



SCREENZONE RECESSED AIR CURTAINS

RAC1306RX

INSTALLATION AND OPERATING MANUAL

All electrical appliances produced by the Company are guaranteed for one year against faulty materials or workmanship. This applies only if the appliance has been used for purposes in accordance with the instructions provided and has not been connected to an unsuitable electricity supply, or subject to misuse, neglect, damage or modified or repaired by any person not authorized by us. This guarantee is offered to you as an extra benefit and does not affect your legal rights.

The correct electricity supply voltage is shown on the rating label attached to the appliance.

Reasonable care has been taken to ensure that this guide is accurate at the time of printing. In the interest of progress the Company reserve the right to vary specifications from time to time without notice.

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1. General Information

1.1 Warnings

All installations must be in accordance with the regulations. These instructions must be handed to the user on completion of the installation. Installers and service engineers must be able to demonstrate competence and be suitably qualified in accordance with the regulations. To ensure continued and safe operation it is recommended that the appliance is serviced annually. The air curtain outlet/inlet grilles must not be obstructed during use. Any modifications made to the unit not approved by Consort will void manufacturer's warranty and potentially create a hazard. The appliance is NOT intended for use by persons (including children) with reduced physical, sensory or mental capabilities or lack of experience or knowledge unless they have been given instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance. Parts of the air curtain can become very hot when in operation and cause burns. The air curtain is not equipped with a room thermostat and should not be used in small rooms so as to avoid overheating.

1.2 Health and Safety

Please read this instructions thoroughly before installing the appliance. Sole liability rests with the installer to ensure that all site safety procedures are adhered to during installation. Sole liability rests with the installer to ensure that protective safety wear such as hand, eye, ear and head protection is used during installation of the product. Ensure that all anchoring points are suitable for the weight of the appliance.

1.3 Electrical Supply

This air curtain must be permanently connected to the electricity supply via an isolated switch. It must provide all-pole disconnection and have a 3mm gap on each pole.



THERE ARE NO EXCEPTIONS.



All units must be wired in accordance with I.E.E. regulations for the Electrical Equipment of Buildings.

BMS control, time switches and door interlocks can be installed at the discretion and responsibility of the installer.

1.4 Location

All units should be installed directly over the door opening. It is recommended that the air curtain is installed on the inside of the building.

Care must be taken to allow complete free air movement into the inlet grilles of the unit to ensure correct working operation of the air curtain. The discharge opening should be as close to the top of the door as possible and cover the entire door width.

Units can be mounted adjacent to each other to cover the full door opening across wider entrances.

1.5 Clearance Distance

It is recommended that a minimum clearance of 50mm is allowed around the case. The clearance allows for cable entry and prevents combustible surfaces from overheating.

The minimum mounting height (floor to grille) is 2m. The maximum mounting height is 3.4m.

2. Introduction

2.1 Introduction

This instruction manual describes the ScreenZone Recessed air curtain RAC1306RX. It is designed for discreet positioning in a suspended ceiling or bulkhead in the doorways of retail or commercial premises up to 3.4m ceiling height.

The air curtains comprise of 2 modular blower units, 510mm wide and with nominal maximum power output of 3kW 3Ph 415V.

Heater is available in lengths of 1300mm, made up of 2 blower units. For wider doorways, up to 7 air curtains can be easily interconnected using CAT5/ CAT6 RJ45 networking cable.

It is recommended that this control cable is run separately within its own trunking to avoid external interference.

The air curtain can be controlled by ACMC touchscreen controller, mechanical switches, wireless controllers CRXSL / HRXSL, or BMS.



This heater should not be installed where there is a corrosive atmosphere or excessive dust.



2.2 Wireless Controller

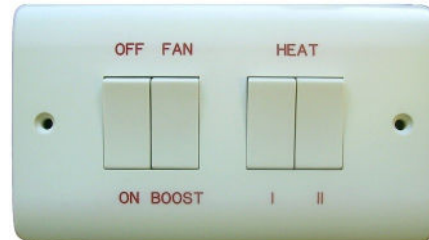
The controllers are not supplied with the heaters and have to be purchased separately.

The air curtain is supplied with an ACREC receiver. The wireless controllers CRXSLWIFI / CRXSL / HRXSL will provide 3 fan speed and 3 heat setting options, depending on the operating mode used.



2.3 Mechanical switch Controller

Optional HE8408 mechanical switch. (not supplied with the heater) More details at Installer wiring (section 6.1). This controller will provide 2 fan speed and 3 heat setting options.



2.4 Touchscreen Controller

Optional colour screen controller. (not supplied with the heater) More details at Installer wiring (section 6.1). This controller will provide 8 fan speed and 8 heat setting options, which can be mounted up to 50m from the air curtain.

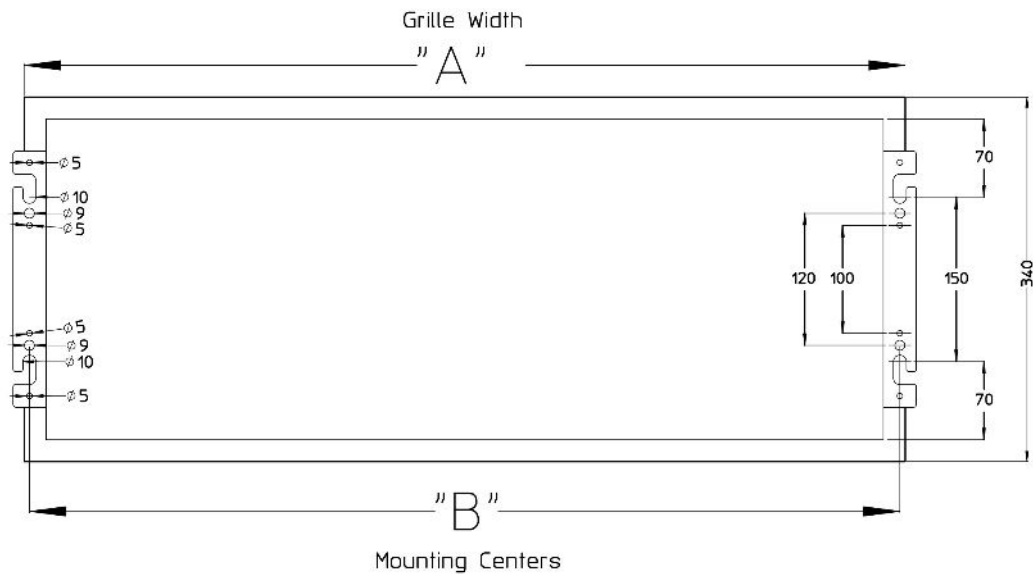
Optional BMS control, remote temperature sensor and door interlocks can be installed.



