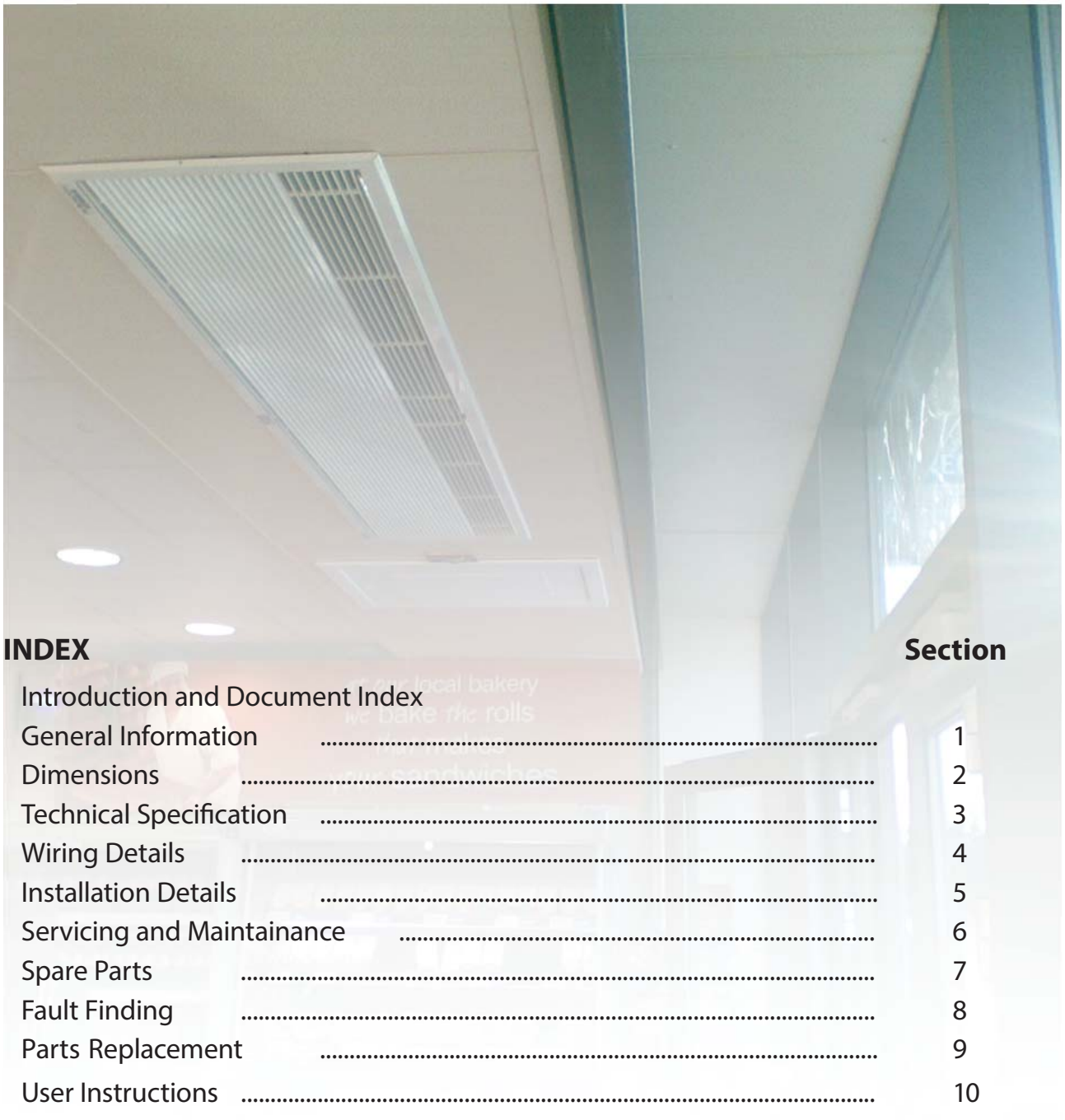
AIRBLOC

ACR Recessed AirCurtain

Electrically Heated, Ambient & LPHW

Installation and Operating Manual



INDEX **Section**

WARNINGS

1 This appliance must only be installed by a competent person in accordance with the requirements of the Codes of Practice or the rules in force.
2 All external wiring MUST comply with the current IEE wiring regulations.
3 Warning this appliance must be earthed.

CE

Part No. 702020

Introduction.

Welcome to the range of Airbloc ACR Recessed Air Curtain. Local regulations may vary in the country of use and it is the installers responsibility to ensure that such regulations are satisfied

All installation and assembly procedures must be carried out by suitable competent persons. Commissioning and service procedures must be carried out by suitable qualified persons to the statutory regulations in the country of use.

When installing, commissioning and servicing is undertaken on these heaters due care and attention is required to ensure that working at height regulations are adhered to at the mounting heights specified.

All Dimensions shown are in mm unless

PLEASE READ this document prior to installation and use. The safety of this heater is guaranteed only by the correct usage in accordance with these instructions, therefore it is recommended that they are retained for future reference.

The manufacturer reserves the right to alter specifications without prior notice.

Any reference made to Laws, Standards, Directives, Codes of Practice or other recommendations governing the application and installation of heating appliances and which may be referred to in Brochures, Specifications, Quotations, and Installation, Operation and Maintenance manuals is done so for information and guidance purposes only and should only be considered valid at the time of the publication. Benson Heating cannot be held responsible from any matters arising from the revision to or introduction of new Laws, Standards, Directives, Codes of Practice or other recommendations.

IMPORTANT NOTICE TO INSTALLERS

Installers should satisfy themselves that the gas pipework installation is carried out in accordance with all current legislation, Codes of Practice and recommendations .

Additionally it may be necessary to protect the gas valves which form part of the heater or burner assembly from potential pipe contamination particularly, but not exclusively, where copper gas pipework is used.

In instances where copper pipework is to be used for all or part of a gas pipework installation, including short length final connections then we advise that installers consult with gas supplier or provider and satisfy themselves what additional precautions may be necessary

Document Index.

1. Installation Requirements.

Isolate any electrical supply to the heater and controller before proceeding.

1.1 Compliance notices

The Airbloc ACR Recessed Air Curtain detailed herewith are manufactured by Nortek Global HVAC (UK) Ltd. within a strictly controlled quality environment within the parameters of ISO 9001.

These instructions are only valid if the following country code is on the appliance GB. IE. If this code is not present on the appliance, it is necessary to refer to the technical instructions which will provide the necessary information concerning the modification of then appliance to the conditions of use for the country.

The Aibloc range has been tested and assessed for compliance with the following European Directives.

Machinery Directive:	(2006/42/EC)
Low Voltage Directive:	(2006/95/EC)
Electromagnetic Compatibility Directive:	(2004/108/EC)
Product Liability Directive:	(85/374/EEC)

The manufacturer has taken reasonable and practical steps to ensure that Airbloc ACR Air Curtains are safe and without risk when properly used. These air curtains should only be used in the manner and purpose for which they were intended, and in accordance with the recommendations detailed herewith.

The ACR Air Curtains have been designed, manufactured, assembled, inspected, and tested, with safety and quality in mind, there are certain basic precautions which the installer and user should be aware of, and they are strongly advised to read the appropriate sections of the information pack accompanying the heater, prior to installation or use.

Nortek Global HVAC (UK) Ltd. supports all new products being supplied to their customers with a comprehensive information pack; this clearly defines mandatory instructions for the safe installation, use, and maintenance, of the appliance(s).

Where proprietary items are incorporated into Airbloc products, detailed information and instructions are also provided as part of the information pack.

It is the responsibility of the installer, owner, user, or hirer, of such products supplied by Nortek Global HVAC (UK) Ltd., to ensure that they are familiar with the appropriate information/ manuals, supplied by the manufacturer, and that they are suitably aware of the purpose of the manuals and the safety instructions. In addition, operators must be suitably trained in the use of the appliance so as to ensure its continued safe and efficient use.

Nortek Global HVAC (UK) Ltd. have a commitment to continuous improvement and therefore reserves the right to amend or change the specification of the Airbloc ACR Recessed Air Curtain range subject to compliance with the appropriate European, national, and local regulations.

Contained within the text of the manual, the words 'Caution' and 'Warning' are used to highlight certain points.

Caution is used when failure to follow or implement the instruction(s) can lead to premature failure or damage to the heater or its component parts.

Warning is used when failure to heed or implement the instruction(s) can lead to not only component damage, but also to a hazardous situation being created where there is a risk of personal injury.

The Airbloc ACR Recessed Air Curtain range conform to the following harmonised standards:

BS EN 292 -1

Safety of Machinery - Basic Concepts, General Principles for Design Basic terminology, methodology BS EN 292-2

Safety of Machinery - Basic Concepts, General Principles for Design Technical Principles and Specifications

BS EN 60204-1

Safety of Machinery - Electrical Equipment for Machines Specification for General Requirements

BS EN 55014

Limits and methods of measurement of radio disturbance characteristics of electrical motor-operated and thermal appliances for household and similar purposes, electrical tools and similar electric apparatus

BS EN 50165

Electrical Equipment of non-electric heating appliances for household and similar purposes, safety requirements

BS EN 60335-2-30

Household and similar electrical appliances. Safety. Particular requirements for room heaters

and to the following European CE directives-

2006/95/EC - low voltage;

2004/108/EC - electromagnetic compatibility.

1.2 Certificates of conformity

Certificates are available from the Quality Control Department at Nortek Global HVAC (UK) Ltd.

1.3 General product information

Models range from 1000mm to 2000mm in length, in both Standard and High capacity and are available in either Electrically heated, Ambient or LPHW. They are designed for discreet positioning in a suspended ceiling or bulkhead in the doorways of retail or commercial premises. Optional case for doorways with restricted space and no suspended ceiling/ bulkhead are available.

Each air curtain is supplied with a fully electronic controller giving multi fan and heat settings (electrically operated units) via a simple key pad which can be mounted up to 50m from the air curtain.

Optional BMS time control, external, thermostats and door interlocks can be installed.

The AC-ACR-PANEL programmer shown above allows the user to control either a single air curtain, or a network of up to 6 air curtains with the same settings, and provides the following functions:-

- Heat On Off or Auto via optional thermostat
- Off or Low, Medium and High Fan Speeds

For further details please refer to section 10.1

Alternatively on electrically heated models, an optional SmartElec3 control system consists of a base unit (installed within the air curtain) and a program panel that can be installed remote from the air curtain.

Usually, the program panel is mounted at a low level from the air curtain for user access and to a maximum distance of 50m.

The base unit and program panel are linked by low voltage cable as specified in these instructions.

The SmartElec3 factory fitted base unit provides terminals for 3 phase supply connection and the low voltage program panel wires. The SmartElec3 base unit rapidly pulses energy to the heating elements. This combined with the inbuilt intelligent sensor control, maintains a fixed outlet temperature, thereby reducing energy consumption as compared to an air curtain without the SmartElec3 control.

The SmartElec3 program panel shown above allows the user to control either a single air curtain, or a network of up to 16 air curtains, each with different settings if required, and provides the following functions:-

- Heat On or Off
- Off or Low, Medium and High Fan Speeds
- Air Outlet Temperature.

For further details please refer to section 12.2

Note

Neither asbestos nor soft soldered joints are used in the construction or manufacture of the Airbloc ACR Recessed Air Curtain range. The materials selected for use can withstand the mechanical, chemical, and thermal stresses which they will be subject to during foreseen normal use when installed in accordance with the manufacturers recommendations.

1.4 Model Definitions

ACR100xxxx = ACR Airbloc 1M in length. 120=1.2M; 150=1.5M; 180=1.8M; 200=2.0M.

ACRxxxSxxx = ACR Airbloc Standard Capacity (up to 3M from floor); H=High Capacity(up to 4m from floor)

ACRxxxxExx = ACR Airbloc Electrically heated. A=Ambient; W=LPHW coils.

ACRxxxx12 = ACR Airbloc 12kW coils. 6=6kW; 9=9kW; 12=12kW; 18kW.

-1ph suffix = ACR Airbloc 230V Single phase supply (Std format =3pha)

-SM suffix = ACR Airbloc SmartElec Energy Saving Controller (Std format=Standard AC/ACR Control)

e.g. ACR200HE18-SM = ACR Airbloc Air Curtain, 2M long, 18kW electrically heated high capacity c/w SmartElec Control.

1.5 General requirements

Caution

Before installation, check that the local distribution conditions, nature of gas and pressure, and the current state adjustment of the appliance are compatible.

Installation and assembly procedures must be carried out by suitable competent persons. Commissioning and service procedures must be carried out by suitable qualified persons.

Warning

Unauthorised modifications to the appliance, or departure from the manufacturers guidance on intended use, or, installation contrary to the manufacturers recommendations may constitute a hazard.

Note

To ignore the warning and caution notices, and to ignore the advice from the manufacturer on installation, commissioning, servicing, or use, will jeopardise any applicable warranty, moreover, such a situation could also compromise the safe and efficient running of the appliance itself, and thereby constitute a hazard.

The installation of the appliance must meet all the relevant European, national, and local criteria.

Prior to installation the following points should be considered;

- The position and mounting height of the Air Curtain for the optimum efficient distribution.
- The position of the Air Curtain relative to the electrical services, and any controllers.
- The position of the Air Curtain relative to the low pressure hot water pipework where appropriate.
- The position of the heater relative to service and maintenance requirements.

Caution

The air Curtain must not be installed within an area where the conditions are unsuitable, e.g. where the atmosphere is highly corrosive, has a high degree of salinity, or where high wind velocities may affect operation. Suitable protection should be provided for the appliance when it is located in a position where it may be susceptible to external mechanical damage.

1.6 Health and Safety

Warning

Airbloc Air Curtains must be installed in accordance with any relevant and Regulations. Due account should be taken of any obligations arising from the Health and Safety at Works Act 1974 or relevant codes of practice. In addition the installation must be carried out in accordance with the current IEE wiring regulations and any other relevant British Standards and Codes of Practice by a qualified installer. Isolate all electrical supplies to the heater & controller before proceeding.

Caution

For your own safety we recommend the use of safety boots and leather faced gloves when handling sharp or heavy items. The use of protective eye wear is also recommended.

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.

Do not rest anything especially ladders against the product.

1.7 Delivery and pre-installation checks.

On receipt of the Air Curtain, the following checks should be carried out;

- The model is as per order.
- That it is undamaged.
- That it is suitable for the source supply.
- That it is suitable for the electrical supply

If any of these points are not satisfied then contact should be made with the Sales Office at Nortek Global HVAC (UK) Ltd as soon as possible by telephoning 01384 489700. In the case of claims for damage, this must be signed for as damaged and reported in writing within 24 hours of delivery, in order to comply with insurance criteria.

1.8 Location

WARNING:

THIS AIR CURTAIN SHOULD NOT BE INSTALLED WHERE THERE IS A CORROSIVE ATMOSPHERE.

Airbloc 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 within the ceiling void or roof 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 to cover the entire door width.

