

SCREENZONE

LARGE COMMERCIAL AIR CURTAINS

CA10HL

CA15HL

CA20HL

CA10HLG

CA15HLG

CA20HLG

CA10HLB

CA15HLB

CA20HLB

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 authorised 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 these 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 4m.

2. Introduction

2.1 Introduction

This instruction manual describes the ScreenZone Large Commercial surface mounted range of air curtains. They are designed for positioning above doorways of retail or commercial premises up to 4m ceiling height.

The air curtains comprise multiple modular blower units 500mm wide and with nominal maximum power output of 6kW 3Ph 415V.

Models are available in 1000mm, 1500mm and 2000mm lengths, made up of 2, 3 and 4 blower units. For wider doorways, up to 7 air curtains can be easily interconnected using CAT5/CAT6 RJ45 networking cable.

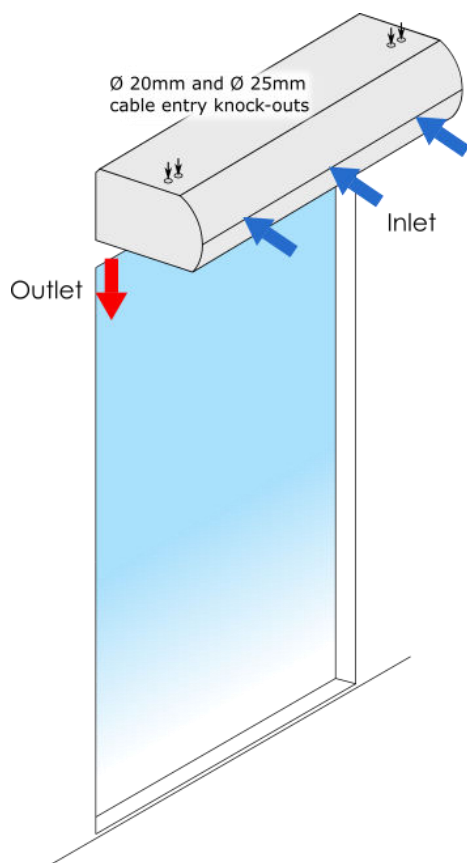
It is recommended that this control cable is run separately within its own trunking to avoid external interference.

The air curtain can be controlled by Touchscreen controller (supplied with the air curtain), mechanical switches (not supplied) or BMS.



WARNING:

THIS AIR CURTAIN SHOULD **NOT** BE INSTALLED WHERE THERE IS A **CORROSIVE ATMOSPHERE** OR **EXCESSIVE DUST**.



2.2 Mechanical switch Controller

Optional HE8408 mechanical switch. (not supplied with the air curtain). More details in section 5.1 Installer wiring. This controller will provide 2 fan speeds and 3 heat setting options.



2.3 Touchscreen Controller

Each air curtain is supplied with an electronic controller giving option for 8 fan and 8 heat settings, it can be mounted up to 50m from the air curtain. Optional BMS control, remote thermostats and door interlocks can be installed.

The electronic touchscreen controller shown on the picture below allows the user to control either a single air curtain, or a network of up to 7 air curtains with the same settings.

The controller is designed to be mounted on a surface double gang back box, and is powered by an RJ45 connection. **The controller will not fit metal or dry lining back box.**

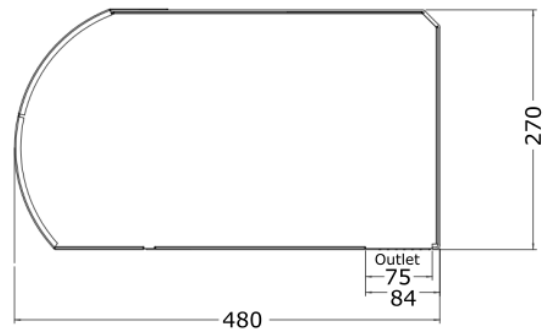
The cable length between the base unit and the controller can be up to 50 metres.



3. Dimensions

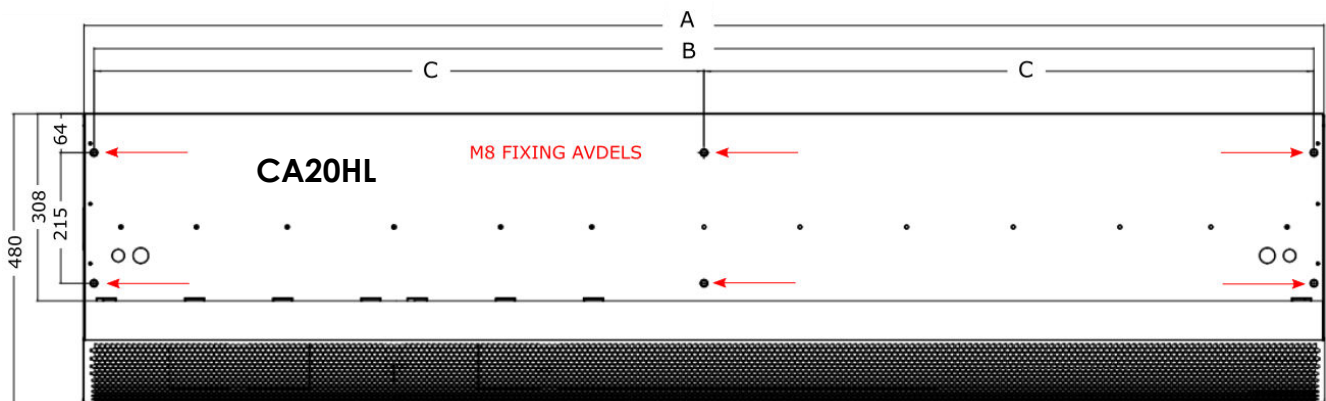
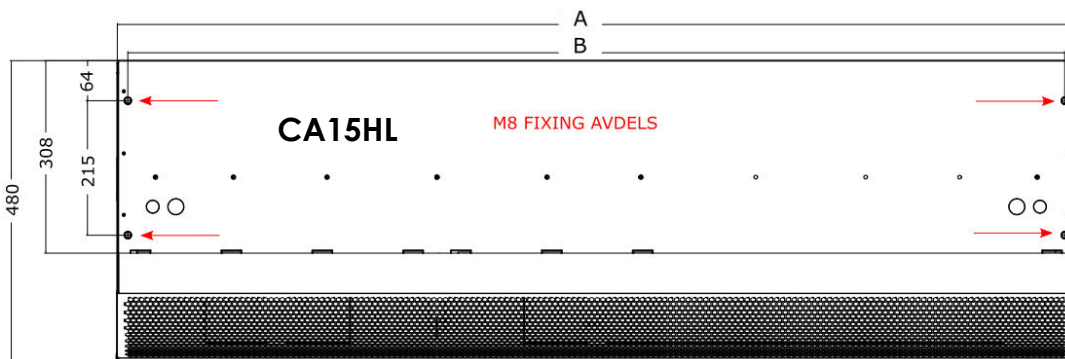
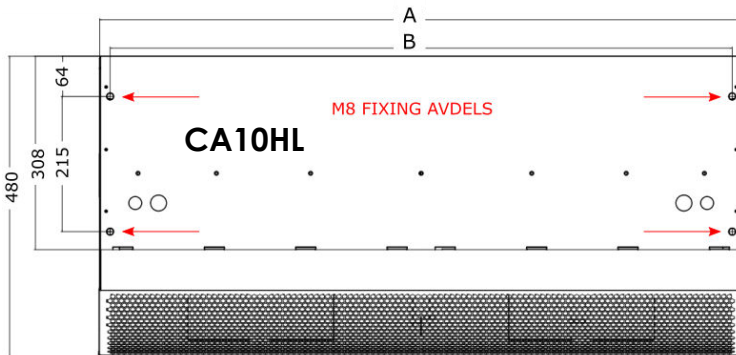
3.1 Air curtain dimensions and fixing locations