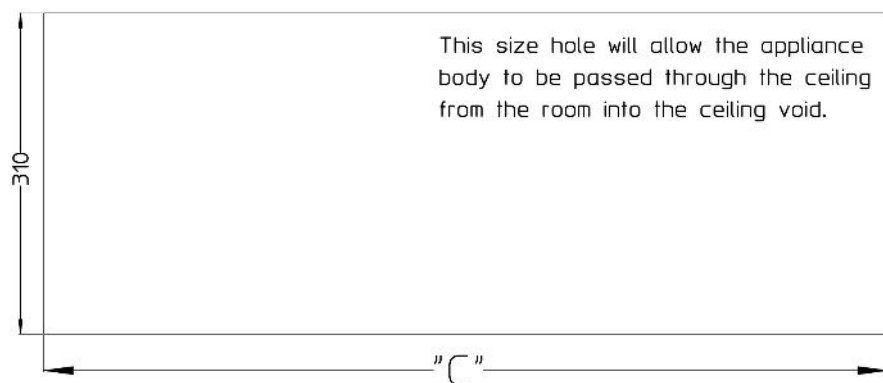
3. Dimensions & Fixing locations

3.1 Air Curtain Dimensions

Product Dimensions



Ceiling Cutout Dimensions



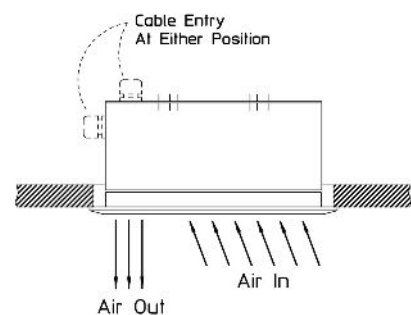
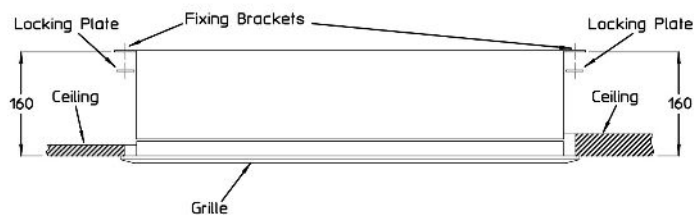
RAC1306RX

A 1350

B 1340

C 1330

All dimensions shown are in millimetres (mm)



4. Installation Details

4.1 Mounting

All units should be installed horizontally directly over the door opening. Before fitting or wiring the air curtain, ensure the outlet is facing the doorway.

Care must be taken to allow complete free air movement into the inlet grilles of the unit to ensure correct working operation of the air curtain. The discharge opening should be as close to the top of the door as possible and must cover the entire door width.

Units can be mounted adjacent to each other to cover the full door opening across wider entrances.

4.2 Electrical Supply Entry

The cable entry is located in the middle of the heater. The top of the heater has 2 x 20mm holes and the side of the heater has 2 x 20mm holes. This should suit most installations.

4.3 Installation

It is the sole responsibility of the installer to ensure that the points of attachment to the building are sound. Consultation with the consultant/architect or owner of the building is recommended to ensure that a sound, mechanically stable installation is achieved.

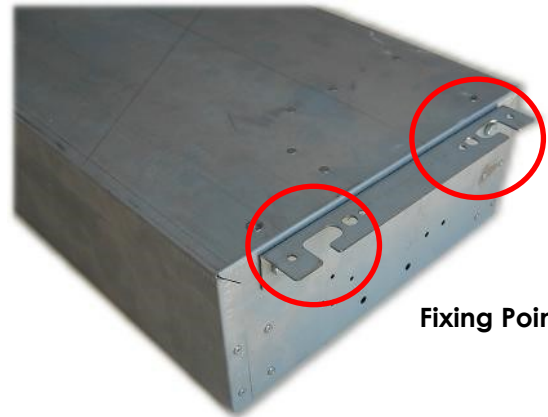
All attachments must be capable of supporting the weight of the product.

Each unit has 2 fixing brackets from which it is suspended. The brackets may be removed to assist in passing the air curtain through the recess then reattached when in-situ.

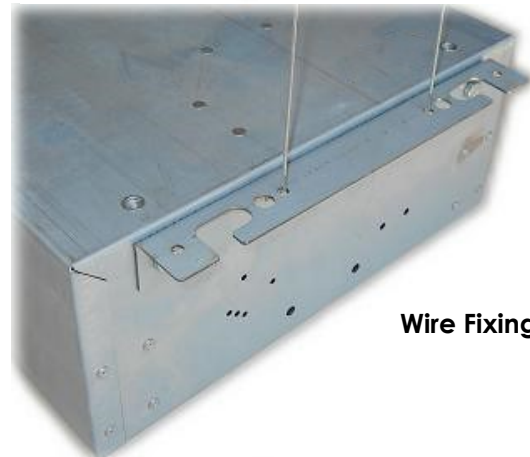
Either drop rods or catenary wire can be used to fasten the air curtain to the ceiling support structure.

The height between the ceiling face and the bottom of the air curtain case needs to be adjusted to circa 20mm to enable the grille assembly to fit flush with the ceiling. Adjust accordingly.

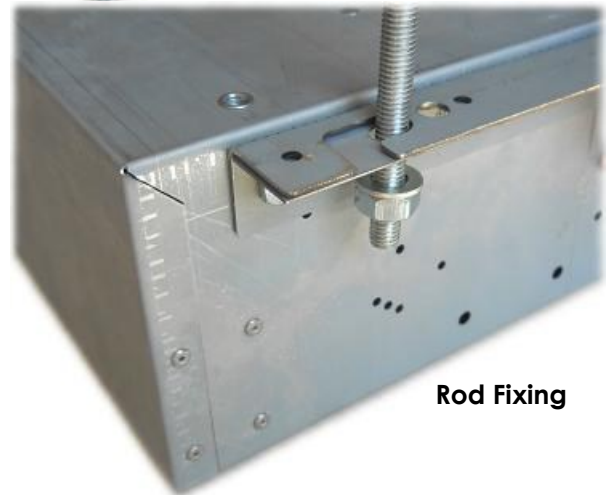
After fitting the product in the ceiling recess and adjusting the height to ensure that the grille sits flush to the ceiling (when re-fitted) take the grille assembly and refit using the screws removed.



Fixing Points



Wire Fixing



Rod Fixing

4. Installation Details

4.4 Grille Removal

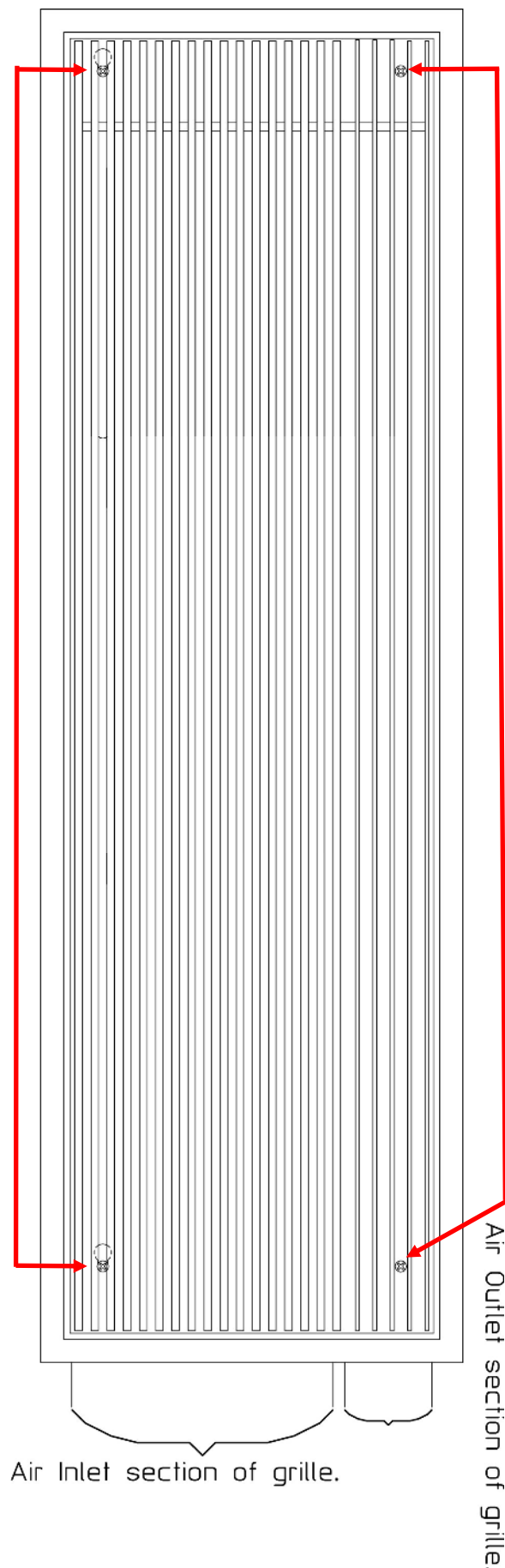
Step 2 - Loosen all screws on air inlet side. They are in keyhole slots and do not need to be fully removed.