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

1.9 Clearance distances

It is recommended that a minimum clearance of 100mm is allowed around the case. The clearance allows for cable entry and prevents combustible surfaces overheating.

The minimum mounting height (floor to grille) is 1.8m. The recommended maximum mounting height is 3m for standard and 4m for high capacity models.

1.10 Electrical Supply

For full electrical loadings, please refer to the individual technical data sheets within this manual.

It is recommended that the electrical supply to the base unit in the air curtain is via an appropriate switched isolator in accordance with the regulations in force in the country of use and must be via a fused isolator having a contact separation of greater than 3mm in all poles.

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

All units must be wired in accordance with I.E.E regulations for the Electrical Equipment of Buildings and the installer should ensure that a suitable isolating switch is connected in the mains supply.


Warning
For safety reasons a good earth connection must ALWAYS be made to the heater and control box.

1.10.1 Electronic controller

Electrically heated supply is either 230V 1 phase (6 and 9kW options) or 415V 3 phase (9 to 18kW), Neutral and Earth. Max cable inlet size is 4mm^2 or 6mm^2 (refer to individual technical specification)

Ambient and LPHW supply is 230V 1 phase, Neutral and Earth. Max cable inlet size is 4mm^2.

Remote unit is wired to the base unit via a Screened twisted pair 28AWG (or direct equiv).

1.10.2 SmartElec3 controller

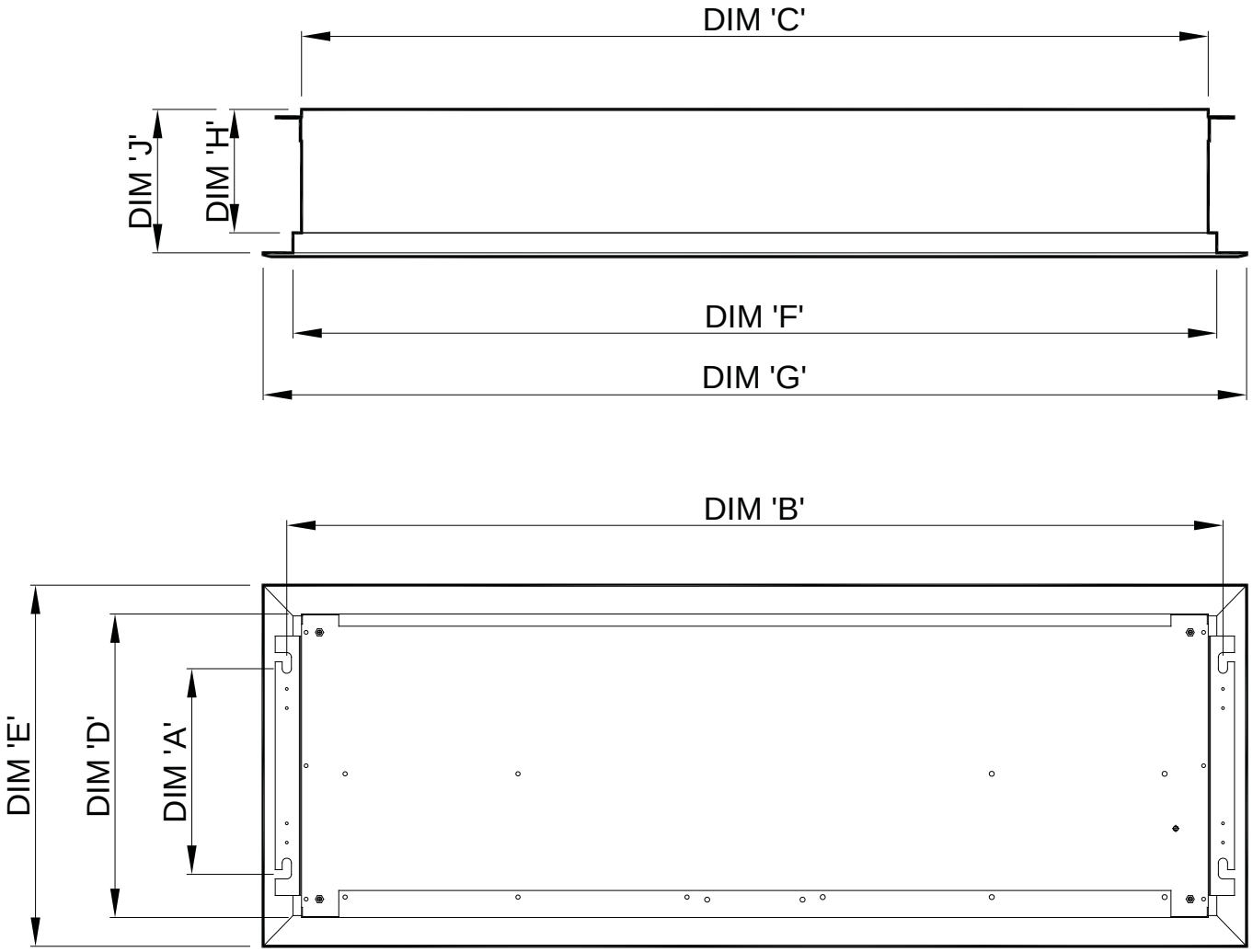
Electrically heated supply is 415V 3 phase, neutral and earth. Max cable inlet size is 10mm^2.

Remote unit is wired to the base unit via a RJ45 pre-wired cable.

Networked air curtain interconnects via a RJ45 pre-wired cable.

2. Dimensions.

2. ACR Air Curtain



Size	ACR100SE6/9; ACR100SW9; ACR100SA	ACR150SE12; ACR150SW12; ACR150SA	ACR200SE18; ACR200SW18; ACR200SA	ACR120HE12; ACR120HW12; ACR120HA	ACR180HE18; ACR180HW18; ACR180HA	ACR200HE18; ACR200HW18; ACR200HA
A	253			407		
B	1220	1520	2020	1185	1785	2097
C	1182	1482	1982	1150	1750	2059
D	395			550		
E	454			608		
F	1205	1505	2005	1150	1750	2082
G	1242	1542	2095	1210	1810	2140
H	160			180		
J	200			220		

2.3 AC-ACR-PANEL program keypad dimensions

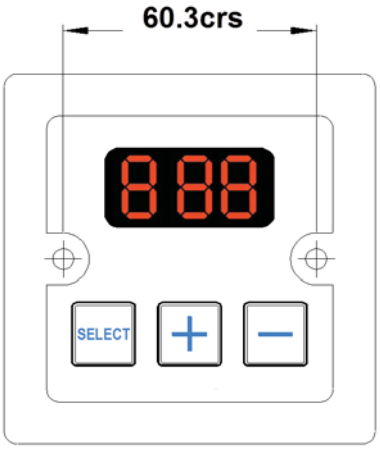


Fig.3. Surface mount

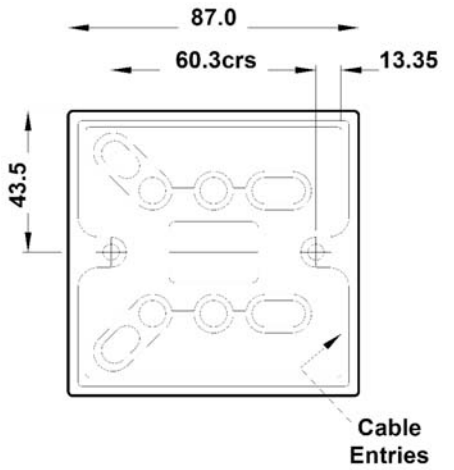
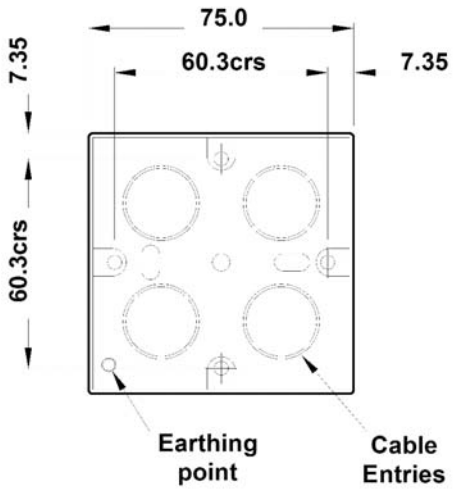
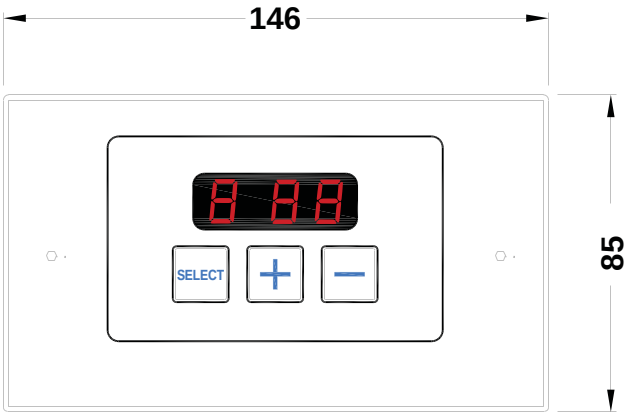
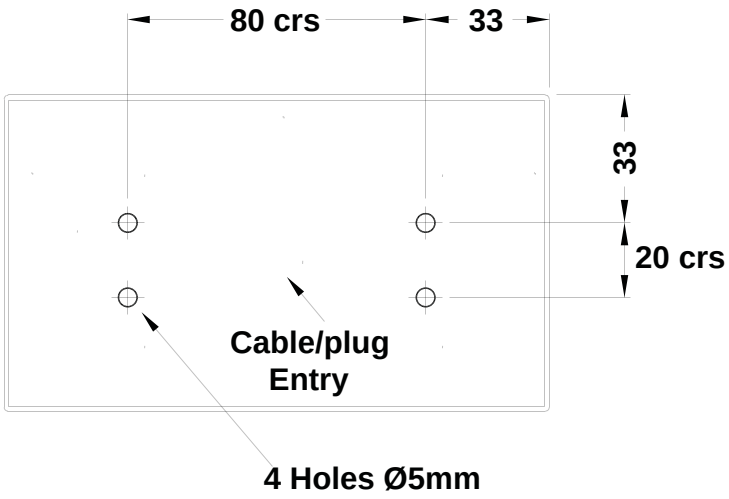


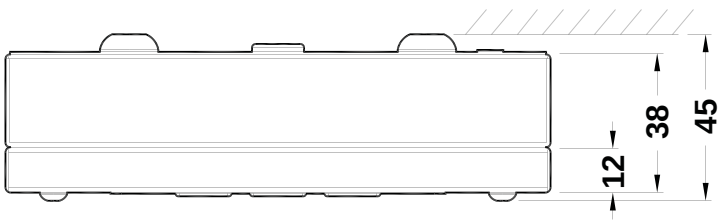
Fig.4. optional flush mount



2.4 Optional SmartElec3 Controller dimensions







3. Technical Specifications.

3.1 (Single Phase only)			ACR100SE6-1PH	ACR150SE6-1PH	ACR200SE9-1PH
General Data					
Maximum height		M		3.0	
Door width			1.2	1.5	2.0
Heat Medium		kW		Electrical heated	
Heat settings				3 / 6	4.5 / 9
Fan type / dia				Crossflow / 100mm	
Fan settings				3	
Switching type				AC-ACR-PANEL	
Weight		kg	28.0	34.0	49.0
Electrical Data					
Supply voltage				230V 1ph 50Hz	
Total load		kW (a)		6.1 (26.5)	9.1 (39.6)
Motor power		W		60	90
Max Starting current*		amps		0.96	1.5
Max Running current*		amps		0.65	0.75
External fuse size amps		amps		32	45
Programmer keypad		pt.no.		AC-ACR-PANEL	
Program keypad control wiring				Screened twisted pair 28AWG	
Cable terminal size				6.0mm^2 MAX	
Mains terminal block position				Separate DIN rail L1; N & E	
Control terminal block position				Right side of base unit terminals +12V, DATA & GND	
Air Data					
Air Volume	Low speed	m^3/h	1164	1475	2013
	Medium speed	m^3/h	1405	1780	2432
	High speed	m^3/h	1646	2085	2851
Air Velocity	Low @ 0M	m/s		4.3	5.4
	Medium @ 0M	m/s		5.6	6.9
	High @ 0M	m/s		7.0	8.4
	High @ 1M	m/s		3.5	4.2
	High @ 2M	m/s		1.6	2.1
	High @ 3M	m/s		0.8	1.0
Delta T	Low speed	°C	17	13	26
	Medium speed	°C	15	11	23
	High speed	°C	13	9	20
Noise level @ 1M in free field	Low speed	dBA		59	
	Medium speed	dBA		62	
	High speed	dBA		64	
Dimensional Data					
Length		mm	1182	1482	1982
Depth (width)		mm		395	
Total height		mm		200	
Outlet length		mm	1125	1425	1945
Outlet depth (width)		mm		85	
Grille height		mm		40	
Mounting bracket centres length		mm	1220	1520	2020
Side to 1st bracket centre		mm		18	
Mounting bracket centres height		mm		Flush with top of unit	
Top to 1st bracket centre		mm		Flush with top of unit	

** Motor current only at high speed*

3.2			ACR100SE9	ACR150SE12	ACR200SE18
General Data					
Maximum height		M		3.0	
Door width			1.2	1.5	2.0
Heat Medium		kW		Electrical heated	
Heat settings			4.5 / 9	6 / 12	9 / 18
Fan type / dia				Crossflow / 100mm	
Fan settings				3	
Switching type				AC-ACR-PANEL / SmartElec3	
Weight		kg	28.0	34.0	49.0
Electrical Data					
Supply voltage				415V 3ph 50Hz	
Total load		kW (a)	9.1 (12.6)	12.1 (16.8)	18.1 (25.2)
Motor power		W		60	90
Max Starting current*		amps		0.96	1.5
Max Running current*		amps		0.65	0.75
External fuse size amps		amps	16	20	32
Programmer keypad		pt.no.		AC-ACR-PANEL	
Program keypad control wiring				Screened twisted pair 28AWG	
Cable terminal size				4.0mm² MAX	6.0mm² MAX
Mains terminal block position				Bottom of base unit. Terminals N; L1; L2 & L3	Separate din rail E: N; L1; L2 & L3
Control terminal block position				Right side of base unit terminals +12V, DATA & GND	
** SmartElec3 Energy Saving Control				108221-RJ45	
SmartElec3 Energy Saving Control wiring				Pre-wired RJ45 cable	
Cable terminal size				10.0mm² Max	
Mains terminal block position				SmartElec3 Base Unit - terminals N; L1; L2 & L3	
Control cable socket position				SmartElec3 Base Unit	
Air Data					
Air Volume	Low speed	m³/h	1164	1475	2013
	Medium speed	m³/h	1405	1780	2432
	High speed	m³/h	1646	2085	2851
Air Velocity	Low @ 0M	m/s		4.3	5.4
	Medium @ 0M	m/s		5.6	6.9
	High @ 0M	m/s		7.0	8.4
	High @ 1M	m/s		3.5	4.2
	High @ 2M	m/s		1.6	2.1
	High @ 3M	m/s		0.8	1.0
Delta T	Low speed	°C	26	25	21
	Medium speed	°C	23	22	20
	High speed	°C	20	19	19
Noise level @ 1M in free field	Low speed	dBA		59	
	Medium speed	dBA		62	
	High speed	dBA		64	
Dimensional Data					
Length		mm	1182	1482	1982
Depth (width)		mm		395	
Total height		mm		200	
Outlet length		mm	1125	1425	1945
Outlet depth (width)		mm		85	
Grille height		mm		40	
Mounting bracket centres length		mm	1220	1520	2020
Side to 1st bracket centre		mm		18	
Mounting bracket centres height		mm		Flush with top of unit	
Top to 1st bracket centre		mm		Flush with top of unit	