	A	B	C
CA10HL	1024	990	
CA15HL	1536	1502	
CA20HL	2049	2014	1007



M8 threaded fixings are located as shown.

Ø20mm & Ø25mm knock-out fixings are also available alongside the threaded fixings.

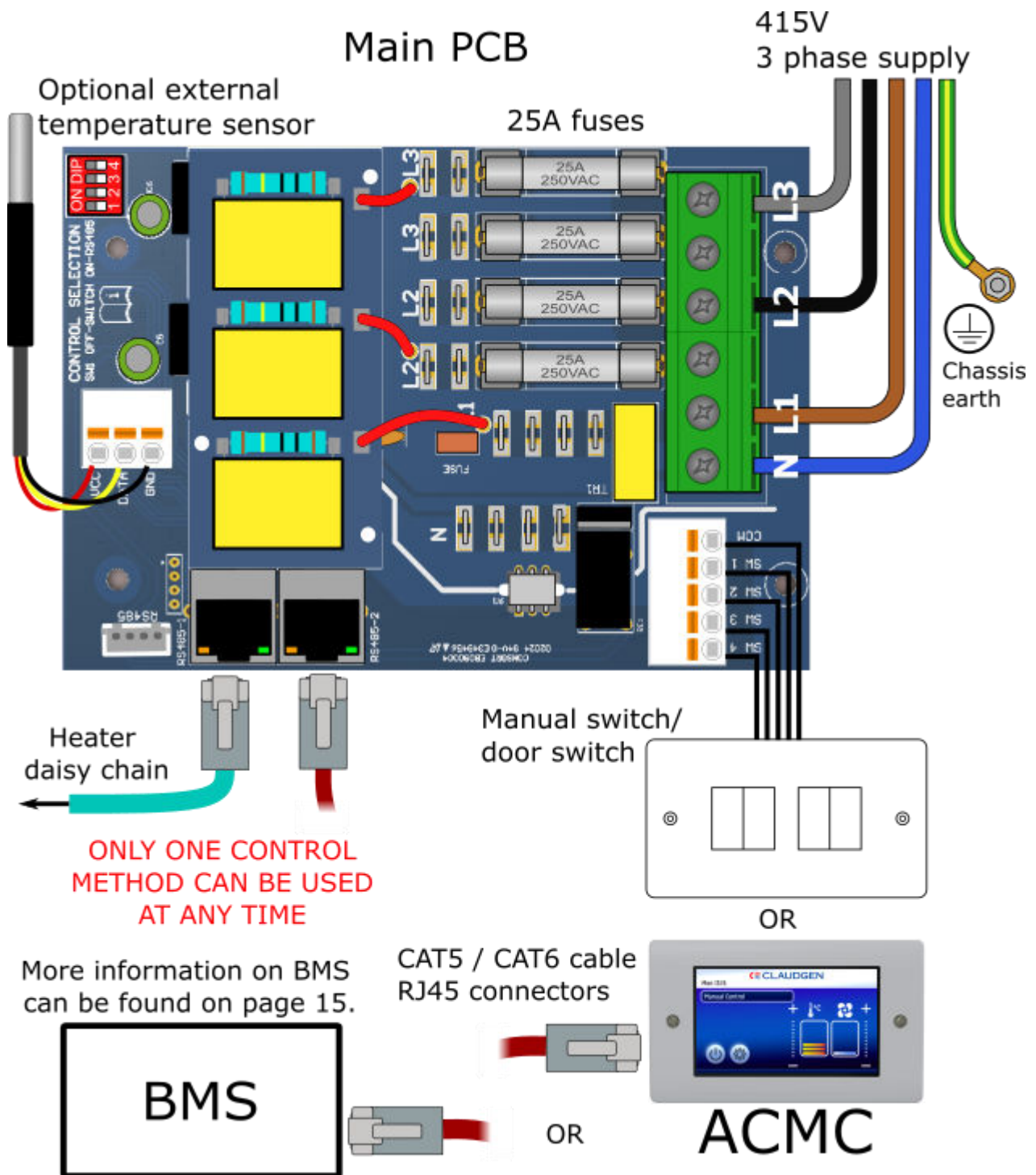


4. Technical Specifications

4.1 General Data			CA10HL	CA15HL	CA20HL
Maximum height		M	4.0		
Door width		M	1.0	1.5	2.0
Heat medium			Electric heating element		
Heat output selected at the installation		kW	8 / 12	12 / 18	16 / 24
Fan type			EC Centrifugal 133 x 180		
Fan control			Electronic fan speed control		
Switching type			Colour Screen Controller with Touch Screen		
Weight		kg	62	77	93
Electrical Data					
Supply voltage			415V 3ph 50Hz		
Total load		kW	12	18	24
Max current per phase		A/pha	13 / 16.5	16.5 / 25	25 / 34
Max motor power		W	196	294	392
External fuse size amps		A/pha	16 / 20	20 / 32	32 / 40
Controller			Touch colour screen controller		
Controller wiring			CAT5 / CAT6 with RJ45 connectors		
Cable terminal size			10mm² Max		
Mains terminal block position			Corner of base unit. Terminals N; L1; L2 & L3		
Control terminal position			Corner of base unit RJ45 type		
Air Data					
Air volume	Max speed	m³/h	1900	2800	3700
Air velocity	Max speed @ 0M	m/s	10		
	Max speed @ 1M	m/s	5.6		
	Max speed @ 2M	m/s	3.6		
	Max speed @ 3M	m/s	3		
Delta T @ 15°C	Max heat Max speed	°C	31		
Noise level @ 3m	Max speed	dBA	66		
	Min speed	dBA	54		
Dimensional Data					
Length		mm	1024	1536	2049
Width		mm	480		
Height		mm	270		