Step 3 - An **EARTH** lead is connected to the lid from the unit body via a push-on connection at grille. When replacing the grille onto the unit ensure the **EARTH** lead is re-connected.

Step 1 - Remove all screws on air outlet side

Step 4 - Slide grille until the screw can pass through the larger section of the key hole slot.

Slide grille this way



5. Technical Specifications

3 Phase supply

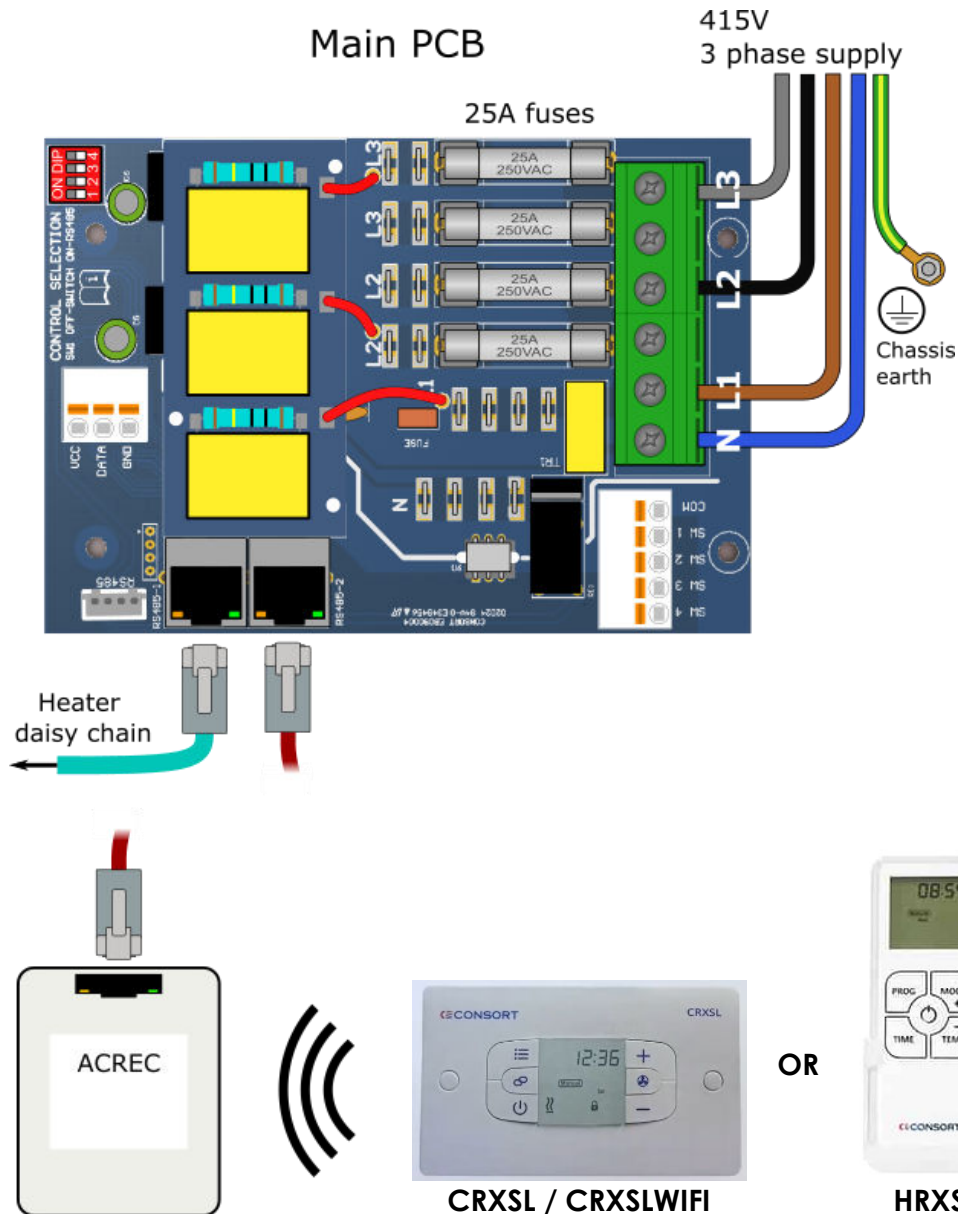
5.1 General Data			RAC1306RX
Maximum height	M	3.4	
Door width	M	1.3	
Heat medium		Electric heating element	
Heat output	kW	6	
Fan type		2x EC Crossflow 100mm	
Fan control		Electronic fan speed control	
Heat switching		Solid state electronic control	
Weight	kg	19.5	
Electrical Data			
Supply voltage		415V 3ph 50Hz	
Total load	kW	6	
Max current per phase	A/pha	8.3	
Max motor power	W	2 x 48	
External fuse size amps	A/pha	10	
Controller		HRXSL / CRXSL / RS485 / Mechanical switches	
Receiver wiring		CAT5 / CAT6 with RJ45 connectors	
Cable terminal size		10mm ²Max	
Mains terminal block position		Centre of base unit. Terminals N; L1; L2 & L3	
Control terminal position		Centre of base unit	
Air Data			
Air volume	Max speed	m³/h	1300
Air velocity	Max speed @ 0M	m/s	6.8
	Max speed @ 1M	m/s	4.2
	Max speed @ 2M	m/s	3
	Max speed @ 3M	m/s	2
Max Delta T @ 10°C	Auto speed	°C	19
Noise level @ 3m	Max speed	dBA	60
	Min speed	dBA	50
Dimensional Data			
Length	mm	1350	
Width	mm	340	
Height	mm	177	

Single Phase supply after internal modification

5.1 General Data		RAC1306RX	
Electrical Data			
Supply voltage		240V 50Hz	
Total load	kW	6	
Max current	A	26	
Max motor power	W	2 x 48	
External fuse size amps	A	32	

6. Wiring Details

6.1 Installer Wiring - ACREC receiver



6.3 Installing ACREC receiver

This heater is supplied with an ACREC wireless receiver. This allows the heater to work with the HRXSL or CRXSL wireless controllers.

NOTE: You must ensure that the dipswitches are set to 000X as shown on the picture above otherwise the heater will not work.

The ACREC must be connected to one of the RJ45 connectors on the main PCB using CAT5 or CAT6 cable as shown on the diagram above.

! The receiver has to be paired with the controller before it can be used. !