** Motor current only at high speed*
***Suffix with –SM for SmartElec3 Energy Saving Control.*

3.3			ACR120HE12	ACR180HE18	ACR200HE18
General Data					
Maximum height		M		4.0	
Door width			1.2	1.8	2.0
Heat Medium		kW		Electrical heated	
Heat settings			6 / 12	9 / 18	
Fan type / dia				Crossflow / 100mm	
Fan settings				3	
Switching type				AC-ACR-PANEL / SmartElec3	
Weight		kg	38.0	55.0	63.0
Electrical Data					
Supply voltage				415V 3ph 50Hz	
Total load		kW (a)	12.4 (17.3)	18.4 (25.6)	
Motor power		W		370	
Max Starting current*		amps		5.0	
Max Running current*		amps		2.1	
External fuse size amps		amps	20	32	
Programmer keypad		pt.no.		AC-ACR-PANEL	
Program keypad control wiring				Screened twisted pair 28AWG	
Cable terminal size				4.0mm^2 MAX	
Mains terminal block position				Bottom of base unit. N; L1; L2 & L3	
Control terminal block position				Right side of base unit terminals +12V, DATA & GND	
** SmartElec3 Energy Saving Control				108221-RJ45	
SmartElec3 Energy Saving Control wiring				Pre-wired RJ45 cable	
Cable terminal size				10.0mm^2 Max	
Mains terminal block position				SmartElec3 Base Unit - terminals N; L1; L2 & L3	
Control cable socket position				SmartElec3 Base Unit	
Air Data					
Air Volume	Low speed	m^3/h	1300	1600	2900
	Medium speed	m^3/h	1850	2400	4100
	High speed	m^3/h	2300	3300	5000
Air Velocity	Low @ 0M	m/s		6.0	
	Medium @ 0M	m/s		8.5	
	High @ 0M	m/s		11.0	
	High @ 1M	m/s	5.4	5.5	5.2
	High @ 2M	m/s	3.6	3.7	3.6
	High @ 3M	m/s	2.6	2.5	2.4
	High @ 4M	m/s	1.5	1.6	1.4
Delta T	Low speed	°C		35	36
	Medium speed	°C	28	27	26
	High speed	°C		22	20
Noise level @ 1M in free field	Low speed	dBA		50	
	Medium speed	dBA		55	
	High speed	dBA		60	
Dimensional Data					
Length			1150	1750	2082
Depth (width)				550	
Total height				227	
Outlet length			1090	1690	2022
Outlet depth (width)				85	
Grille height				6	
Mounting bracket centres length			1185	1785	2117
Side to 1st bracket centre				17.5	
Mounting bracket centres height				Flush with top of unit	
Top to 1st bracket centre				Flush with top of unit	

** Motor current only at high speed*
***Suffix with –SM for SmartElec3 Energy Saving Control.*

3.4			ACR100SA	ACR150SA	ACR200SA
General Data					
Maximum height		M		3.0	
Door width			1.2	1.5	2.0
Heat Medium		kW		Ambient	
Fan type / dia				Crossflow / 100mm	
Fan settings				3	
Switching type				AC-ACR-PANEL	
Weight		kg	28.0	34.0	49.0
Electrical Data					
Supply voltage				230V 1ph 50Hz	
Total load		kW (a)		0.06 (0.26)	0.09 (0.4)
Motor power		W		60	90
Max Starting current*		amps		0.96	1.5
Max Running current*		amps		0.65	0.75
External fuse size amps		amps		3	
Programmer keypad		pt.no.		AC-ACR-PANEL	
Program keypad control wiring				Screened twisted pair 28AWG	
Cable terminal size				4.0mm^2 MAX	
Mains terminal block position				Base unit L1; N + E	
Control terminal block position				Right side of base unit terminals +12V, DATA & GND	
Air Data					
Air Volume	Low speed	m^3/h	1164	1475	2013
	Medium speed	m^3/h	1405	1780	2432
	High speed	m^3/h	1646	2085	2851
Air Velocity	Low @ 0M	m/s		4.3	5.4
	Medium @ 0M	m/s		5.6	6.9
	High @ 0M	m/s		7.0	8.4
	High @ 1M	m/s		3.5	4.2
	High @ 2M	m/s		1.6	2.1
	High @ 3M	m/s		0.8	1.0
Noise level @ 1M in free field	Low speed	dBA		59	62
	Medium speed	dBA		62	64
	High speed	dBA		64	66
Dimensional Data					
Length		mm	1182	1482	1982
Depth (width)		mm		395	
Total height		mm		200	
Outlet length		mm	1125	1425	1945
Outlet depth (width)		mm		85	
Grille height		mm		40	
Mounting bracket centres length		mm	1220	1520	2020
Side to 1st bracket centre		mm		18	
Mounting bracket centres height		mm		Flush with top of unit	
Top to 1st bracket centre		mm		Flush with top of unit	

** Motor current only at high speed*

3.5			ACR120HA	ACR180HA	ACR200HA
General Data					
Maximum height		M		4.0	
Door width			1.2	1.8	2.0
Heat Medium		kW		Ambient	
Fan type / dia				Crossflow / 100mm	
Fan settings				3	
Switching type				AC-ACR-PANEL	
Weight		kg	38.0	55.0	63.0
Electrical Data					
Supply voltage				230V 1ph 50Hz	
Total load		kW (a)		0.4 (1.61)	
Motor power		W		370	
Max Starting current*		amps		5.0	
Max Running current*		amps		2.1	
External fuse size amps		amps		10	
Programmer keypad		pt.no.		AC-ACR-PANEL	
Program keypad control wiring				Screened twisted pair 28AWG	
Cable terminal size				4.0mm^2 MAX	
Mains terminal block position				Base unit L1; N + E	
Control terminal block position				Right side of base unit terminals +12V, DATA & GND	
Air Data					
Air Volume	Low speed	m^3/h	1300	1600	2900
	Medium speed	m^3/h	1850	2400	4100
	High speed	m^3/h	2300	3300	5000
Air Velocity	Low @ 0M	m/s		6.0	
	Medium @ 0M	m/s		8.5	
	High @ 0M	m/s		11.0	
	High @ 1M	m/s	5.4	5.5	5.2
	High @ 2M	m/s	3.6	3.7	3.6
	High @ 3M	m/s	2.6	2.5	2.4
	High @ 4M	m/s	1.5	1.6	1.4
Noise level @ 1M in free field	Low speed	dBA		50	
	Medium speed	dBA		55	
	High speed	dBA		60	
Dimensional Data					
Length		mm	1150	1750	2082
Depth (width)		mm		550	
Total height		mm		227	
Outlet length		mm	1090	1690	2022
Outlet depth (width)		mm		85	
Grille height		mm		6	
Mounting bracket centres length		mm	1185	1785	2117
Side to 1st bracket centre		mm		17.5	
Mounting bracket centres height		mm		Flush with top of unit	
Top to 1st bracket centre		mm		Flush with top of unit	

** Motor current only at high speed*

3.6			ACR100SW9	ACR150SW12	ACR200SW18
General Data					
Maximum height		M		3.0	
Door width			1.2	1.5	2.0
Heat Medium		kW		LPHW	
Heat settings			9	12	18
Fan type / dia				Crossflow / 100mm	
Fan settings				3	
Switching type				AC-ACR-PANEL	
Weight		kg	28.0	34.0	49.0
Electrical Data					
Supply voltage				230V 1ph 50Hz	
Total load		kW (a)		0.06 (0.26)	0.09 (0.4)
Motor power		W		60	90
Max Starting current*		amps		0.96	1.5
Max Running current*		amps		0.65	0.75
External fuse size amps		amps		3	
Programmer keypad		pt.no.		AC-ACR-PANEL	
Program keypad control wiring				Screened twisted pair 28AWG	
Cable terminal size				4.0mm^2 MAX	
Mains terminal block position				Base unit. terminals L1; N + E	
Control terminal block position				Right side of base unit terminals +12V, DATA & GND	
Air Data					
Air Volume	Low speed	m^3/h	1164	1475	2013
	Medium speed	m^3/h	1405	1780	2432
	High speed	m^3/h	1646	2085	2851
Air Velocity	Low @ 0M	m/s		4.3	5.4
	Medium @ 0M	m/s		5.6	6.9
	High @ 0M	m/s		7.0	8.4
	High @ 1M	m/s		3.5	4.2
	High @ 2M	m/s		1.6	2.1
	High @ 3M	m/s		0.8	1.0
Delta T	Low speed	°C	26	25	21
	Medium speed	°C	23	22	20
	High speed	°C	20	19	19
Noise level @ 1M in free field	Low speed	dBA		59	62
	Medium speed	dBA		62	64
	High speed	dBA		64	66
LPHW Data					
LPHW flow		l/s		0.20	0.40
Fluid pressure drop		kPA	3.8	17.6	20
Flow & return connection		mm		15	22
Inlet temperature		°C		82	
Outlet temperature		°C		71	
Dimensional Data					
Length		mm	1182	1482	1982
Depth (width)		mm		395	
Total height		mm		200	
Outlet length		mm	1125	1425	1945
Outlet depth (width)		mm		85	
Grille height		mm		40	
Mounting bracket centres length		mm	1220	1520	2020
Side to 1st bracket centre		mm		18	
Mounting bracket centres height		mm		Flush with top of unit	
Top to 1st bracket centre		mm		Flush with top of unit	

3.7			ACR120HW12	ACR180HW18	ACR200HW18
General Data					
Maximum height		M		4.0	
Door width			1.2	1.8	2.0
Heat Medium		kW		LPHW	
Heat settings			12	18	
Fan type / dia				Crossflow / 100mm	
Fan settings				3	
Switching type				AC-ACR-PANEL	
Weight		kg	38.0	55.0	63.0
Electrical Data					
Supply voltage				230V 1ph 50Hz	
Total load		kW (a)		0.4 (1.6)	
Motor power		W		370	
Max Starting current*		amps		5.0	
Max Running current*		amps		2.1	
External fuse size amps		amps		10	
Programmer keypad		pt.no.		AC-ACR-PANEL	
Program keypad control wiring				Screened twisted pair 28AWG	
Cable terminal size				4.0mm² MAX	
Mains terminal block position				Base unit. terminals L1; N + E	
Control terminal block position				Right side of base unit terminals +12V, DATA & GND	
Air Data					
Air Volume	Low speed	m^3/h	1300	1600	2900
	Medium speed	m^3/h	1850	2400	4100
	High speed	m^3/h	2300	3300	5000
Air Velocity	Low @ 0M	m/s		6.0	
	Medium @ 0M	m/s		8.5	
	High @ 0M	m/s		11.0	
	High @ 1M	m/s	5.4	5.5	5.2
	High @ 2M	m/s	3.6	3.7	3.6
	High @ 3M	m/s	2.6	2.5	2.4
	High @ 4M	m/s	1.5	1.6	1.4
Delta T	Low speed	°C		35	36
	Medium speed	°C	28	27	26
	High speed	°C		22	20
Noise level @ 1M in free field	Low speed	dBA		50	
	Medium speed	dBA		55	
	High speed	dBA		60	
LPHW Data					
LPHW flow		l/s	0.27	0.40	0.40
Fluid pressure drop		kPA	19	23	15
Flow & return connection		mm		15	
Inlet temperature		°C		82	
Outlet temperature		°C		71	
Dimensional Data					
Length		mm	1150	1750	2082
Depth (width)		mm		550	
Total height		mm		227	
Outlet length		mm	1090	1690	2022
Outlet depth (width)		mm		85	
Grille height		mm		6	
Mounting bracket centres length		mm	1185	1785	2117
Side to 1st bracket centre		mm		17.5	
Mounting bracket centres height		mm		Flush with top of unit	
Top to 1st bracket centre		mm		Flush with top of unit	

3.8	Program Controller
General Data	
Sensor Input	NTC
Protection	2 x 'slow blow' fuse for the protection of the heater switching devices.
Fan Output	3 off Relay for High, Medium and Low Fan setting 3A max 240Vac
Connections	Screw terminals 4 for supply, 6 for heater output, 4 for fan output, 2 for BMS (time) control, 2 for sensor input, 2 for external thermal trip, 2 for external door switch .
Supply	230V 1Ph or 415 3Ph dependent on model type.
Dimensions	Program panel 88mm(L) x 88mm(W) max.
Mounting Positions	Program panel fixing centres 60.3mm
Temperature	5 to 50 °C operating; -20 to 65 °C storage
Display	Three 7-segment LCD red for parameter display
Push Buttons	3 positive feedback tactile push buttons

3.9	SmartElec3 Controller
General Data	
Sensor Input	NTC
Control Setpoint	16 to 35 °C in steps of 1 degree
Temperature Control	Proportional with 1°C hysteresis
Minimum Power	0% to 99 %
Cycle Time	2 seconds fixed
Protection	2 x high speed fuse for the protection of the heater switching devices
Fan Output	3 off Relay for High, Medium and Low Fan setting 3A max 240Vac
Connections	Screw terminals 5 for supply, 3 for heater output, 4 for fan output, 2 for BMS (time) control, 2 for sensor input, 2 for external thermal trip, 2 for external sensor, 2 for door, 2 for cooling fan on 24kW models. RJ45 comms connection to base unit via pre-wired cable.
Supply	415 V rms +/-15% 50/60Hz 5VA max.
Dimensions	Program panel 146mm(L) x 85mm(W) x 38mm(D) max.
Mounting Positions	Program panel fixing centres 80mm x 20mm
Temperature	5 to 50 °C operating; -20 to 65 °C storage
Display	Three 7-segment LCD red for parameter display
Push Buttons	3 positive feedback tactile push buttons