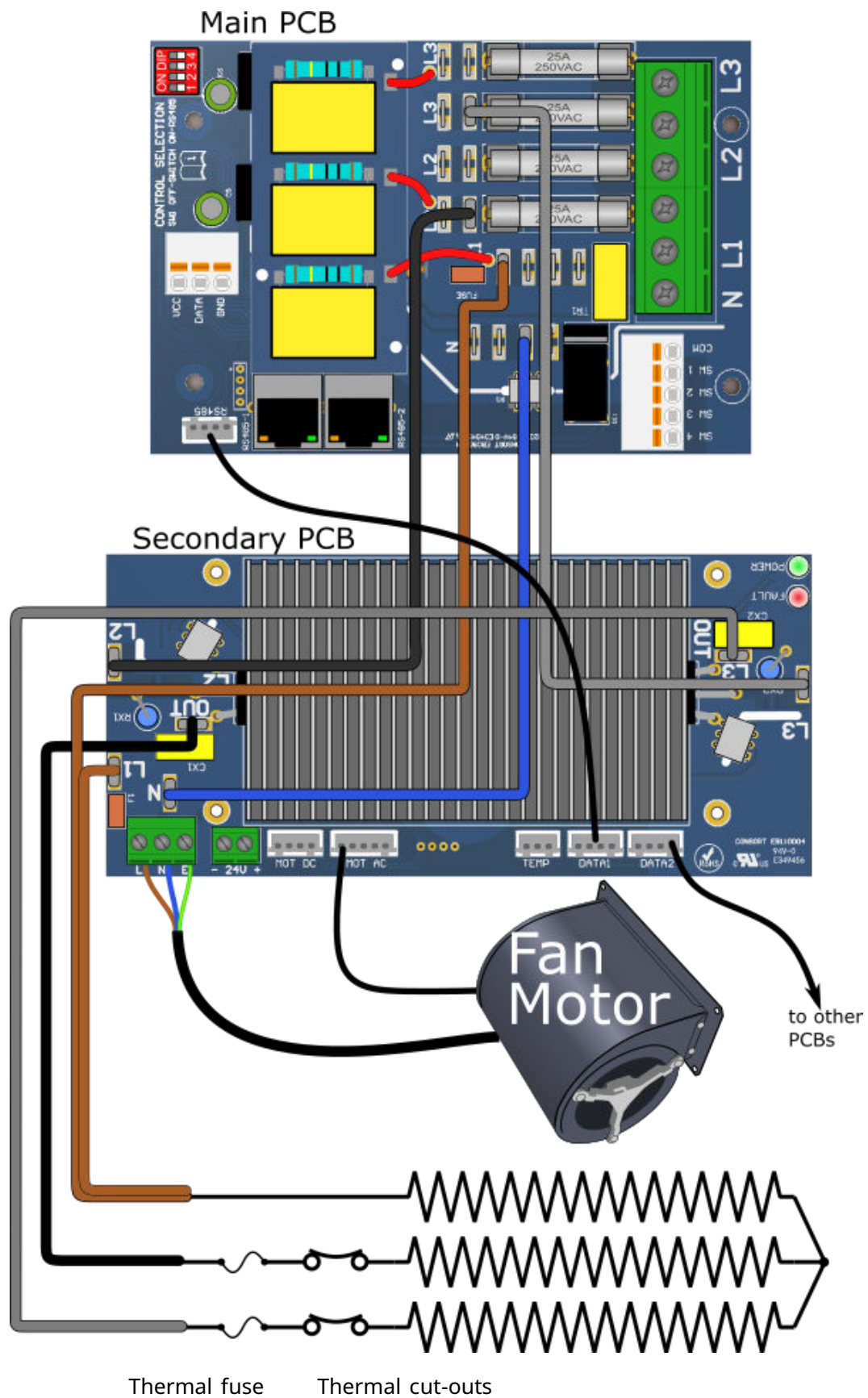
5. Wiring Details

5.1 Installer Wiring



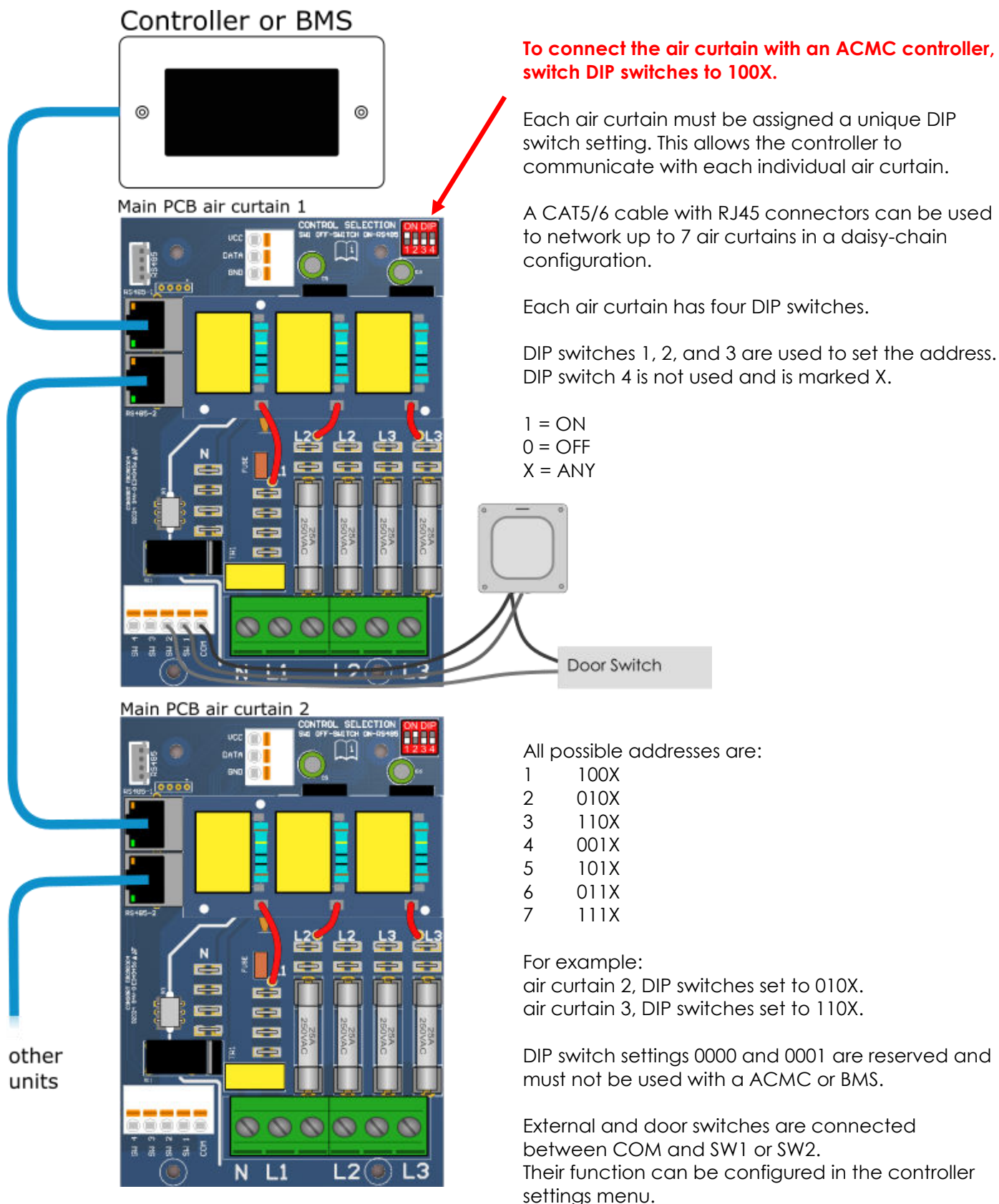
5. Wiring Details

5.2 Factory Wiring



5. Wiring Details

5.3 Network Wiring - Controller



5. Wiring Details

5.4 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.

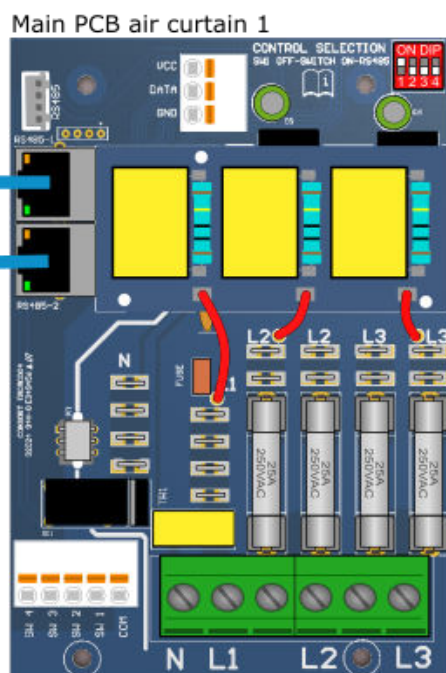
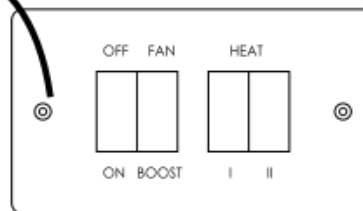
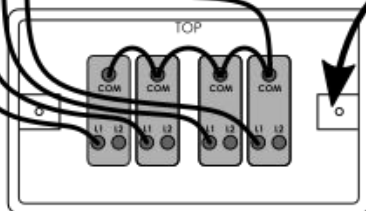
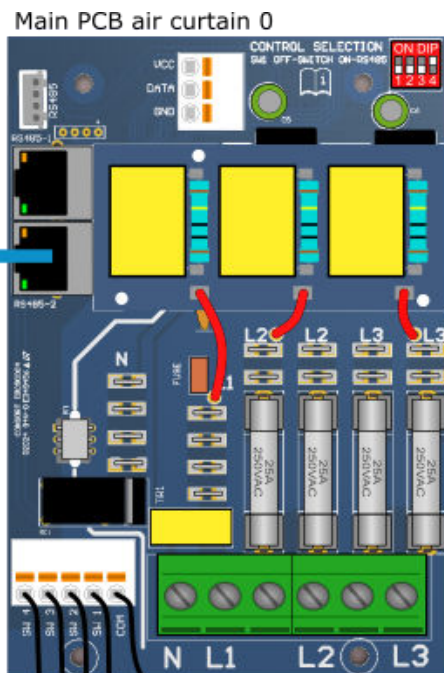
The DIP switch 4 is used to select fan speed range.

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



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

6. Heat Output Configuration

The air curtain is supplied configured for standard power output.

RAC10HL - 8kW
RAC15HL - 12kW
RAC20HL - 16kW

This configuration is suitable for installation height from 2 to 3m or where maximum power usage must be limited for other reasons. As supplied, the each blower unit is configured for 4kW power output. Cable links are supplied to increase the output to the rated 6kW. Once the links are installed the air curtains are configured to maximum power output.

RAC10HL - 12kW
RAC15HL - 18kW
RAC20HL - 24kW