6.4 Pairing air curtain with HRXSL or CRXSL

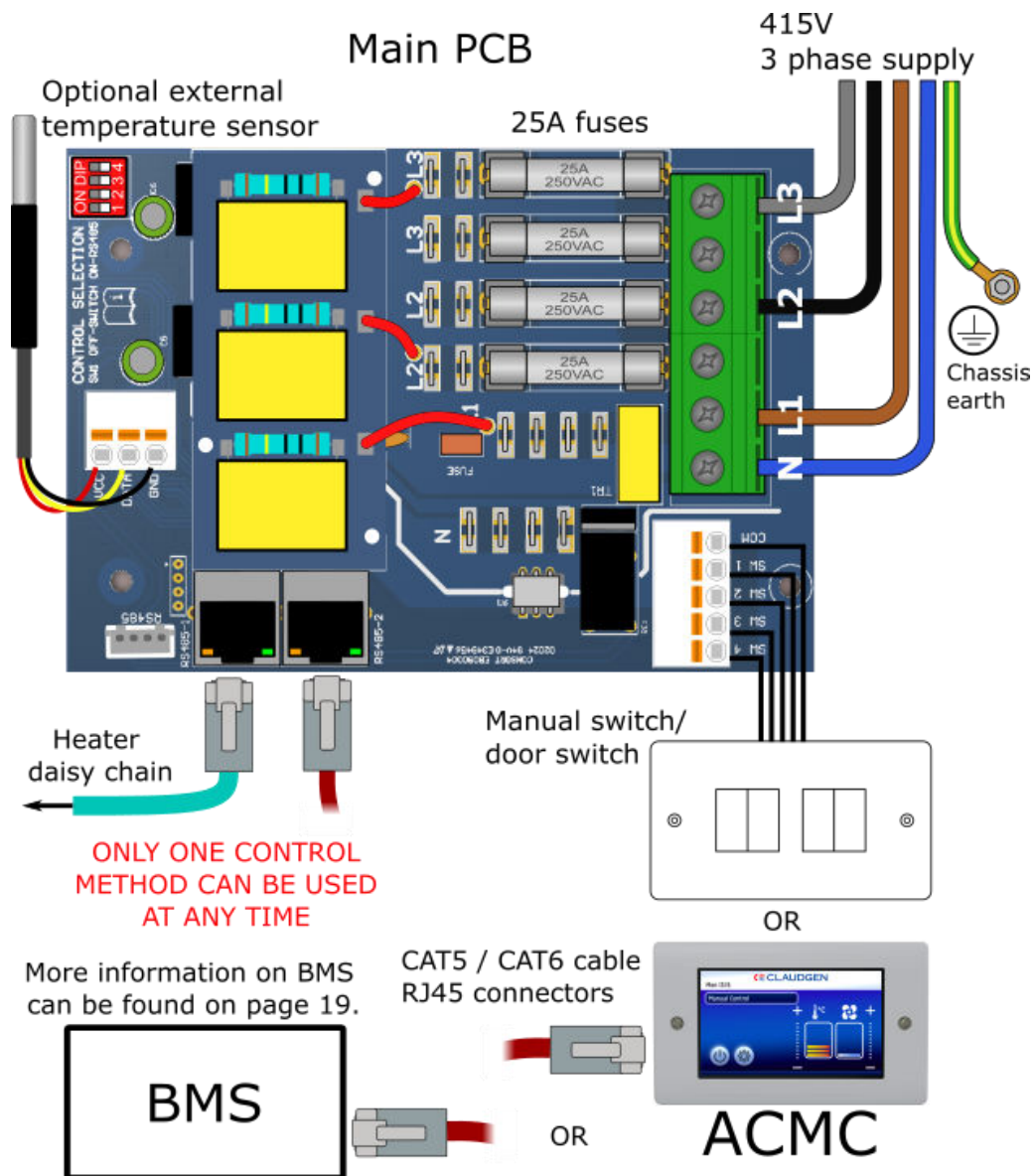
For detailed a guide on how to pair, follow the user instruction supplied with the controller.

On the heater side, in order to pair heater to the controller, the power to the heater must be off.

1. Power up the heater, the green light on the receiver should be on
2. Within 20 seconds, enter pairing mode on the controller, the green light should blink.
3. If the pairing was successful the heater should start working for several seconds.

