-3:2008  
ErP - Commission Regulation (EU) No.327/2011,  
ISO 5801:2007, ISO 12759:2010

**Basis of Self Attestation:** Quality Assurance to BS EN ISO 9001: 2008  
B.S.I. Registered Firm Certificate Number FM 85224  
SGS Test Report ELS150049/2/R/DC/11;  
SGS Test Report EMC150049/1  
CE Marking Association Test Report 6799 and 6800

**Responsible Person:** Mr. P. Casey, Operations Director, Thermoscreens Ltd.

**Date:** 20 March 2014

**Signed:**

A handwritten signature in blue ink, appearing to read "Phil Casey". The signature is written in a cursive, flowing style.