This configuration is suitable for installation height from 3 to 4m or in areas with more draught where higher fan speed is required.

Two cable links are supplied per blower unit. These are 100mm x 2.5mm² with female spade connector terminations. Grey and Black PVC sheathed cables are intended for use with L2 and L3 phases.

In each blower unit, locate the end of the heating element, where the cables connect. Before modification it will look like fig. 1.

The cable links are installed as shown in fig. 2.

Push the spade connectors over the free terminals without twisting until it clicks and locks into place.

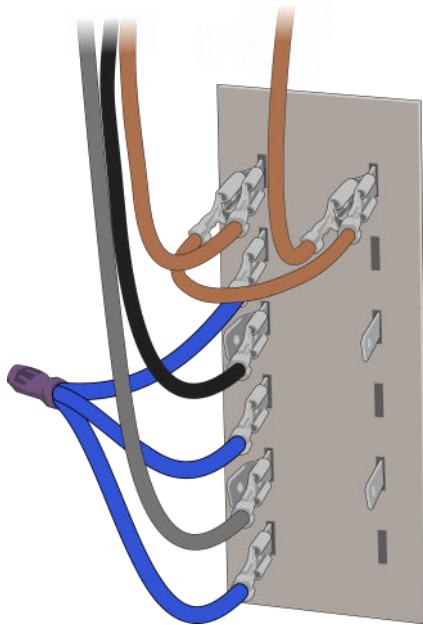


Fig. 1 Heating Element connection as supplied

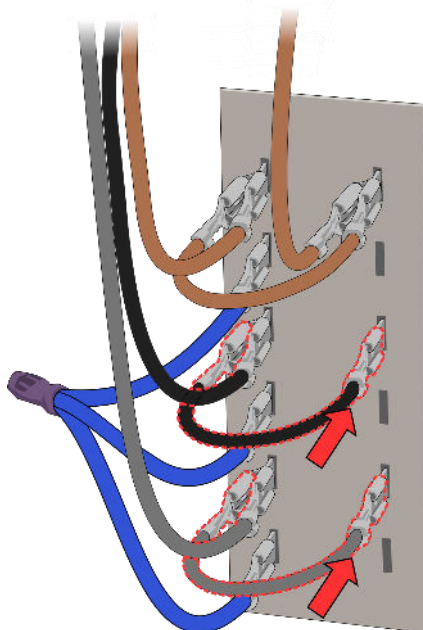


Fig. 2 Heating Element with links installed

7. Disassembly / Assembly

To access the electrical connections, remove four 2.5mm hex head screws as pictured, then lift the cover ~5cm. (Fig.1)

Pull the unscrewed cover in the direction pictured to remove. (Fig.2)

This will slide the locator holes off two internal locator studs and give access to the electrical connections. (Fig.3)

This can be repeated to remove each cover from the unit if needed.