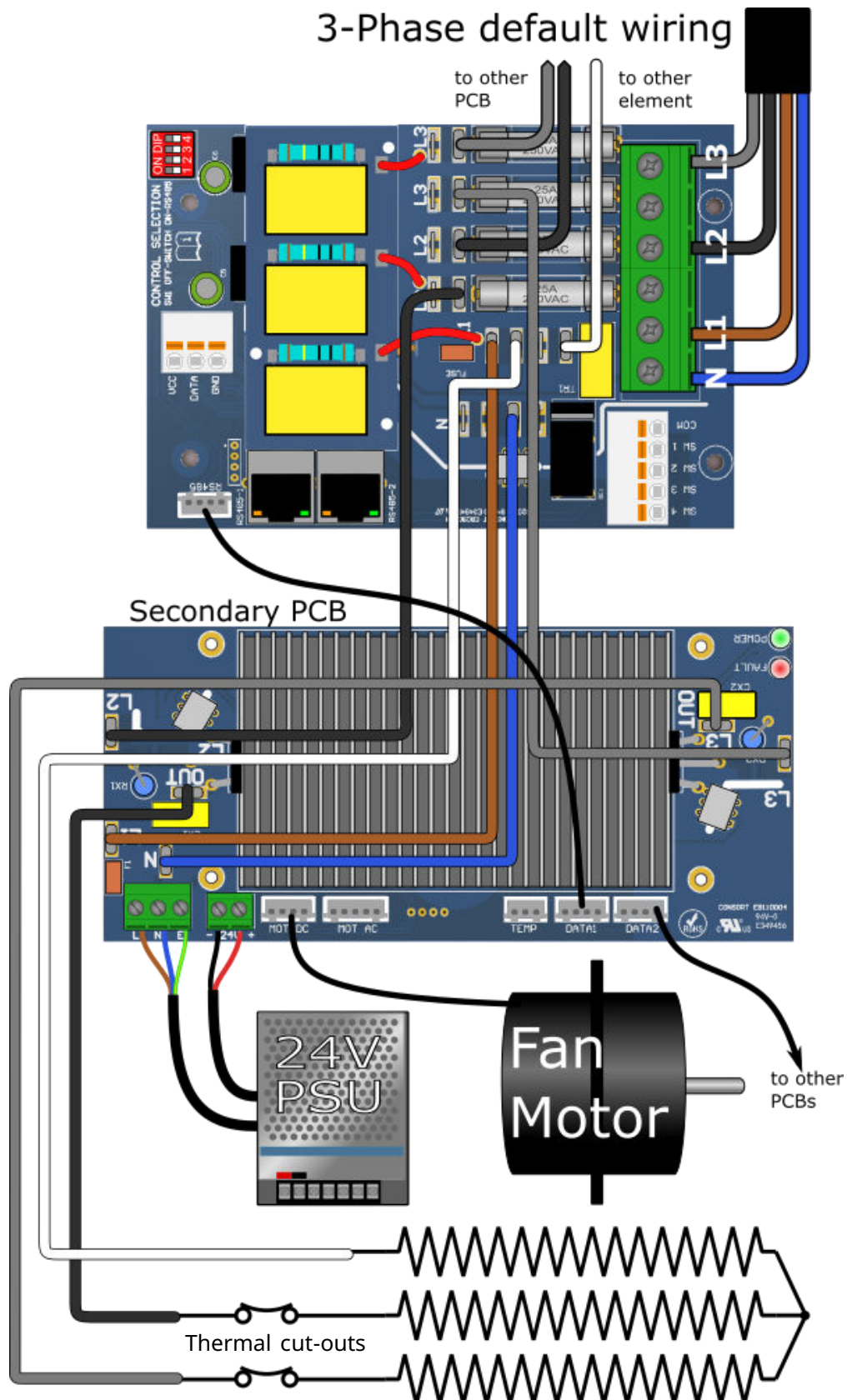
6. Wiring Details

6.2 Installer Wiring - Mechanical Switch or ACMC



6. Wiring Details

6.5 Factory Wiring



7. Modification for use on single phase

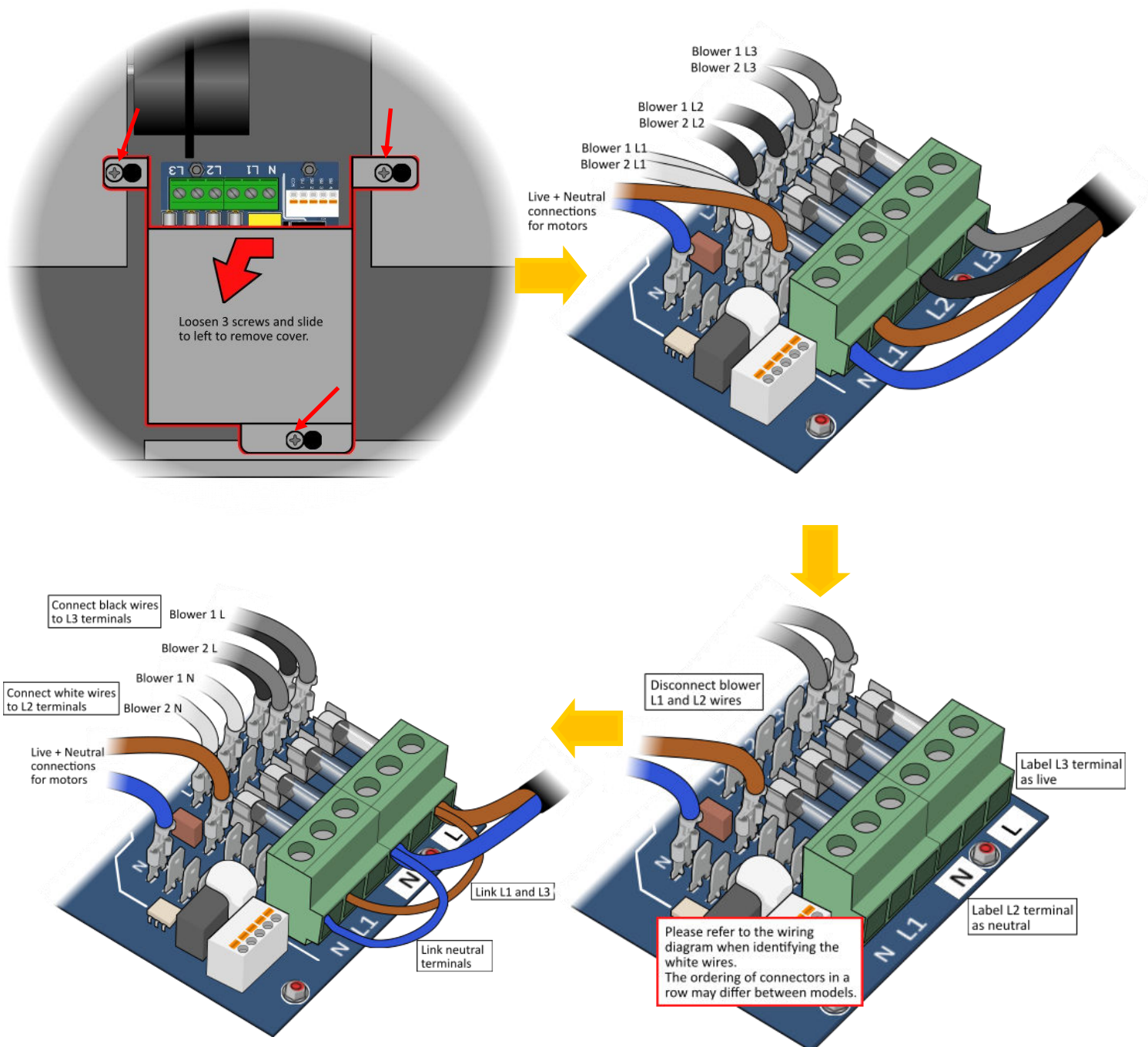
RAC1306RX are supplied as 3 phase only appliance. In order to use it with a single phase supply, the internal wiring has to be modified. The appliance is supplied with a single phase conversion kit. The pictures below describe how to change the internal wiring. After the internal wiring has been modified it is necessary to change labelling of the connector as shown on the picture below and also new rating label showing single phase supply must be use to cover the existing 3 phase operation rating label.



This has to be followed exactly.



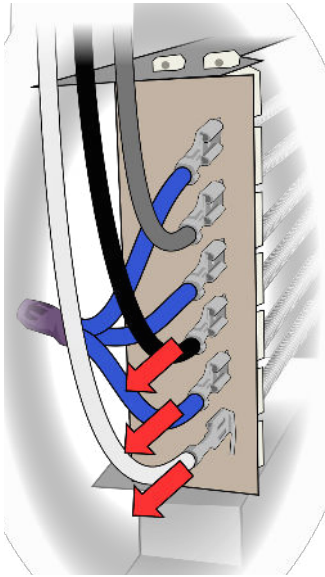
7.1 Internal Wiring modifications.



7. Modification for use on single phase

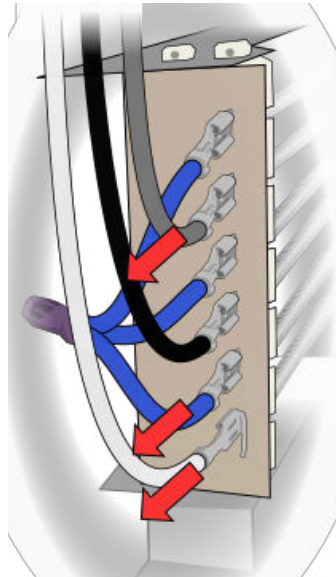
7.2 Modification of internal wiring of the heating element for single phase operation