4. Wiring Diagrams.

4.1 Installer Wiring - Electrically Heated 6 & 9kW SINGLE PHASE ONLY

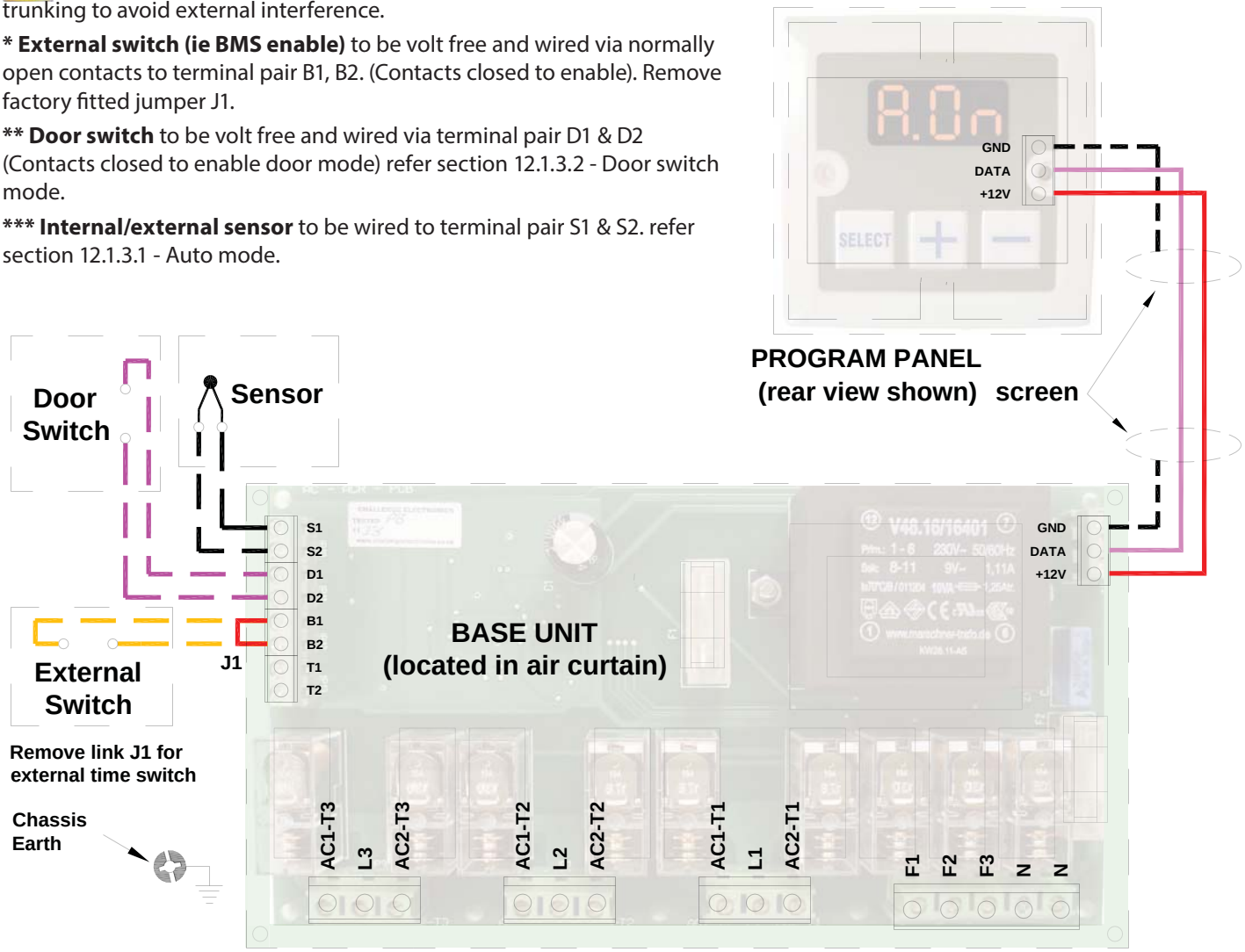
The program panel is connected to the base unit via a set of 3 way connectors marked “+12V”, “DATA” and “GND”. Interconnecting wiring is via screened twisted pair 28AWG as shown. Max length 50m.

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

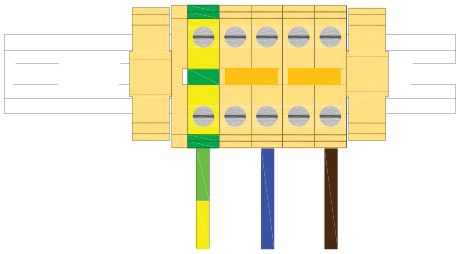
*** External switch (ie BMS enable)** to be volt free and wired via normally open contacts to terminal pair B1, B2. (Contacts closed to enable). Remove factory fitted jumper J1.

**** Door switch** to be volt free and wired via terminal pair D1 & D2 (Contacts closed to enable door mode) refer section 12.1.3.2 - Door switch mode.

***** Internal/external sensor** to be wired to terminal pair S1 & S2. refer section 12.1.3.1 - Auto mode.



Contractors Terminal



230V 50Hz Mains Supply

Terminal	Description	Cable
N	Neutral	6mm² max
L1	1 Phase supply	
Pcb Terminal	**Description**	**Cable**
+12V	Supply to remote unit	1mm² max
DATA	Data to remote unit	
GND(s)	0V terminal	
D1, D2	Option door contact**	
B1, B2	Option external switch*	
S1, S2	Option internal/external sensor***	
Pcb Fuses	**Rating (A)**	
F1	T2A (slow blow)	
F2	T3.15A (slow blow)	

Protection

External circuit breaker with the appropriate rating should be installed for the protection of the installation.

4.2 Installer Wiring - Electrically Heated 9 & 12kW THREE PHASE ONLY

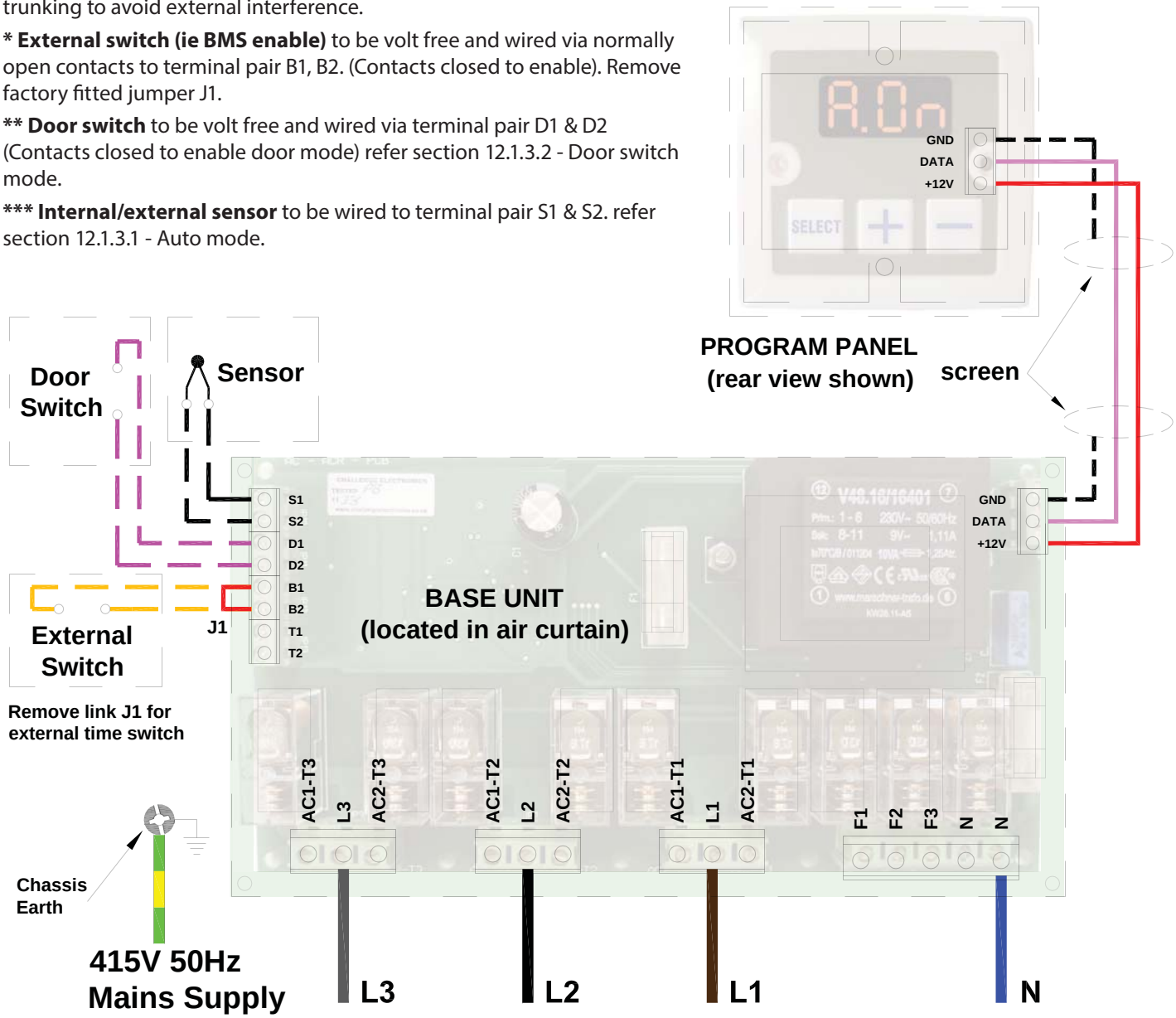
The program panel is connected to the base unit via a set of 3 way connectors marked “+12V”, “DATA” and “GND”. Interconnecting wiring is via screened twisted pair 28AWG as shown. Max length 50m.

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

*** External switch (ie BMS enable)** to be volt free and wired via normally open contacts to terminal pair B1, B2. (Contacts closed to enable). Remove factory fitted jumper J1.

**** Door switch** to be volt free and wired via terminal pair D1 & D2 (Contacts closed to enable door mode) refer section 12.1.3.2 - Door switch mode.

***** Internal/external sensor** to be wired to terminal pair S1 & S2. refer section 12.1.3.1 - Auto mode.



Terminal	Description	Cable
N	Neutral	4mm² max
L1	3 Phase supply	
L2	3 Phase supply	
L3	3 Phase supply	
+12V	Supply to remote unit	1mm² max
DATA	Data to remote unit	
GND(s)	0V terminal	
D1, D2	Option door contact**	
B1, B2	Option external switch*	
S1, S2	Option internal/external sensor***	
Pcb Fuses	**Rating (A)**	
F1	T2A (slow blow)	
F2	T3.15A (slow blow)	

Protection

External circuit breaker with the appropriate rating should be installed for the protection of the installation.

4.3 Installer Wiring -Electrically Heated 18kW THREE PHASE ONLY

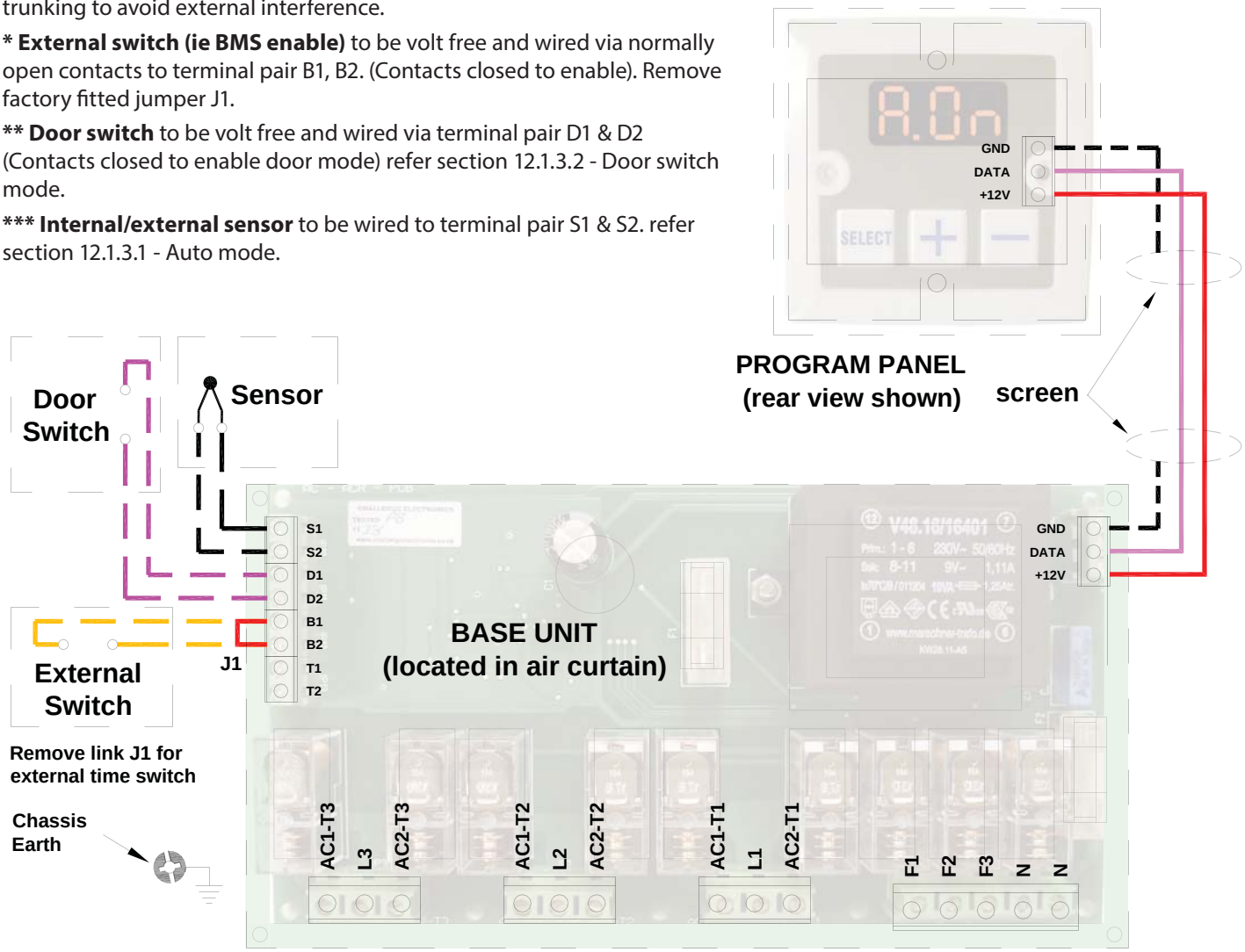
The program panel is connected to the base unit via a set of 3 way connectors marked “+12V”, “DATA” and “GND”. Interconnecting wiring is via screened twisted pair 28AWG as shown. Max length 50m.

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

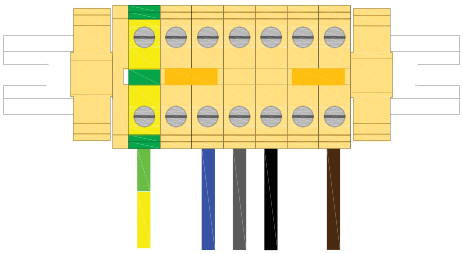
*** External switch (ie BMS enable)** to be volt free and wired via normally open contacts to terminal pair B1, B2. (Contacts closed to enable). Remove factory fitted jumper J1.