These steps can be reversed to put on the cover back on.

Each panel reveals a modular blower which can be replaced if needed.

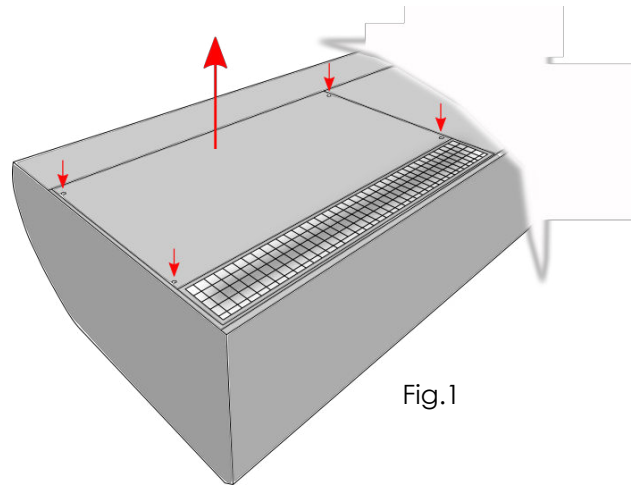


Fig.1

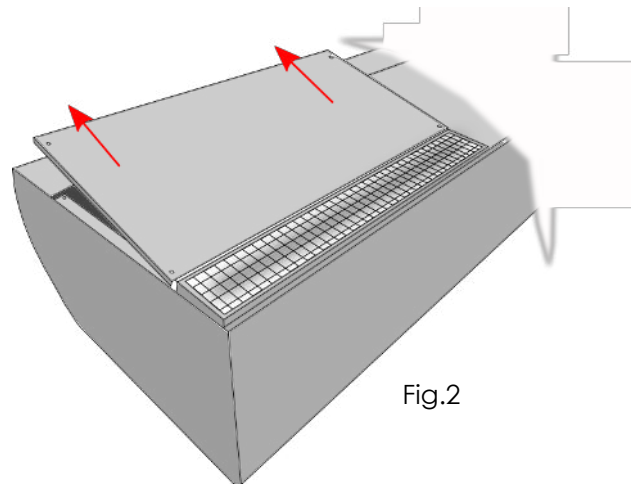


Fig.2

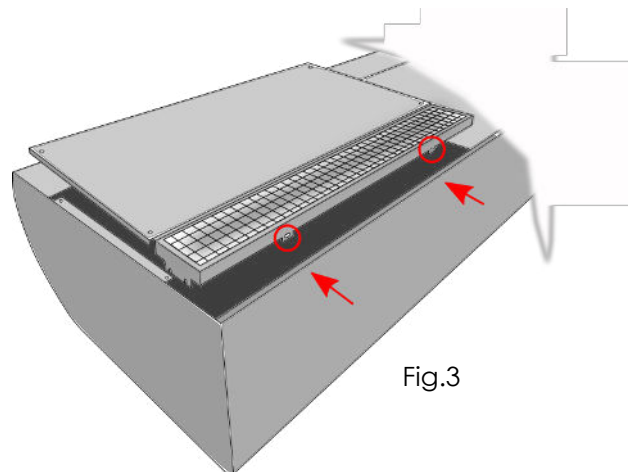


Fig.3

8. Installation Details

8.1 Mounting

All units should be installed horizontally directly over the door opening. It is recommended that the air curtain is installed on the inside of the building, within the open room space.

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.

8.4 Installation - Wiring

With covers off, connect the electrical supply and controller interconnecting wiring to the appropriate terminals on the controller base unit (See relevant wiring diagram section 5.1).



**ENSURE AIR OUTLETS ARE AS CLOSE
AS POSSIBLE TO DOOR OPENING**



8.2 Electrical Supply

There are four cable entries located on the top of the air curtain. The hole sizes for cable entries are 20mm and 25mm. All cable entry holes are blanked off.

8.3 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.

Weight of the unit is specified in section 4.
Technical Specifications

Step 1

Disassemble the air curtain following section 7.

Step 2

Either drop rods or catenary wire can be used to fasten the air curtain to the ceiling support structure. The mounting points can be seen in section 3 marked 'M8 fixing avdels'.

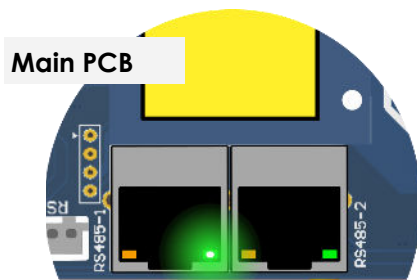
Step 3

Refit grille assembly and panels following section 7.
Ensure the grille sits flush against the ceiling.

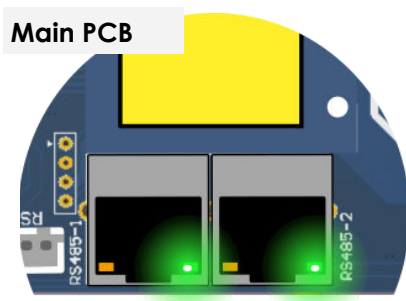
9. Fault detection and status lights

9.1 Fault detection

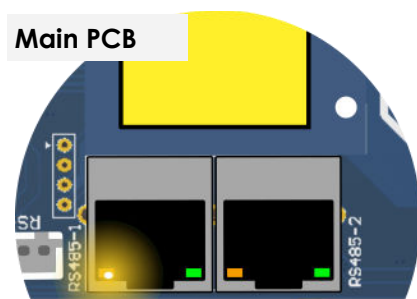
When the air curtains are powered up in standby mode, a green LED on the main board shows that the 12V power supply is working correctly:



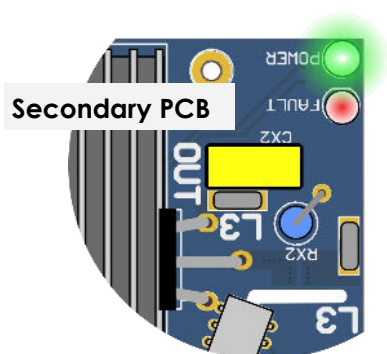
When heat or cold blow is demanded the secondary PCBs are powered. A second LED on the main PCB shows that the second 12V power supply is working correctly:



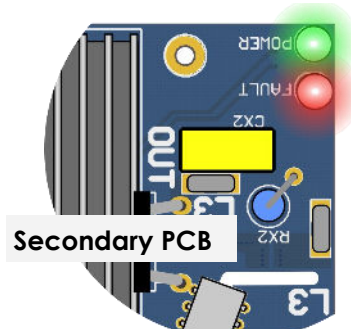
A fault with the auxiliary power is indicated by a flashing orange LED on the main PCB:



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

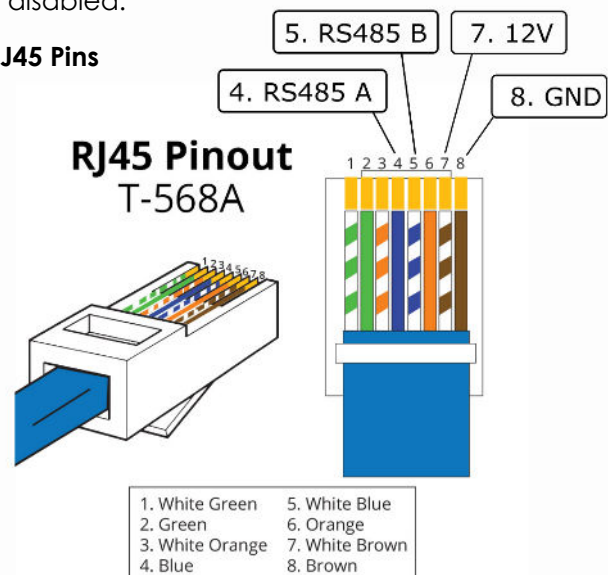
16 Bit Holding Registers:

1 RPM (units revolutions per minute)

2 Power (units percentage 0 -100)

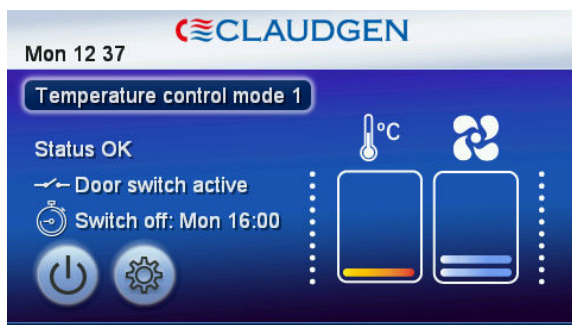
RPM must be set to at least 600, otherwise heating is disabled.

RJ45 Pins



11. Touchscreen Controller Operation

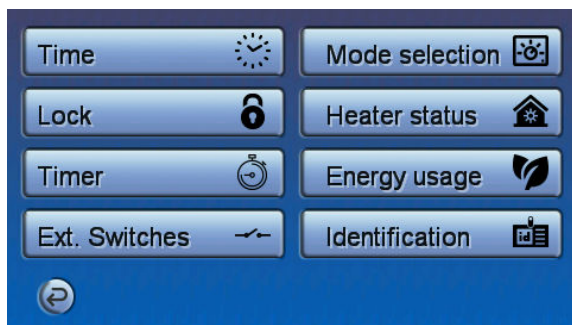
11.1 Home Screen



The home screen provides information about the air curtain status and all relevant functions.

- Time
- Operating mode
- Heater status
- Door switch status
- Timer status
- Heat output
- Fan speed
- ON / Stand-by button
- Settings menu button

11.2 Settings menu



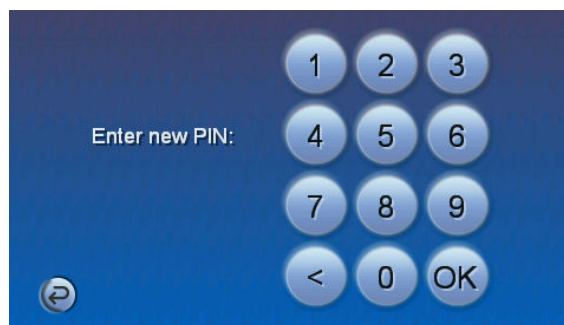
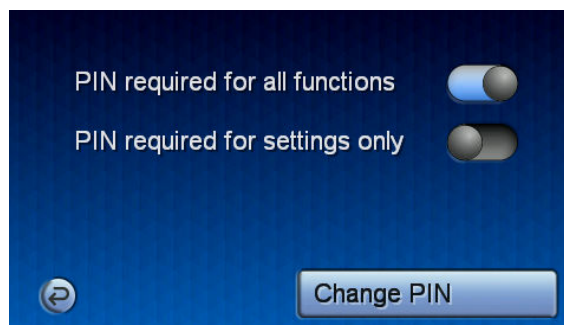
All functions and settings are available from this menu.

11.3 Time



The time can be set using the arrow buttons. A coin battery CR1220 maintains the time when power is interrupted. Time is displayed on the home screen and needs to be set to use the timer function.

11.4 Lock

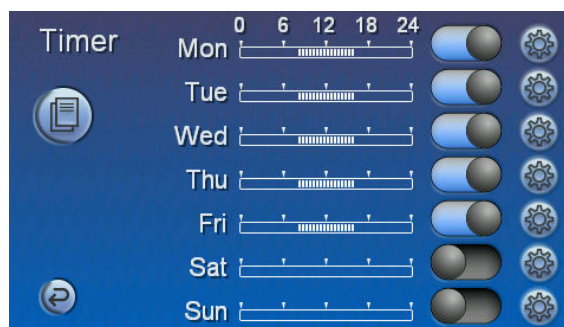


PIN function can be enabled to prevent unwanted operation of the air curtain or changing the settings.

The PIN can be completely disabled, enabled for settings only or all functions.

The default Pin is set as **1234**, but can be changed using the Change Pin button. If the PIN is forgotten contact Consort technical help.