Step L.1



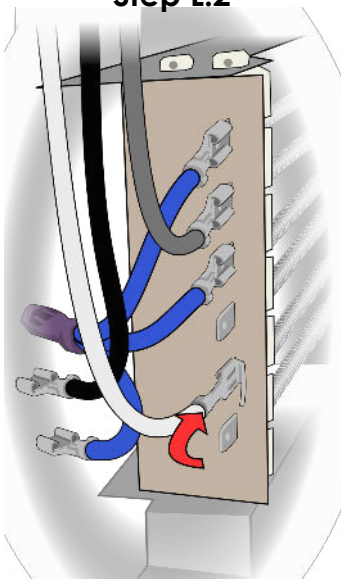
Left-Hand
Element

Step R.1

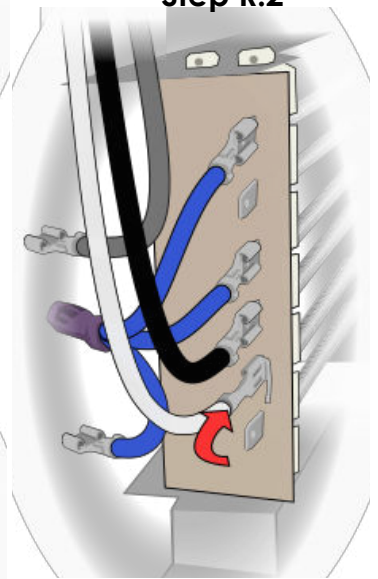


Right-Hand
Element

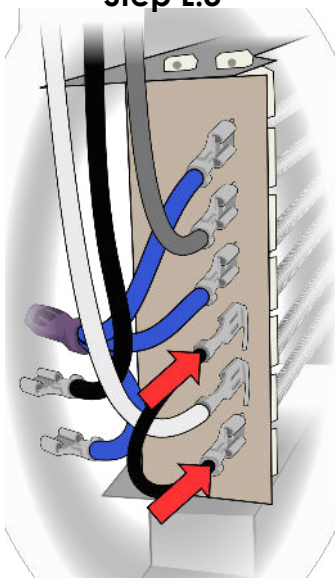
Step L.2



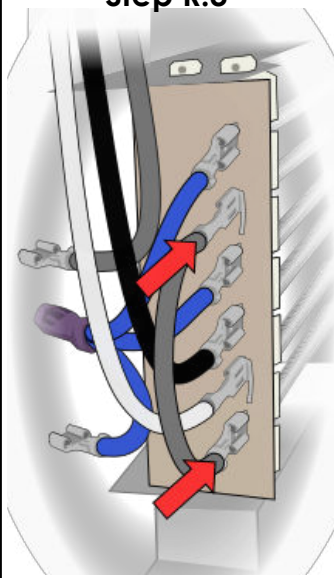
Step R.2



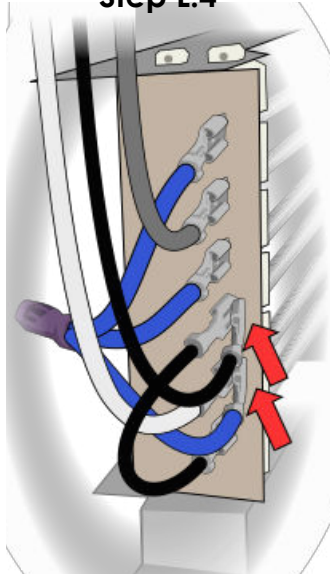
Step L.3



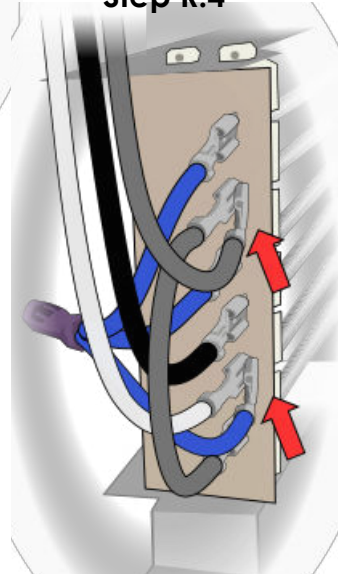
Step R.3



Step L.4

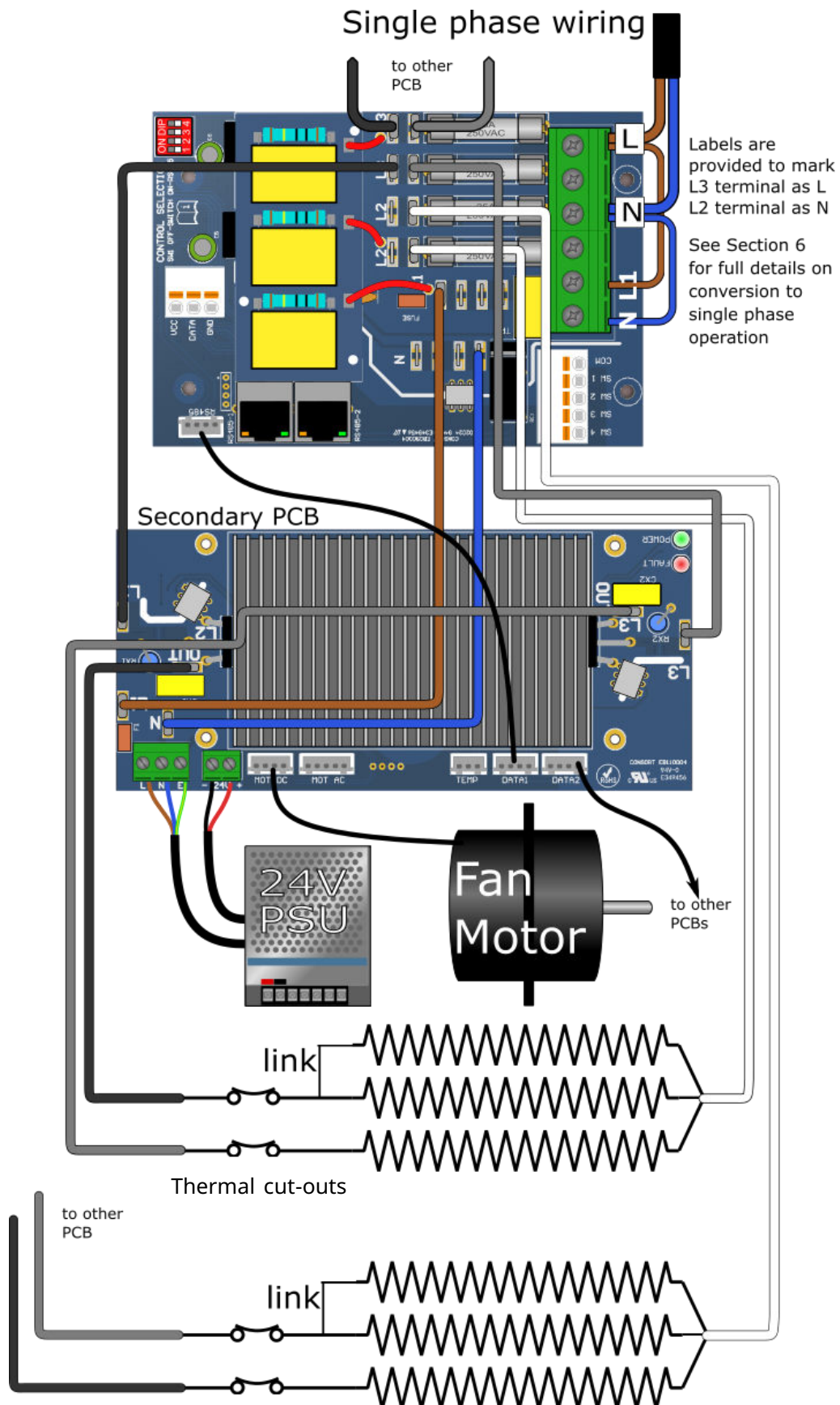


Step R.4



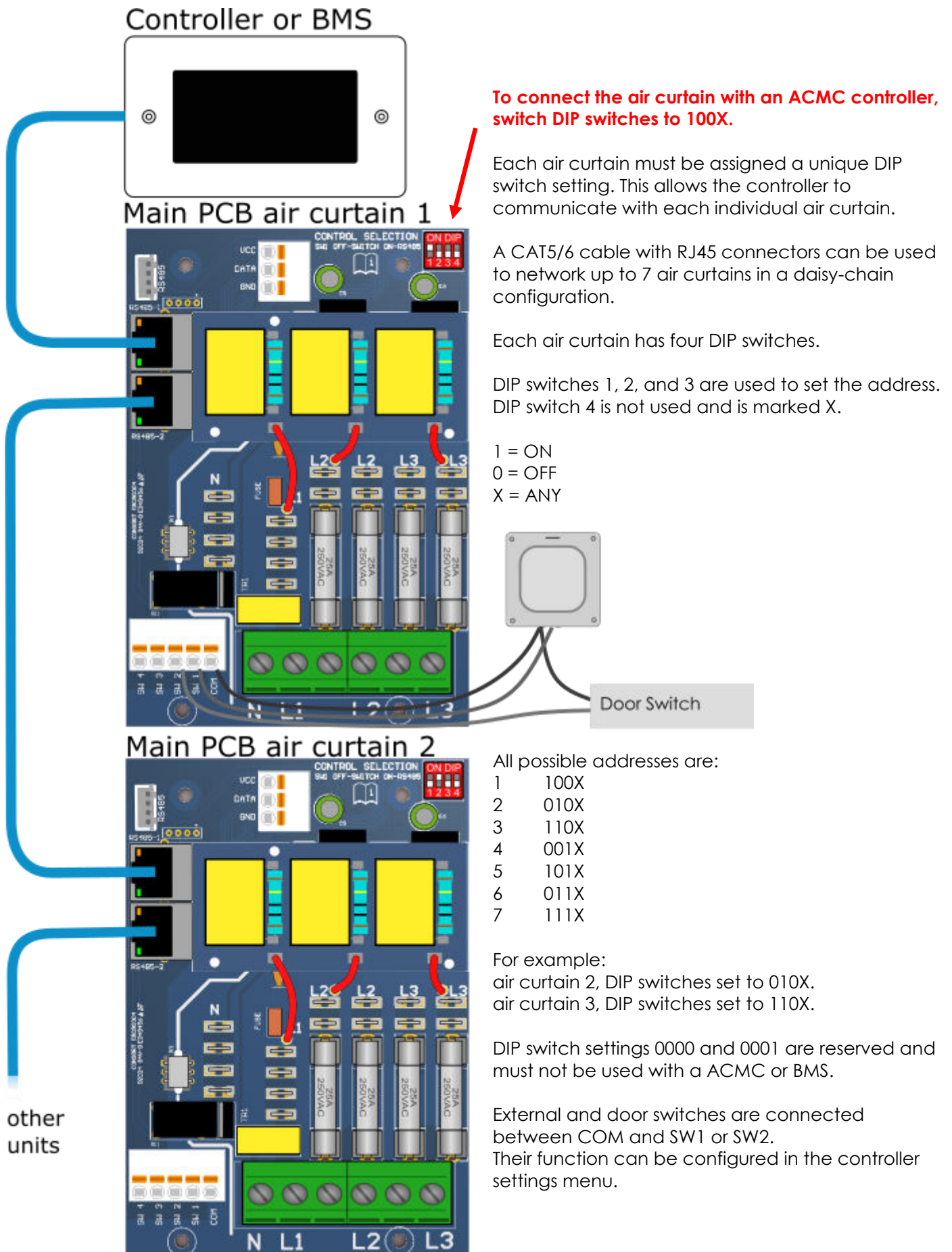
7. Modification for use on single phase

7.3 Modification for use on single phase



8. Network Wiring

8.1 Network Wiring - Touchscreen Controller



8. Network Wiring

8.2 Network Wiring - Mechanical Switches

The air curtain can be controlled by mechanical switches.

To operate the air curtain by mechanical switches, the DIP switches on the main PCB need to be set to 000X.

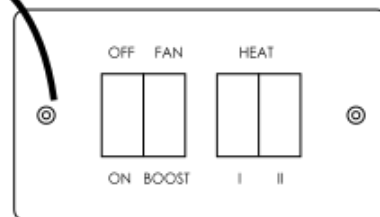
The DIP switch 4 is used to select fan speed range.

For installation height of 2 - 3m, set the DIP switches to 0000.

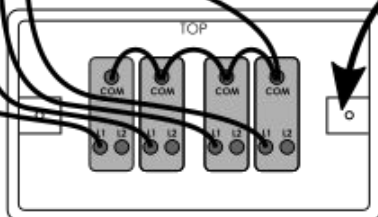
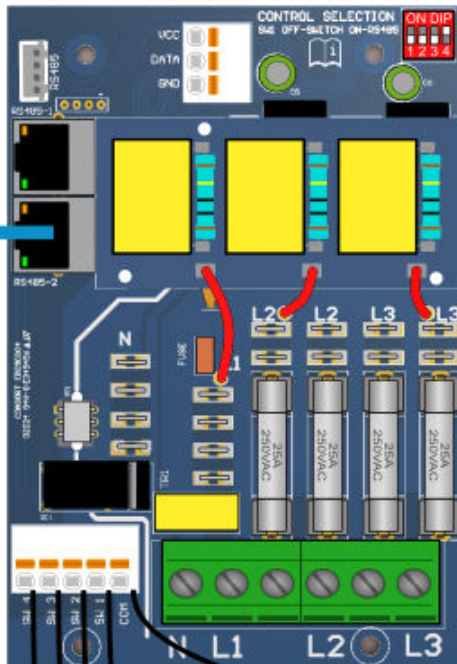
For installation height of 3 - 4m, set the DIP switches to 0001.

1 = ON
0 = OFF
X = ANY

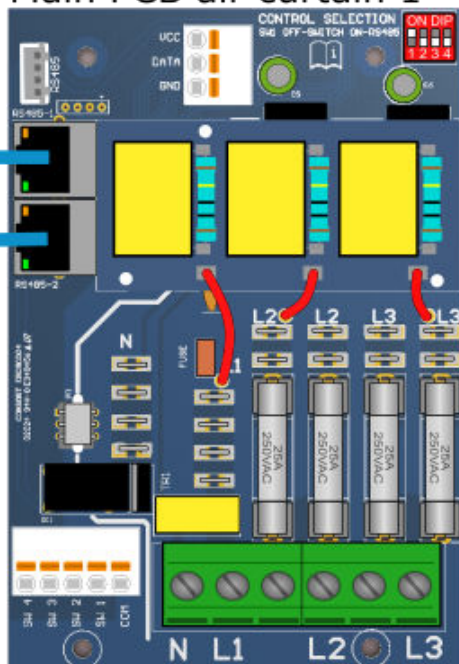
SW1 - on / off
SW2 - low speed / high speed
SW3 - 1/3 heat output
SW4 - 2/3 heat output



Main PCB air curtain 0



Main PCB air curtain 1