**** Door switch** to be volt free and wired via terminal pair D1 & D2 (Contacts closed to enable door mode) refer section 12.1.3.2 - Door switch mode.

***** Internal/external sensor** to be wired to terminal pair S1 & S2. refer section 12.1.3.1 - Auto mode.



Contractors Terminal



415V 50Hz Mains Supply

Terminal	Description	Cable
N	Neutral	6mm² max
L1	3 Phase supply	
L2	3 Phase supply	
L3	3 Phase supply	
+12V	Supply to remote unit	1mm² max
DATA	Data to remote unit	
GND(s)	0V terminal	
D1, D2	Option door contact**	
B1, B2	Option external switch*	
S1, S2	Option internal/external sensor***	
Pcb Fuses	**Rating (A)**	
F1	T2A (slow blow)	
F2	T3.15A (slow blow)	

Protection

External circuit breaker with the appropriate rating should be installed for the protection of the installation.

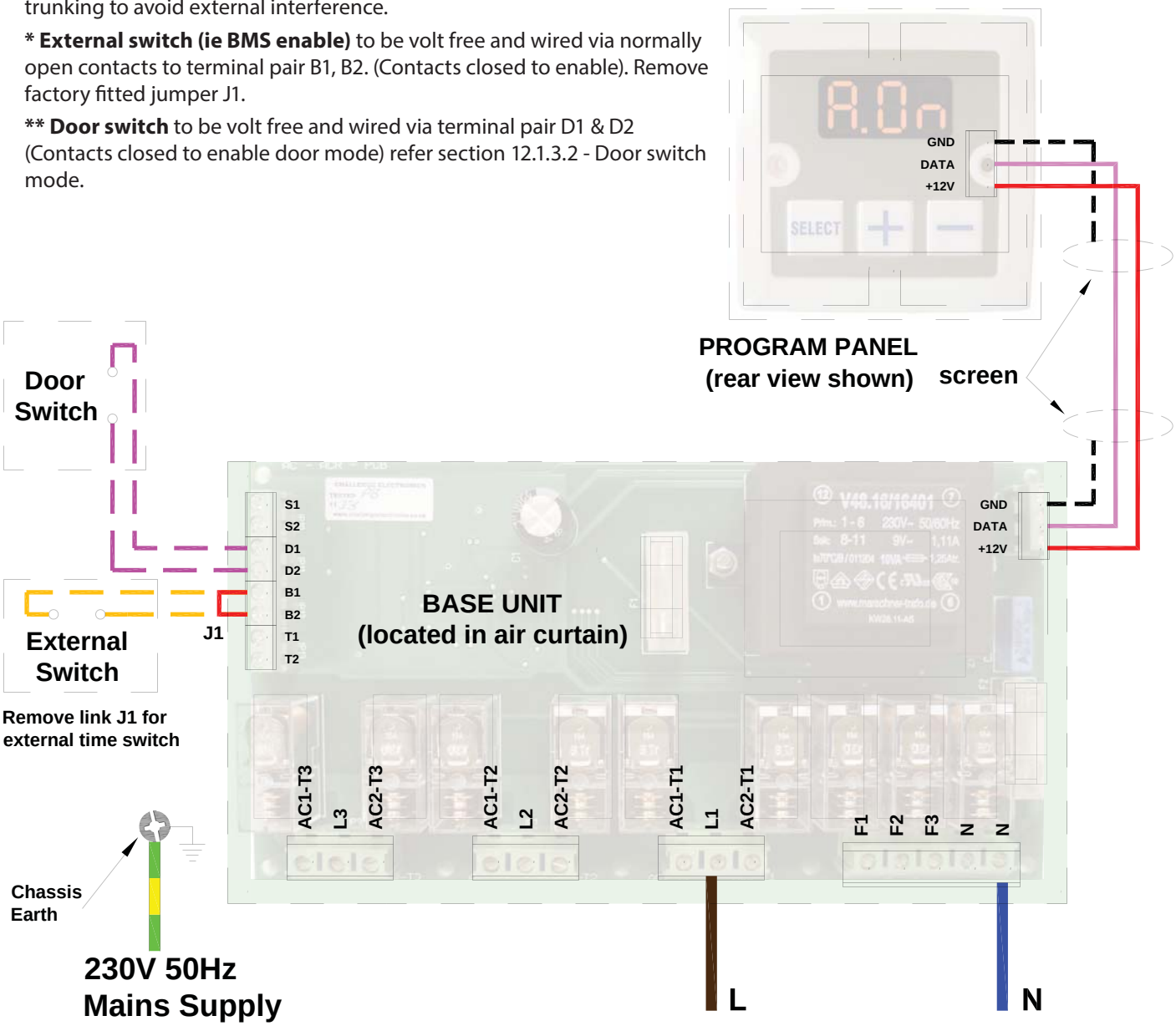
4.4 Installer Wiring - Ambient

The program panel is connected to the base unit via a set of 3 way connectors marked “+12V”, “DATA” and “GND”. Interconnecting wiring is via screened twisted pair 28AWG as shown. Max length 50m.

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

*** External switch (ie BMS enable)** to be volt free and wired via normally open contacts to terminal pair B1, B2. (Contacts closed to enable). Remove factory fitted jumper J1.

**** Door switch** to be volt free and wired via terminal pair D1 & D2 (Contacts closed to enable door mode) refer section 12.1.3.2 - Door switch mode.



Terminal	Description	Cable
N	Neutral	4mm² max
L1	1 Phase supply	
Pcb Terminal	**Description**	**Cable**
+12V	Supply to remote unit	1mm² max
DATA	Data to remote unit	
GND(s)	0V terminal	
D1, D2	Option door contact**	
B1, B2	Option external switch*	
Pcb Fuses	**Rating (A)**	
F1	T2A (slow blow)	
F2	T3.15A (slow blow)	

Protection

External circuit breaker with the appropriate rating should be installed for the protection of the installation.

4.5 Installer Wiring - LPHW

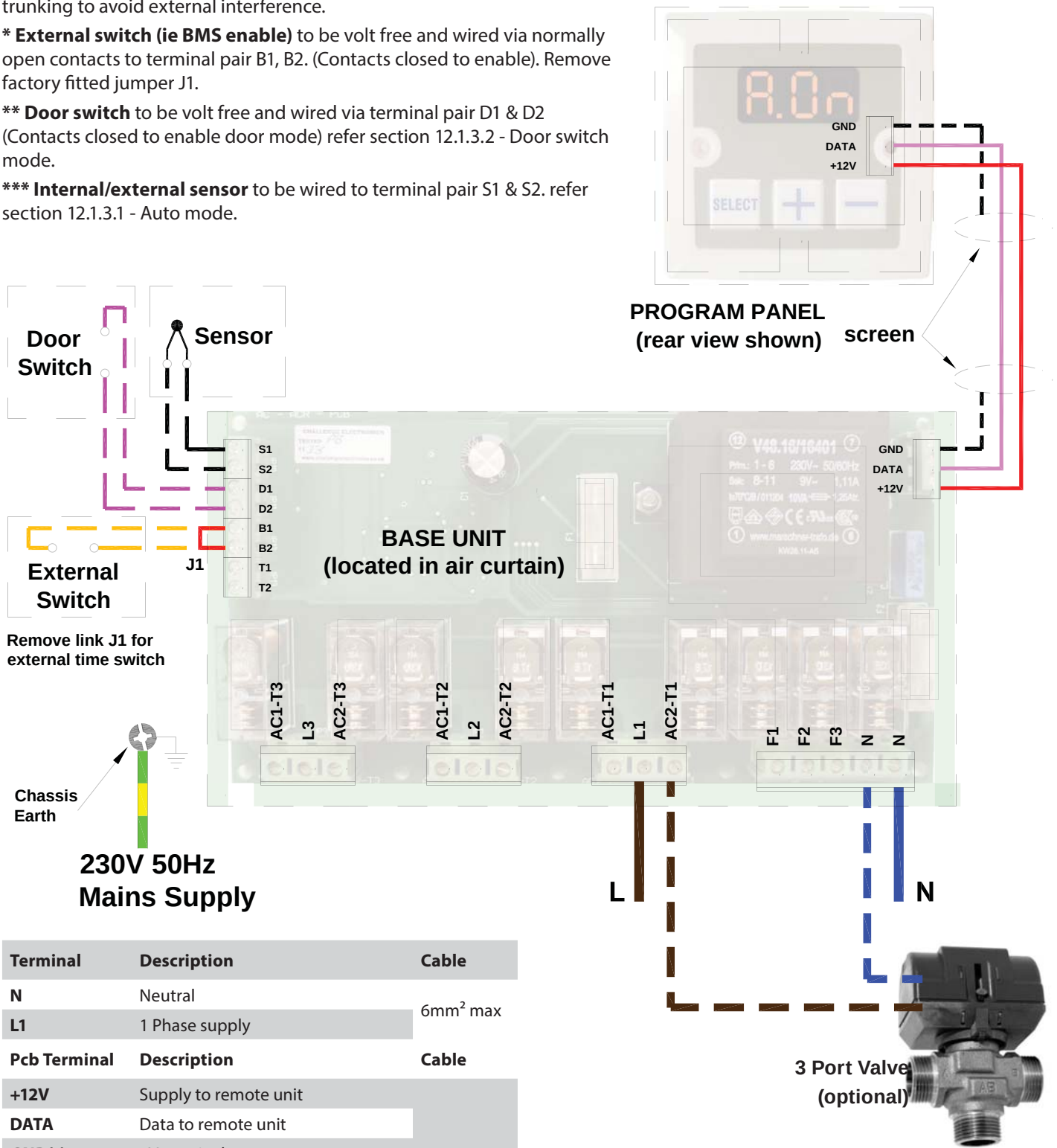
The program panel is connected to the base unit via a set of 3 way connectors marked “+12V”, “DATA” and “GND”. Interconnecting wiring is via screened twisted pair 28AWG as shown. Max length 50m.

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

*** External switch (ie BMS enable)** to be volt free and wired via normally open contacts to terminal pair B1, B2. (Contacts closed to enable). Remove factory fitted jumper J1.

**** Door switch** to be volt free and wired via terminal pair D1 & D2 (Contacts closed to enable door mode) refer section 12.1.3.2 - Door switch mode.

***** Internal/external sensor** to be wired to terminal pair S1 & S2. refer section 12.1.3.1 - Auto mode.



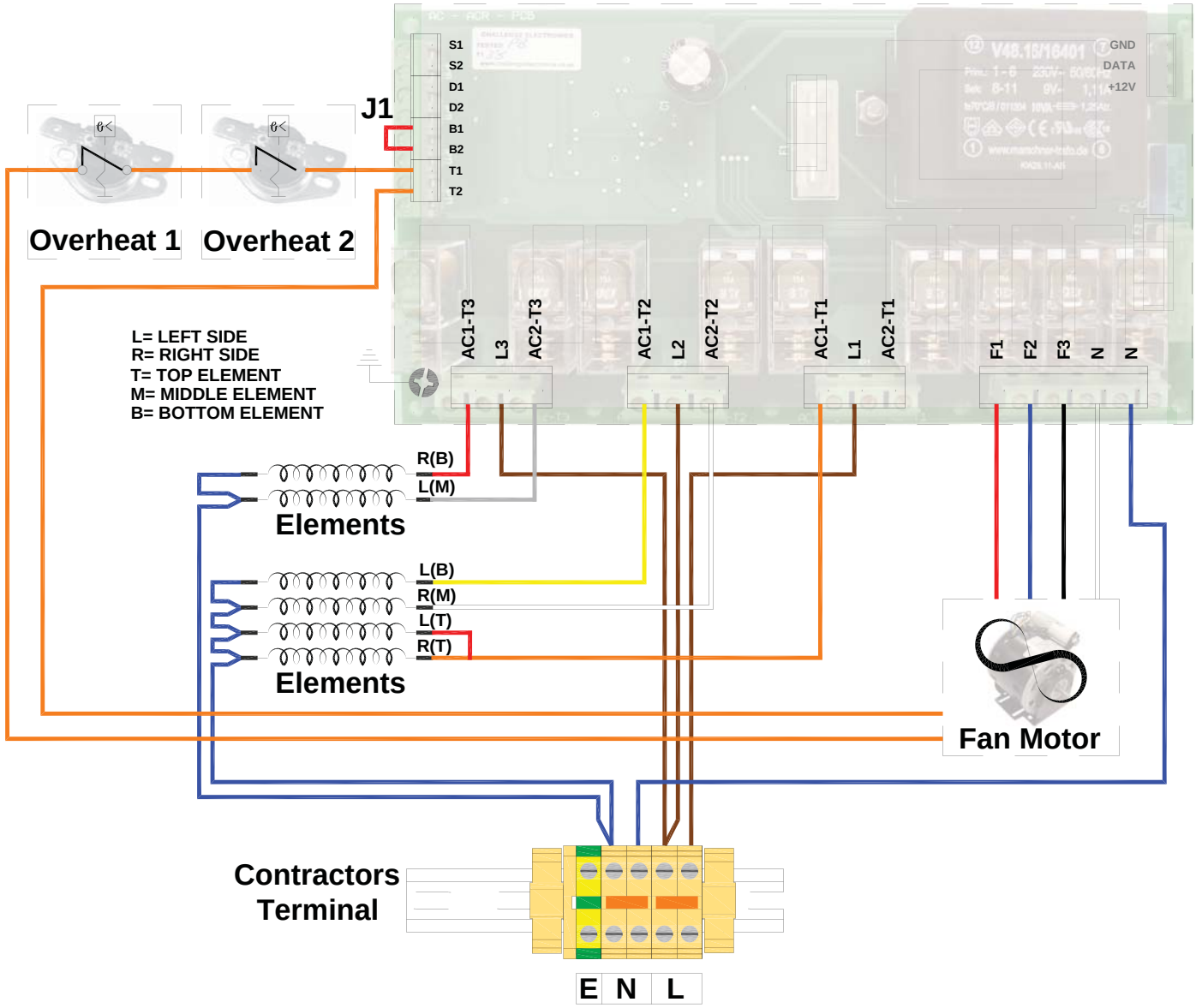
Terminal	Description	Cable
N	Neutral	6mm² max
L1	1 Phase supply	
Pcb Terminal	**Description**	**Cable**
+12V	Supply to remote unit	1mm² max
DATA	Data to remote unit	
GND(s)	0V terminal	
D1, D2	Option door contact**	
B1, B2	Option external switch*	
S1, S2	Option internal/external sensor***	
Pcb Fuses	**Rating (A)**	
F1	T2A (slow blow)	
F2	T3.15A (slow blow)	

Optional 3 port valve to be wired to terminals AC2-T1 & N.

Protection

External circuit breaker with the appropriate rating should be installed for the protection of the installation.