11.5 Timer

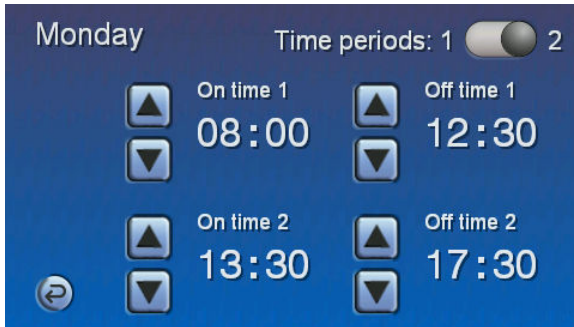


The 7 day timer function allows scheduling automatic switching between on and stand-by. Each day can be individually enabled or disabled. The timer allows up to two periods of operation per day. The white bars indicate when the air curtain is timed to switch on.

Use the settings buttons to set up the time for each day (see next page), and the copy button to copy settings from one day to another.

11. Touchscreen Controller Operation - cont.

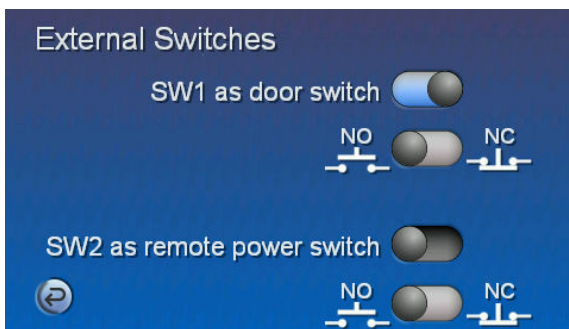
11.6 Timer - time schedule



There are 2 timer periods for each day available. Tapping the slider in the top right corner will change between 1 or 2 time periods.

The times for the first time periods are on the top of the screen, the times for the second timer period are on the bottom of the screen. Times can be adjusted in 15 minute intervals using the buttons. When the timer is active, an icon will appear on the home screen giving information about the next switch time.

11.7 External switches



There is a provision for 2 remote switches to be wired into the air curtain. The switches must be voltage free type, NO or NC configuration.

SW1 can be connected to a door switch or occupancy sensor installed in the door area. When the function is activated, the door switch will enable the air curtain when the door is open and disable it when the door is closed. The second slider is used to configure the system for the correct switch type. When the air curtain is disabled by the door switch, the air curtain will operate at a low fan speed. This will allow for a fast start-up when the door is opened. When SW1 is active, the home screen will show the status of the door switch.

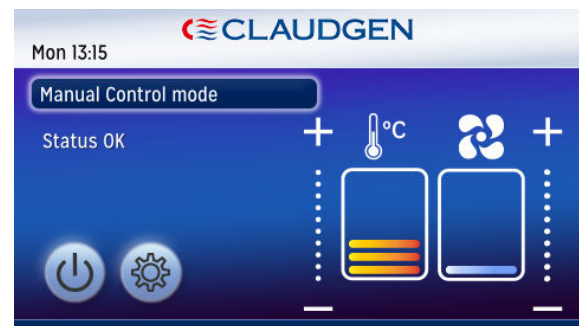
SW2 is intended for a remote switch to be used to disable the air curtain from a remote location. Usually this would be a simple BMS or external timer connection. Once disabled using remote switch, the air curtain can't be controller by the touchscreen controller and will remain disabled until enabled remotely.

11.8 Operating Mode selection

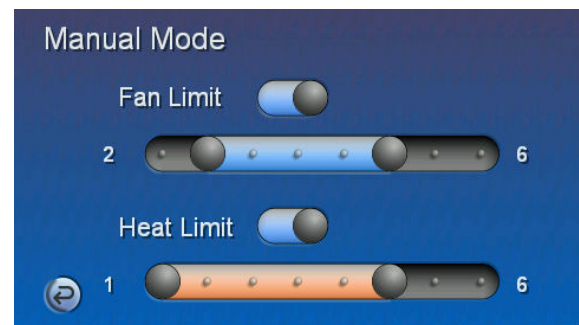


One of four operating modes can be selected. Each mode uses a different method for selecting heat and fan settings when the air curtain is not in stand-by mode. Use the settings button to configure each mode.

11.9 Manual Mode



In manual mode user can select required fan and heat output by tapping + or - symbols on the home screen next to the fan and heat bars.



There are 8 fan speeds and 8 heat settings available. It is possible set maximum and minimum limits for fan speed and heat output. Once limits are set and functions activated, only limited fan speed and heat output will be available on the home screen when in manual mode.

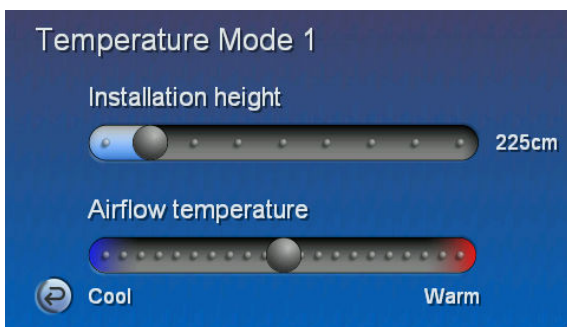
11. Touchscreen Controller Operation - cont.

11.10 Automatic Mode



Automatic Mode is the best choice for easy to set-up efficiency and comfort. Set the height by moving slider to the required position. The air curtain will run at optimum fan speed and heat output based on the inlet temperature.

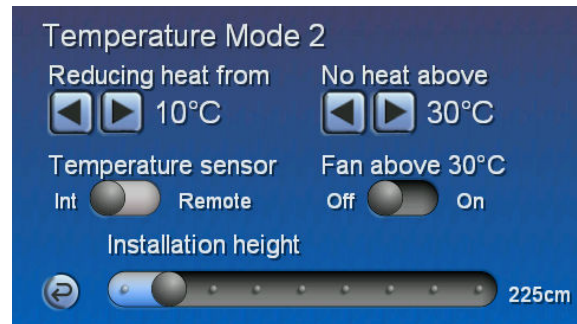
11.11 Temperature Mode 1



Temperature Mode 1 is very similar to Automatic Mode, with the additional option for adjusting the airflow temperature. With the airflow temperature set in the middle of the scale, this is equivalent to Automatic Mode.

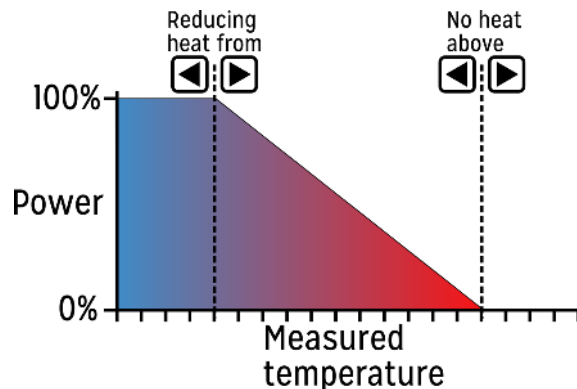
In certain situations, when required, airflow can be increased or decreased by increasing or decreasing the set installation height. Using a higher setting for the installation height will make the air curtain less energy efficient.