CAT5/6 cable with RJ45 connectors can be used to network up to 7 air curtains in a daisy-chain configuration.

The DIP switches on all daisy chained air curtains after the unit with mechanical switches must be set to unique DIP switch addresses.

All possible addresses are:

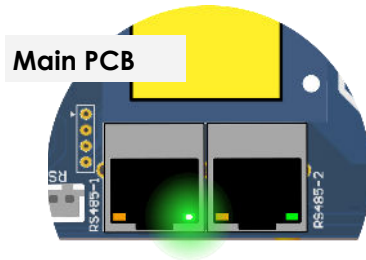
- 0 000X - unit with mechanical switches
- 1 100X
- 2 010X
- 3 110X
- 4 001X
- 5 101X
- 6 011X
- 7 111X

other units

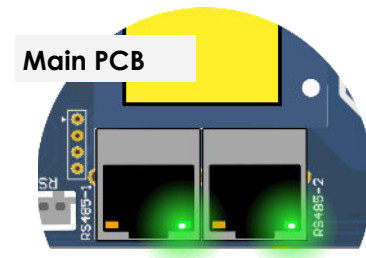
9. Fault detection and status lights

9.1 Fault detection

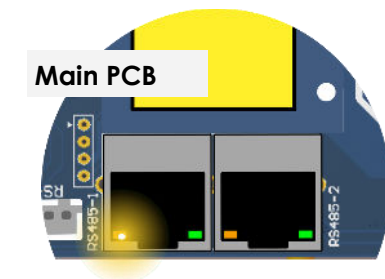
When the air curtains are powered up in standby mode, a green LED on the main board shows that the 12V power supply is working correctly:



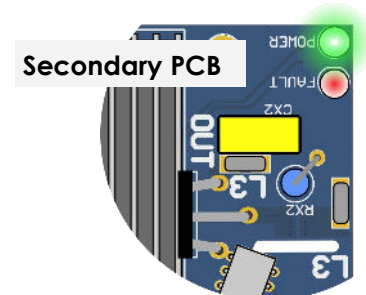
When heat or cold blow is demanded the secondary PCBs are powered. A second LED on the main PCB shows that the second 12V power supply is working correctly:



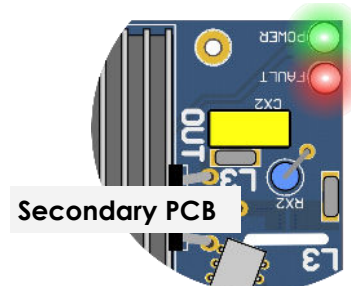
A fault with the auxiliary power is indicated by a flashing orange LED on the main PCB:



A green LED on the secondary PCBs shows that they are receiving 12V power:



The air curtain monitors the fan speed, power output and heatsink temperature. In the event of a fault the red LED on the secondary PCB flashes:



The red LED flashes a number of times and then pauses. The number of flashes indicates the fault.