4.6 Factory Wiring - Electrically heated ACR100/ACR150 6 & 9kW SINGLE PHASE ONLY



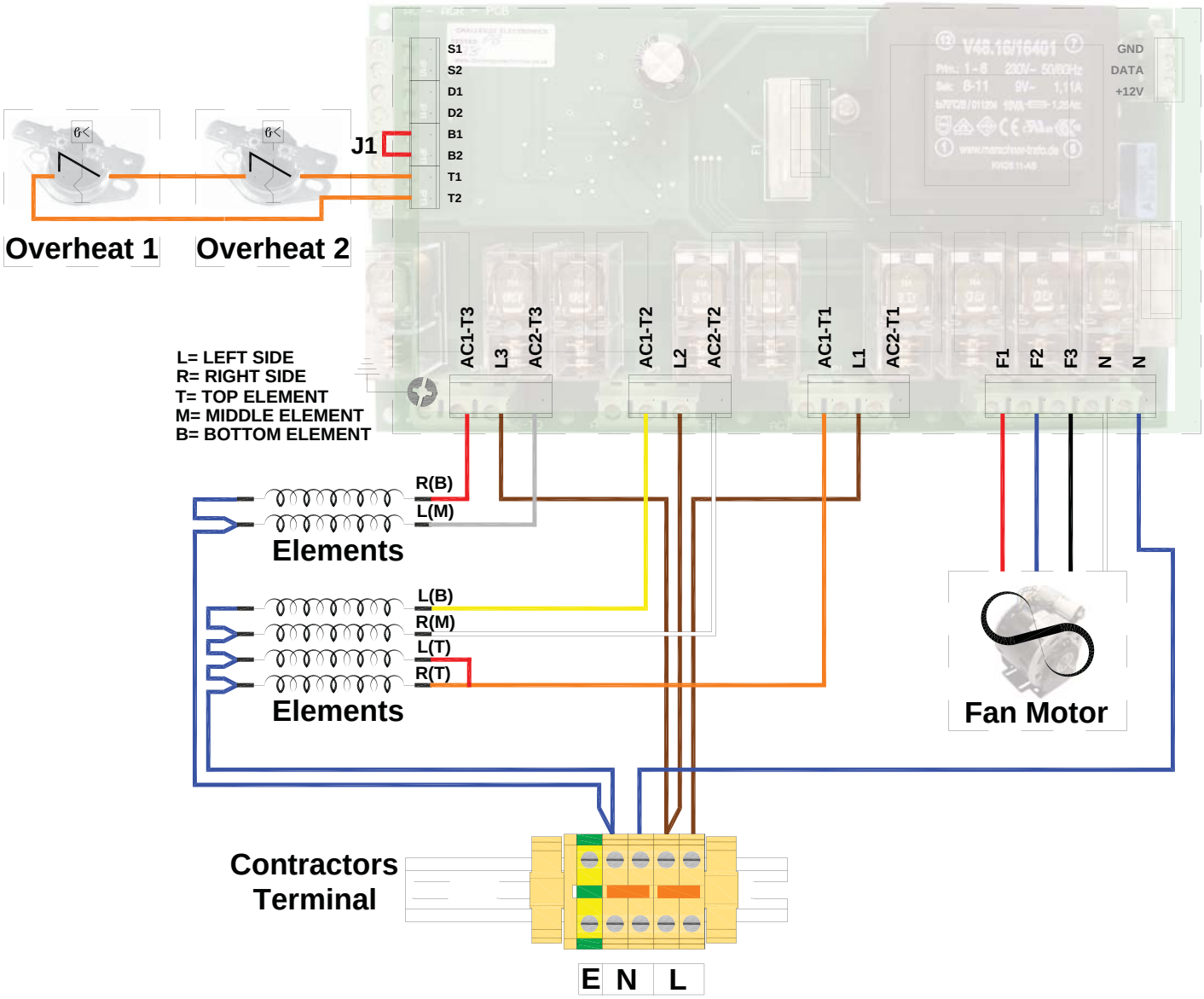
The element output is connected to the right and left side of each terminal block marked **"AC1-T1", "AC2-T1", AC1-T2", "AC2-T2", "AC1-T3"** and **"AC2-T3"**

The fan output is connected to a 4 way connector marked **"N", "F1", "F2" and "F3"**.

The thermal trip is connected to a 2 way connector marked **"T1" & "T2"**

Pcb Terminal	Description
AC2-T2 & T3	One third heating elements
AC1-T1/T2 & T3	Two thirds heating elements
L1, L2 & L3	Live Inputs from Terminal
T1	Thermal Overheat trip
T2	Thermal Overheat trip
N	Neutrals
F1	Fan - low speed
F2	Fan - medium speed
F3	Fan - high speed
J1	Factory BMS link

4.7 Factory Wiring - Electrically heated ACR200 9kW SINGLE PHASE ONLY



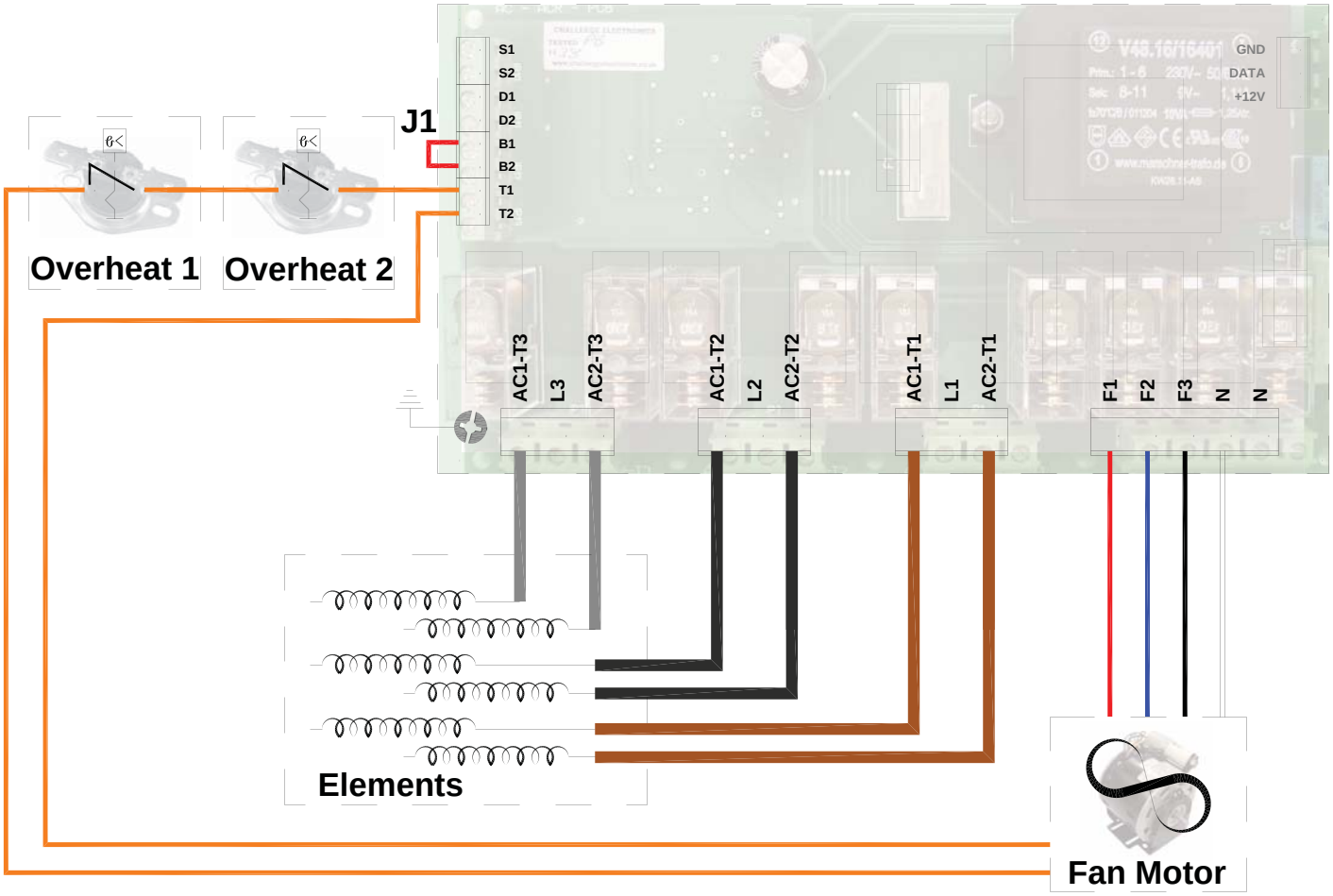
Pcb Terminal	Description
AC2-T2 & T3	One third heating elements
AC1-T1/T2 & T3	Two thirds heating elements
L1, L2 & L3	Live Inputs from Terminal
T1	Thermal Overheat trip
T2	Thermal Overheat trip
N	Neutrals
F1	Fan - low speed
F2	Fan - medium speed
F3	Fan - high speed
J1	Factory BMS link

The element output is connected to the right and left side of each terminal block marked **"AC1-T1", "AC2-T1", AC1-T2", "AC2-T2", "AC1-T3"** and **"AC2-T3"**

The fan output is connected to a 4 way connector marked **"N", "F1", "F2" and "F3"**.

The thermal trip is connected to a 2 way connector marked **"T1" & "T2"**

4.8 Factory Wiring - Electrically heated ACR100/ACR150 9 & 12kW THREE PHASE ONLY



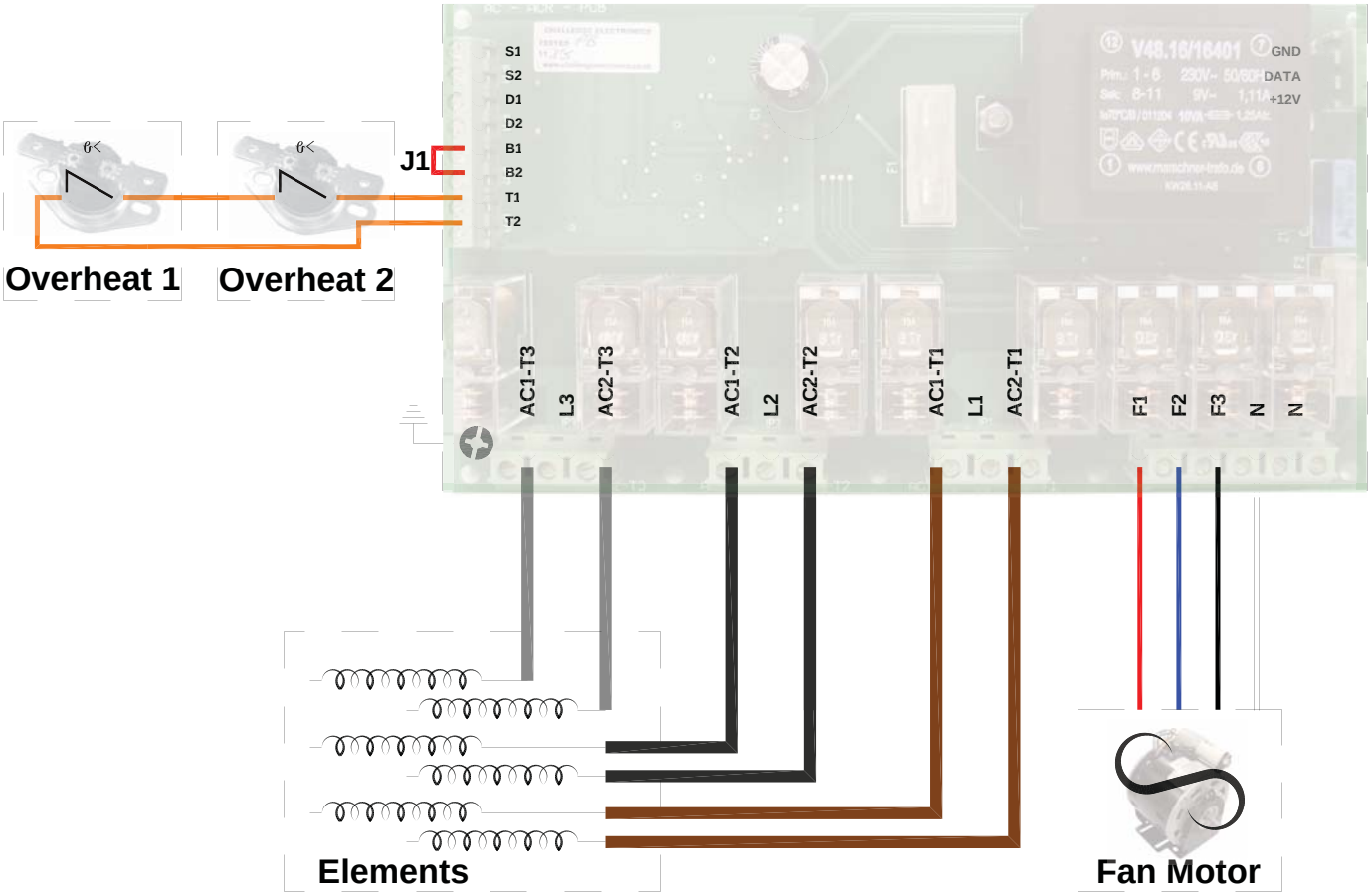
The element output is connected to the right and left side of each terminal block marked **"AC1-T1", "AC2-T1", AC1-T2", "AC2-T2", "AC1-T3"** and **"AC2-T3"**

The fan output is connected to a 4 way connector marked **"N", "F1", "F2" and "F3"**.