11.12 Temperature Mode 2



This operating mode is suitable for situations where the air curtain is used to maintain the room temperature or where the requirement is to adjust the heat output based on the indoor/outdoor temperature.

This operating mode can use either the internal or the optional external temperature sensor.



The temperature on the left defines the starting point below which the air curtain uses full power. The temperature on the right defines the point above which the air curtain doesn't produce any heat. As the measured temperature rises the heat output is gradually reduced until the air curtain doesn't produce any heat.

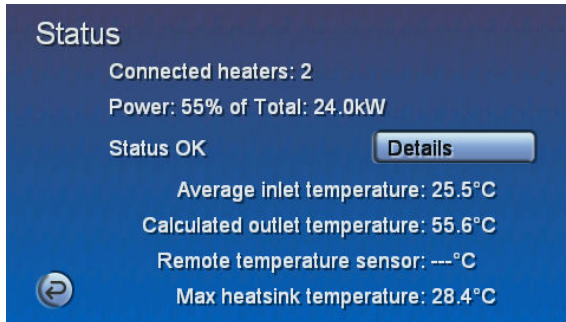
Using the internal temperature, this mode can be used to maintain room temperature.

With a remote sensor installed outside, this mode can be used to compensate for external temperature.

There is also an option to select fan function after the air curtain stops producing heat. Fan can be set to turn off after the air curtain stops producing heat or run all the time.

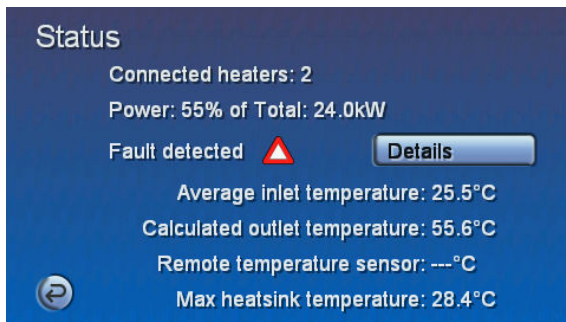
11. Touchscreen Controller Operation - cont.

11.13 Heater status

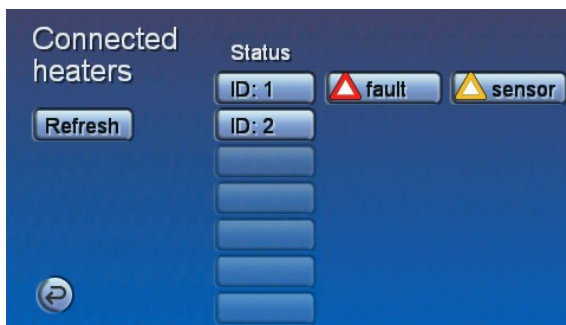


The Status screen provides an overview of values from all connected air curtains. The air curtains need to be run before some of the values can be calculated.

In the event of a fault a red warning triangle is displayed:



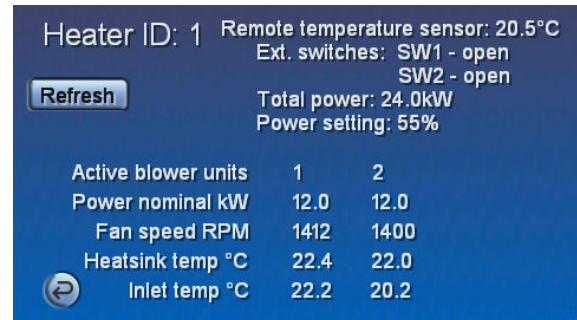
More details are available when tapping the details button. The detailed status screens are primarily for installers or engineers to help with installation or fault diagnostics.



The connected heaters screen shows all of the currently connected air curtains, in order of address ID. Air curtains are connected when the controller is first powered up. In order to connect to newly powered air curtains, press Refresh to search for them.

For each connected air curtain, up to 3 detailed status screens are available. These are general status, faults and sensor screens.

The links to the faults and sensor screens are hidden when no faults have been identified.



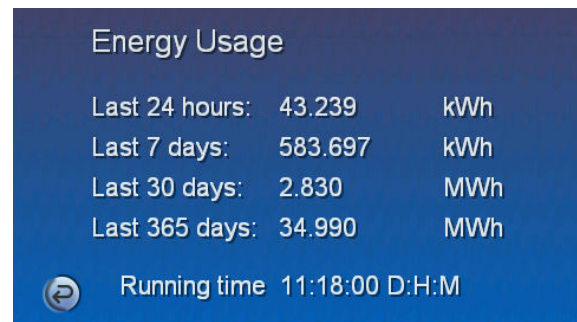
The general status screen shows details about the air curtain and all of the internal blower units.

The air curtain needs to be run before some of the values can be calculated.

The faults screen can provide detailed diagnostic of faults for each internal blower unit.

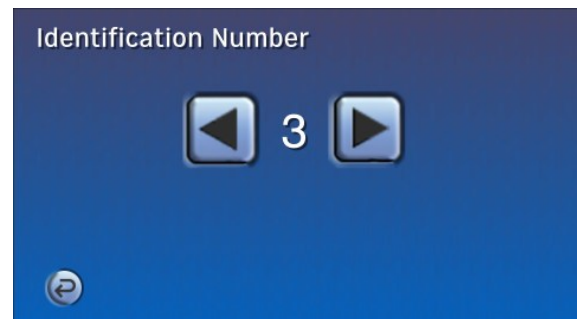
The sensor screen shows the status of the temperature sensors.

11.14 Energy usage



The energy usage screen provides information related to energy used from the day the air curtain was installed. The values are calculated based 3PH 400V and so will differ from actual energy usage when mains voltage is lower or higher.

11.15 Identification



User can set ID number for controller identification. This number is shown on the left hand corner of the home screen. This feature is useful in situations where there is more than one controller side by side.

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

Transposed standards used:

- BS EN 55014-1:2021
- BS EN 301 489-1 & -3
- BS EN 300 220-1 & -2
- BS EN 60730-2-9:2019
- BS EN 60335-1:2012 + A15:2021
- EN 60335-2-30:2009 + A1:2020
- ETSI EN 303 645 V2.1.1 (2020)

PART NUMBER AND DESCRIPTION OF APPLIANCE:

CA10HL, CA15HL, CA20HL

NAME OF RESPONSIBLE PERSON:

DAVID O'SULLIVAN

POSITION:

OPERATIONS MANAGER

DATE:

25/03/26



FM 12671

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