Number of flashes	Fault
1	Power measurement when triacs switched off: Response: Auto run motor
2	Motor fault Response: Disable heating
3	Triac heatsink overheat: Response: Reduce heating
4	Low power measurement when triacs switched on: Causes: Thermal cut-out operated, blown fuse, missing phase

9.2 Overheat protection reset

The air curtain is equipped with electronic overheat protection and also over-temperature cut-outs. There are four cut-outs on each air curtain. They are located just in front of the element. In the unlikely event of electronic failure, the mechanical cut-outs will switch off power to the heating element. In order to reset cut-outs, isolate the air curtain from power, allow the air curtain to cool, remove the cover and carry out inspection. The cut-outs will reset automatically when unit has been isolated and cooled down.



**THE CAUSE OF CUT-OUTS OPERATING
SHOULD BE INVESTIGATED BEFORE
RESETTING.**



10. BMS Connection MODBUS Protocol

10.1 BMS Connection

The air curtain is compatible with BMS systems using MODBUS protocol. The connection to BMS system can be made using one of the RJ45 connectors. Only one means of control can be used at a time. If BMS is used to control the air curtain, the colour screen controller must not be used.

The BMS can control fan speed and heat output and also read and report the air curtain status. Speed can be set in the range of 600 - 1700RPM in 1RPM steps. If the speed is set below 600 RPM, the heating element is automatically disabled. Care has to be taken when selecting speed. The fan speed should be always correct for the selected heat output. If the speed is too low, the air curtain can overheat.

Heat output can be set in the range of 0 - 100% in 1% steps.

10.2 MODBUS Protocol



The DIP switches 1, 2 and 3 are used to configure each air curtain with a unique address.

RJ45 cable can be used to network up to 7 air curtains in a daisy-chain configuration.

DIP switch setting 000X is reserved for when a controller or BMS is not used.

All possible addresses:

1	100X
2	010X
3	110X
4	001X
5	101X
6	011X
7	111X

RS485 serial half-duplex interface

MODBUS RTU

9600 baud

8 bits

1 start bit

no parity + 2 stop bits

'mark' parity + 1 stop bit

Supported MODBUS function codes:

0x03 read multiple input registers

0x04 read multiple holding registers

0x06 write single holding register

0x10 write multiple holding registers

16 Bit Input Registers:

1 Status

2 Temp 1

3 Temp 2

4 Temp Heatsink

5 Temp External

6 External Switches

Temperatures are formatted as 16 bit signed integers. Units are sixteenths of a degrees Celsius, as used by DS18B20 temperature sensors. The hex value 0xF000 is used to denote an invalid reading.

The status register uses bits to indicate faults:

Bit 0 - overheat

Bit 1 - heatsink overheat

Bit 2 - temp sensor 1

Bit 3 - temp sensor 2

Bit 4 - heatsink temp sensor

Bit 5 - remote temp sensor

Bit 6 - L2 on current low

Bit 7 - L2 off current high

Bit 8 - L3 on current low

Bit 9 - L3 off current high

Bit 10 - motor PSU

Bit 11 - motor

Bit 12 - MCU

Bit 13 - connection

Bit 14 - 12V auxiliary power

Bit 15 - main PCB relay

External switches register uses bits to show the state of switches:

Bit 0 - Switch 1

Bit 1 - Switch 2

Bit 2 - Switch 3

Bit 3 - Switch 4

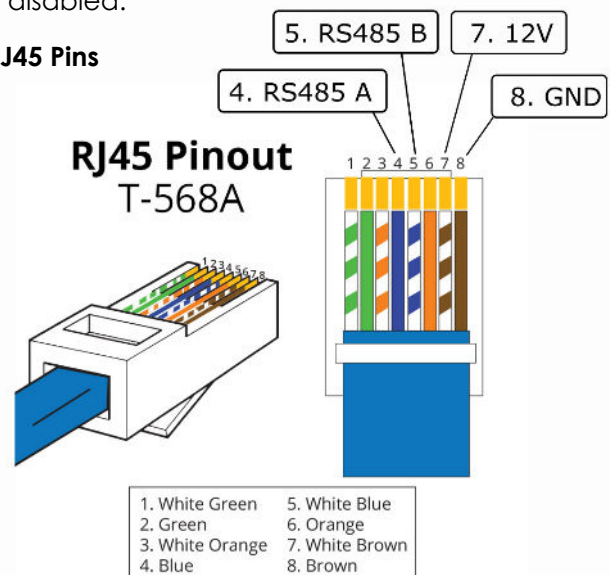
16 Bit Holding Registers:

1 RPM (units revolutions per minute)

2 Power (units percentage 0 -100)

RPM must be set to at least 600, otherwise heating is disabled.

RJ45 Pins



Declaration Of Conformity

In accordance with UK Government Guidance.

WE HEREBY CERTIFY THAT THE APPLIANCES DETAILED HEREON HAVE BEEN INSPECTED AND TESTED, AND CONFORM TO THE REQUIREMENTS OF THE FOLLOWING UK STATUTORY INSTRUMENTS WHERE APPLICABLE:

Electrical Equipment (Safety) Regulations 2016 SI. 2016 1101

Electromagnetic Compatibility Regulations 2016 SI. 2016 No. 1091

Radio Equipment Regulations 2017 SI. 2017 No. 1206

The Ecodesign for Energy Related Products and Energy Information (Amendment) (EU Exit) Regulations 2019. SI. 2010 2617

The Restriction of use of Certain Hazardous Substances. SI. 2012 No. 3032

The Supply of Machinery (Safety) Regulations 2008 (SI 2008/1597)

The Waste Electrical and Electronic Equipment Regulations 2013. SI 2013 No. 3113

Security Requirements for 'Connectable Products' PTSI Act 2022

The Product Security and Telecommunications Infrastructure (Security Requirements for Relevant Connectable Products) Regulations 2023

Transposed standards used:

- | | |
|----------------------------------|---|
| • BS EN 55014 (2006) | • EN 50663 (2017) |
| • BS EN 301489.1 & .3 | • EN 60730-2-9 (2010) |
| • BS EN 300220.1 & .2 | • EN 60730-1 (2011) |
| • BS EN 60730.2.9 | • ETSI EN 300 220-1 V3.1.1 (2017-02) |
| • BS EN 60335.1 (2012) | • ETSI EN 300 220-2 V3.2.1 (2018-06) |
| • BS EN 60335.2.30 (2009) | • ETSI EN 301 489-1 V2.2.2 (2019) |
| • ETSI BS EN 303645 | • ETSI EN 301 489-3 V2.1.1 (2019) |

PART NUMBER AND DESCRIPTION OF APPLIANCE: RAC1306RX

NAME OF RESPONSIBLE PERSON:

POSITION:

DATE:

DAVID O'SULLIVAN

OPERATIONS MANAGER

24/06/24



FM 12671

CONSORT EQUIPMENT PRODUCTS LTD.

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WWW.CONSORTEPL.COM