The thermal trip is connected to a 2 way connector marked **"T1" & "T2"**

Pcb Terminal	Description
AC2-T1/T2 & T3	One half heating elements
AC1-T1/T2 & T3	Two half heating elements
T1	Thermal Overheat trip
T2	Thermal Overheat trip
N	Neutrals
F1	Fan - low speed
F2	Fan - medium speed
F3	Fan - high speed
J1	Factory BMS link

4.9 Factory Wiring - Electrically heated ACR120HE 12kW THREE PHASE ONLY



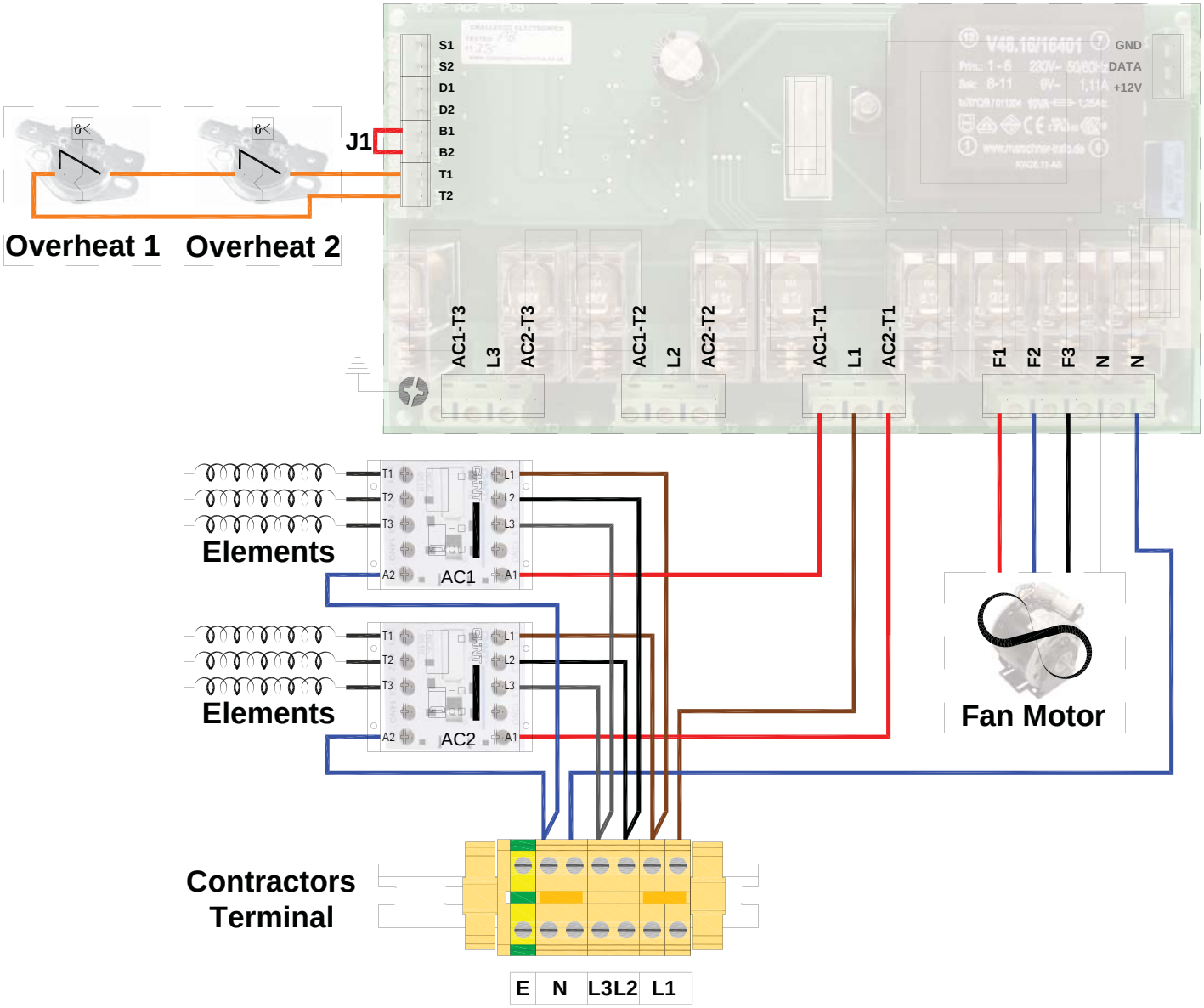
Pcb Terminal	Description
AC2-T1/T2 & T3	One half heating elements
AC1-T1/T2 & T3	Two half heating elements
T1	Thermal Overheat trip
T2	Thermal Overheat trip
N	Neutrals
F1	Fan - low speed
F2	Fan - medium speed
F3	Fan - high speed
J1	Factory BMS link

The element output is connected to the right and left side of each terminal block marked **"AC1-T1", "AC2-T1", AC1-T2", "AC2-T2", "AC1-T3"** and **"AC2-T3"**

The fan output is connected to a 4 way connector marked **"N", "F1", "F2" and "F3"**.

The thermal trip is connected to a 2 way connector marked **"T1" & "T2"**

4.10 Factory Wiring - Electrically heated ACR200/ACR180HE 18kW THREE PHASE ONLY



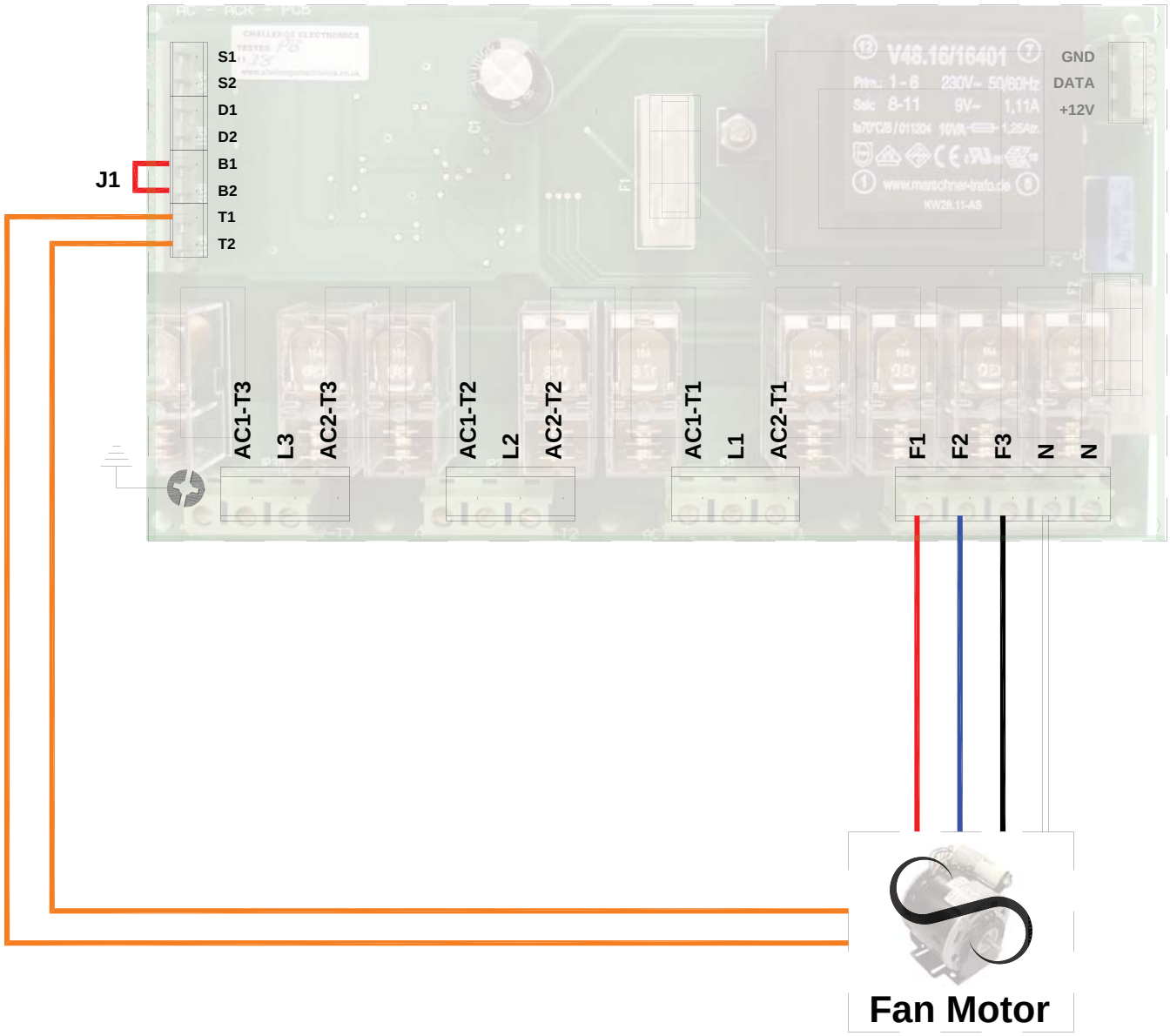
Pcb Terminal	Description
AC2-T1	One half heating elements
AC1-T1	Two half heating elements
L1	Live Input from terminal
T1	Thermal Overheat trip
T2	Thermal Overheat trip
N	Neutrals
F1	Fan - low speed
F2	Fan - medium speed
F3	Fan - high speed
J1	Factory BMS link

The element outputs are connected to contactors "**AC1**" and "**AC2**" on terminals "**T1, T2 and T3".**

The fan output is connected to a 4 way connector marked **"N"**, **"F1", "F2" and "F3"**.

The thermal trip is connected to a 2 way connector marked **"T1" & "T2"**

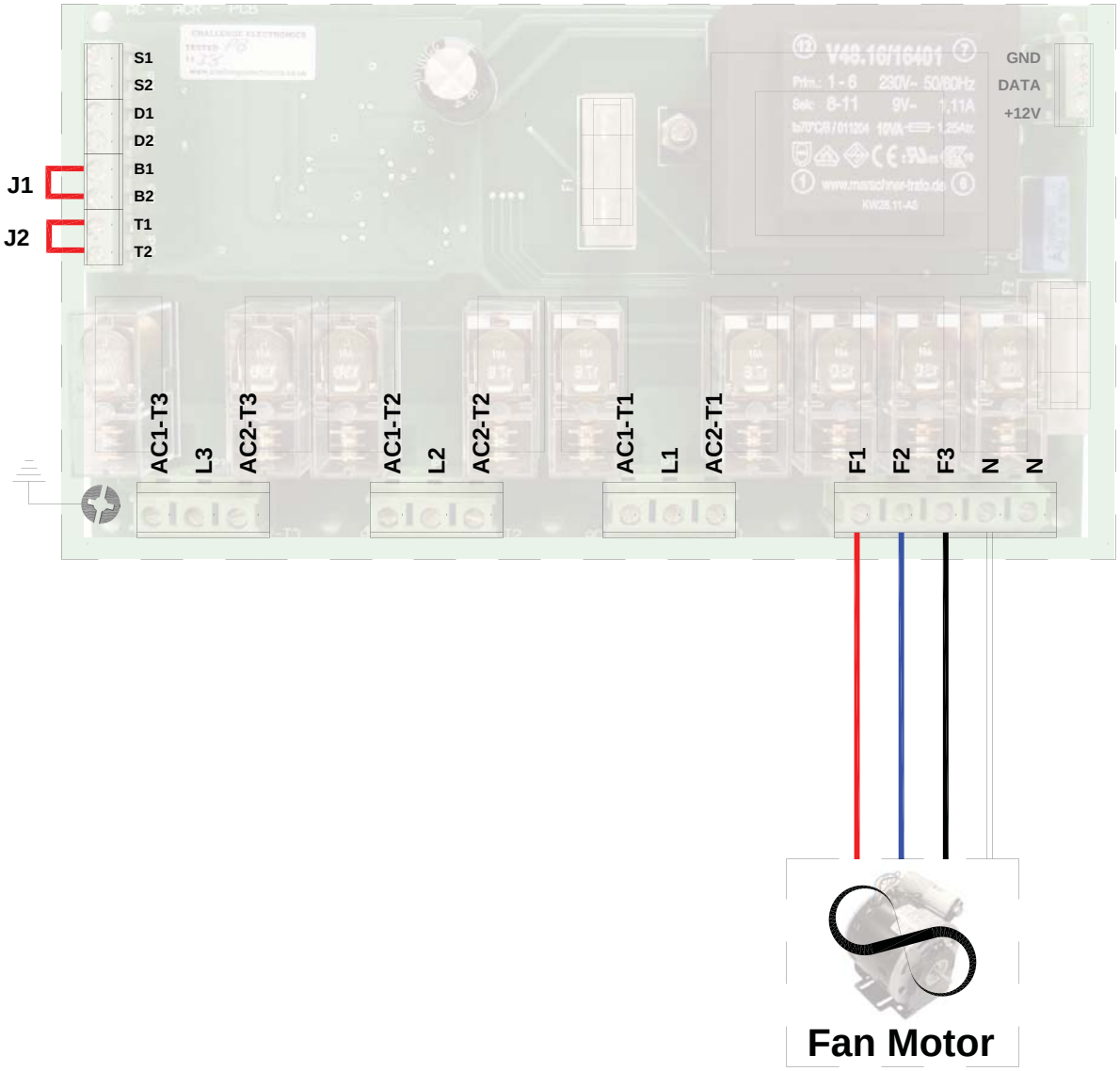
4.11 Factory Wiring - Ambient ACR100/ACR150



Pcb Terminal	Description
N	Neutrals
F1	Fan - low speed
F2	Fan - medium speed
F3	Fan - high speed
J1	Factory BMS link

The fan output is connected to a 4 way connector marked **"N", "F1", "F2" and "F3"**.

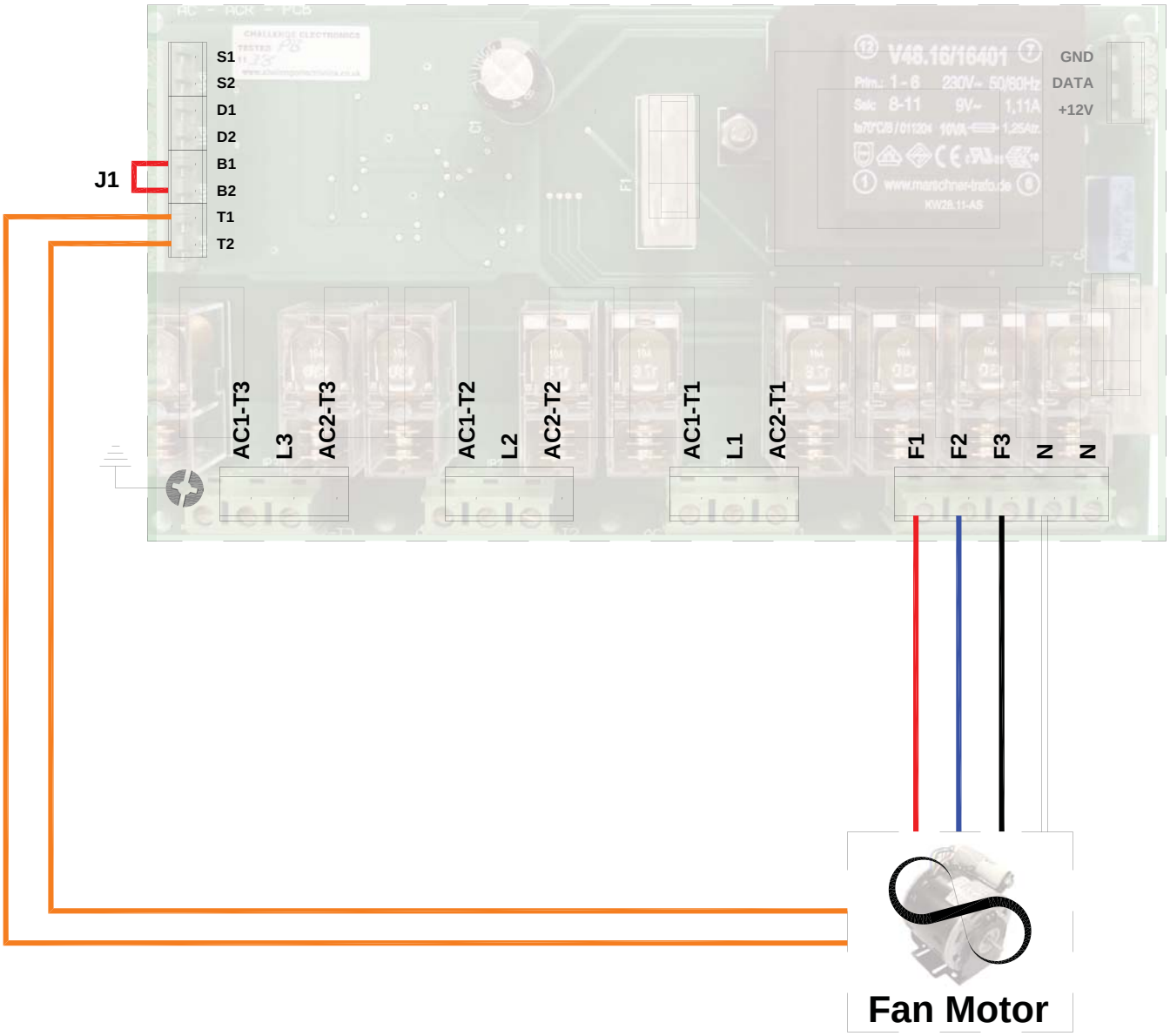
4.12 Factory Wiring - Ambient ACR200/ACR120HA/ACR180HA



Pcb Terminal	Description
N	Neutrals
F1	Fan - low speed
F2	Fan - medium speed
F3	Fan - high speed
J1	Factory BMS link
J2	Factory thermal link

The fan output is connected to a 4 way connector marked **"N"**, **"F1", "F2" and "F3"**.

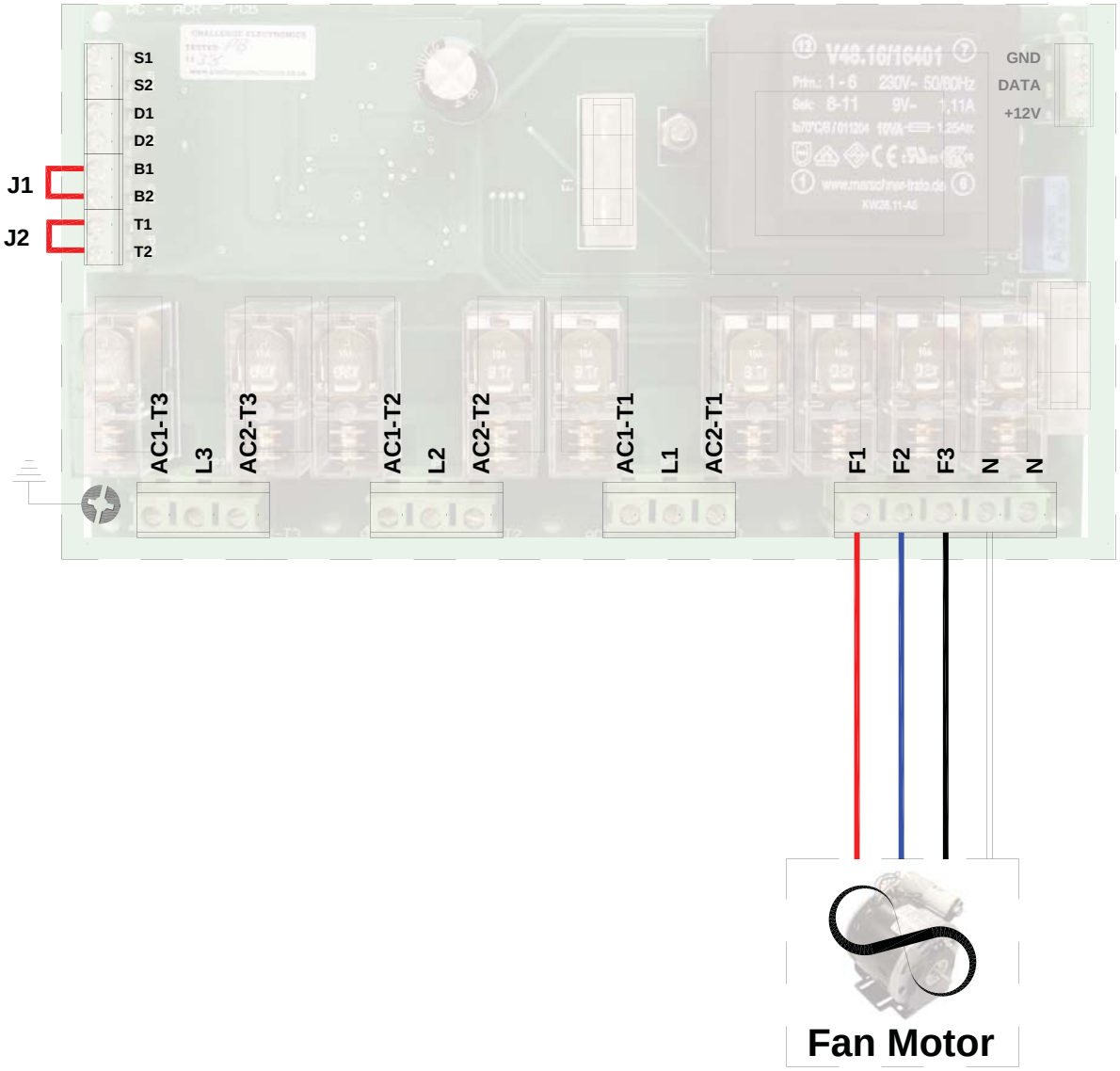
4.13 Factory Wiring - LPHW ACR100/ACR150



Pcb Terminal	Description
N	Neutrals
F1	Fan - low speed
F2	Fan - medium speed
F3	Fan - high speed
J1	Factory BMS link

The fan output is connected to a 4 way connector marked **"N"**, **"F1", "F2" and "F3"**.

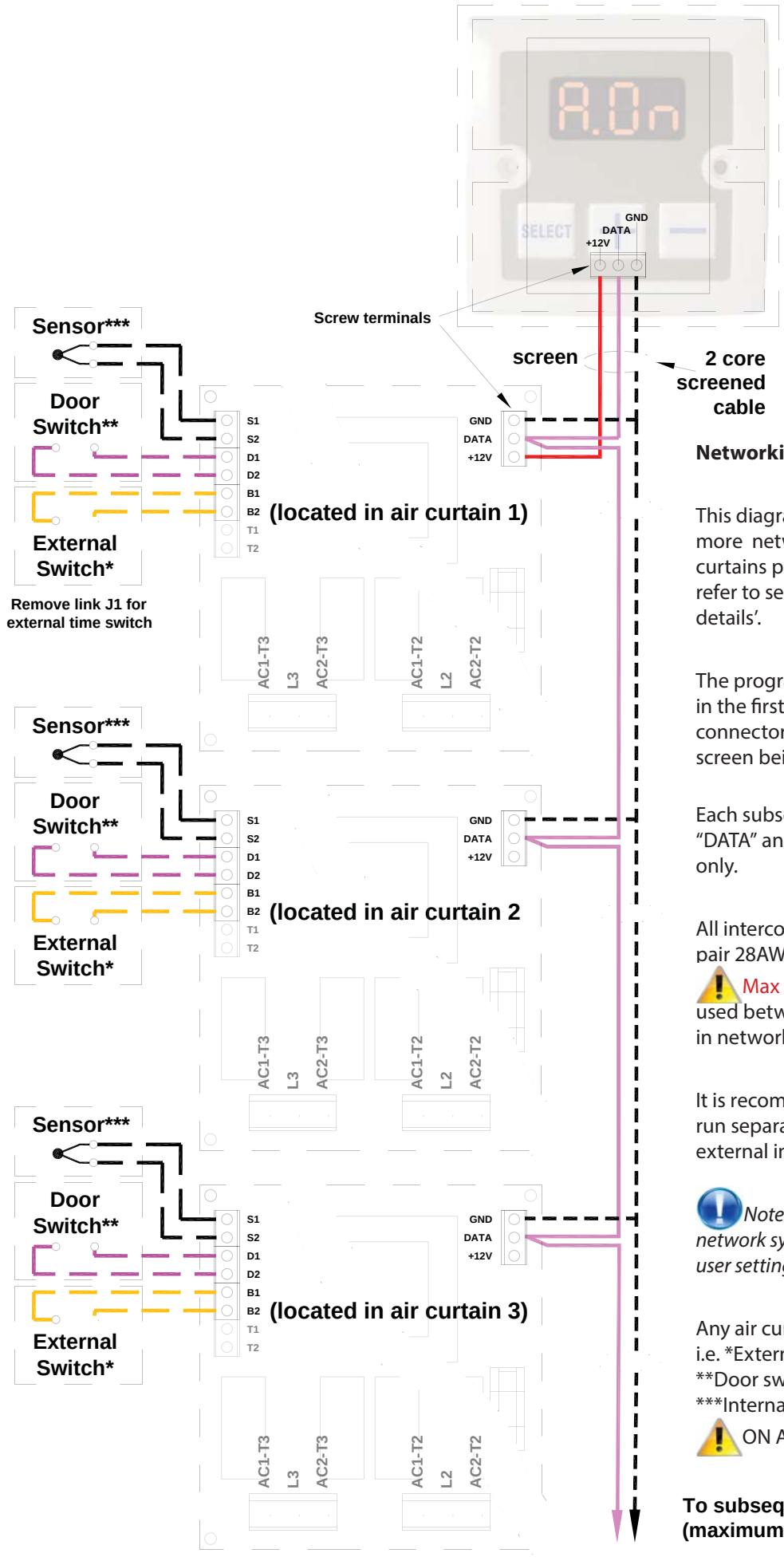
4.14 Factory Wiring - LPHW ACR200/ACR120HW/ACR180HW



Pcb Terminal	Description
N	Neutrals
F1	Fan - low speed
F2	Fan - medium speed
F3	Fan - high speed
J1	Factory BMS link
J2	Factory thermal link

The fan output is connected to a 4 way connector marked **"N"**, **"F1", "F2" and "F3"**.

4.15 Network Wiring - Electronic controller



Networking

This diagram refers only to the wiring of 2 or more networked air curtains. (maximum 6 air curtains per control panel). For mains wiring refer to section 4 of this manual 'installer wiring details'.

The program panel is connected to the base unit in the first air curtain via a 2 core cable to a 3 way connector marked "+12V", "DATA" and "GND". The screen being connected to "GND".

Each subsequent air curtain is wired via the "DATA" and "GND" corresponding connections only.

All interconnecting wiring is via screened twisted pair 28AWG as shown.

Max length 50m. (Total length of cable used between program panel and last air curtain in network).

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

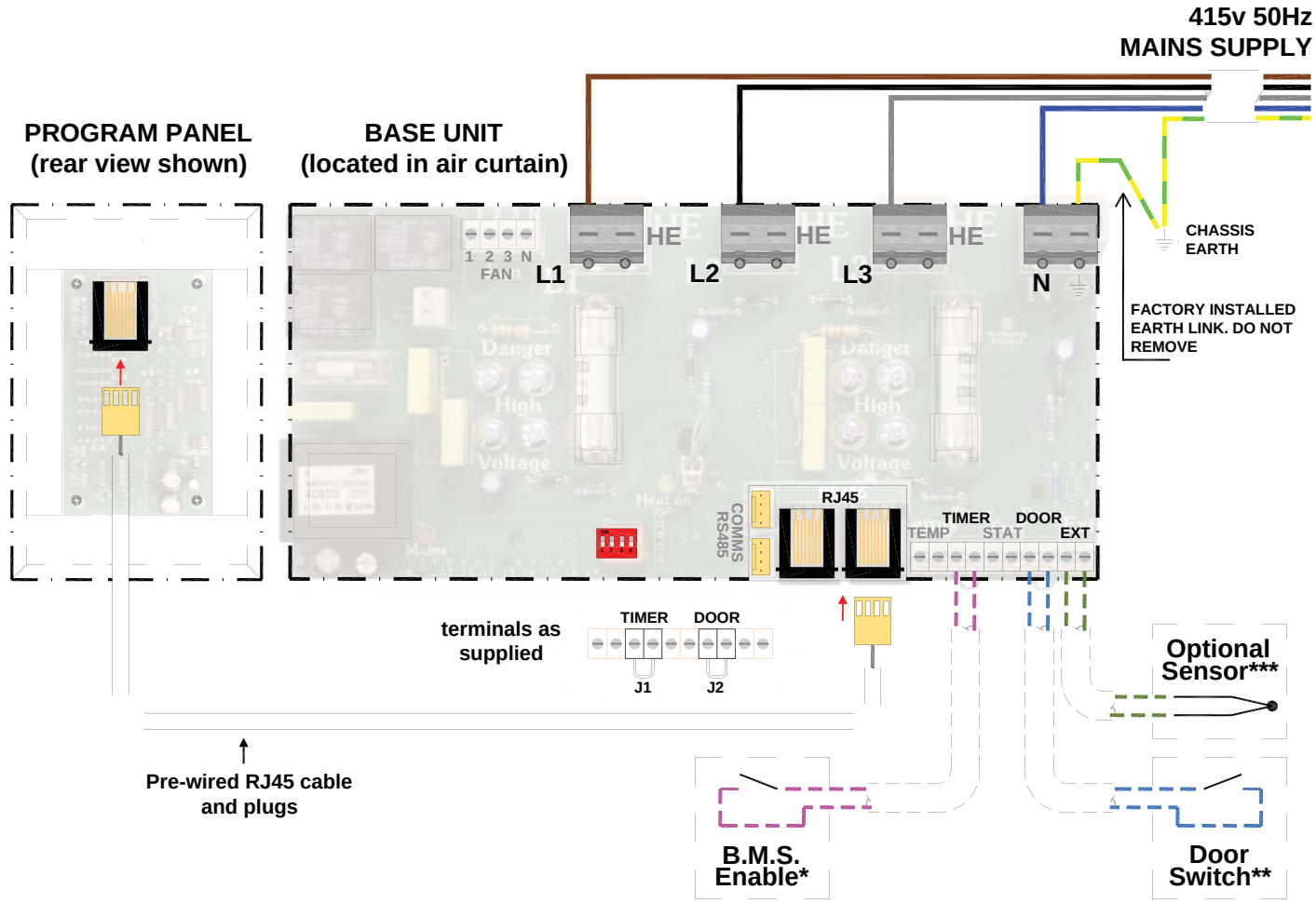
Note: All air curtains connected within the network system will operate in unison under the user settings of the single keypad.

Any air curtain can respond to optional circuits
i.e. *External switch (BMS); or
**Door switch or
***Internal/external sensors

ON AN INDIVIDUAL BASES!

To subsequent air curtains (maximum of 6)

4.16 Installer wiring diagram Electrically heated with SmartElec3 control.



Interconnecting wiring

The program panel is connected to the base unit via a pre-wired RJ45 cables as shown and supplied in 2, 10, 20, 30, 50 and 100m lengths.

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

Optional wiring

*** External switch** (ie BMS enable) to be volt free and wired via normally open contacts to terminal pair **'TIMER'.** (Contacts closed to enable). Remove factory fitted jumper J1.

**** Door switch** to be volt free and wired via normally closed contacts to terminal pair **'DOOR'**. (Contacts open to enable door mode). Remove factory fitted jumper J2.
refer section 10.2.6.1 - Door link settings.

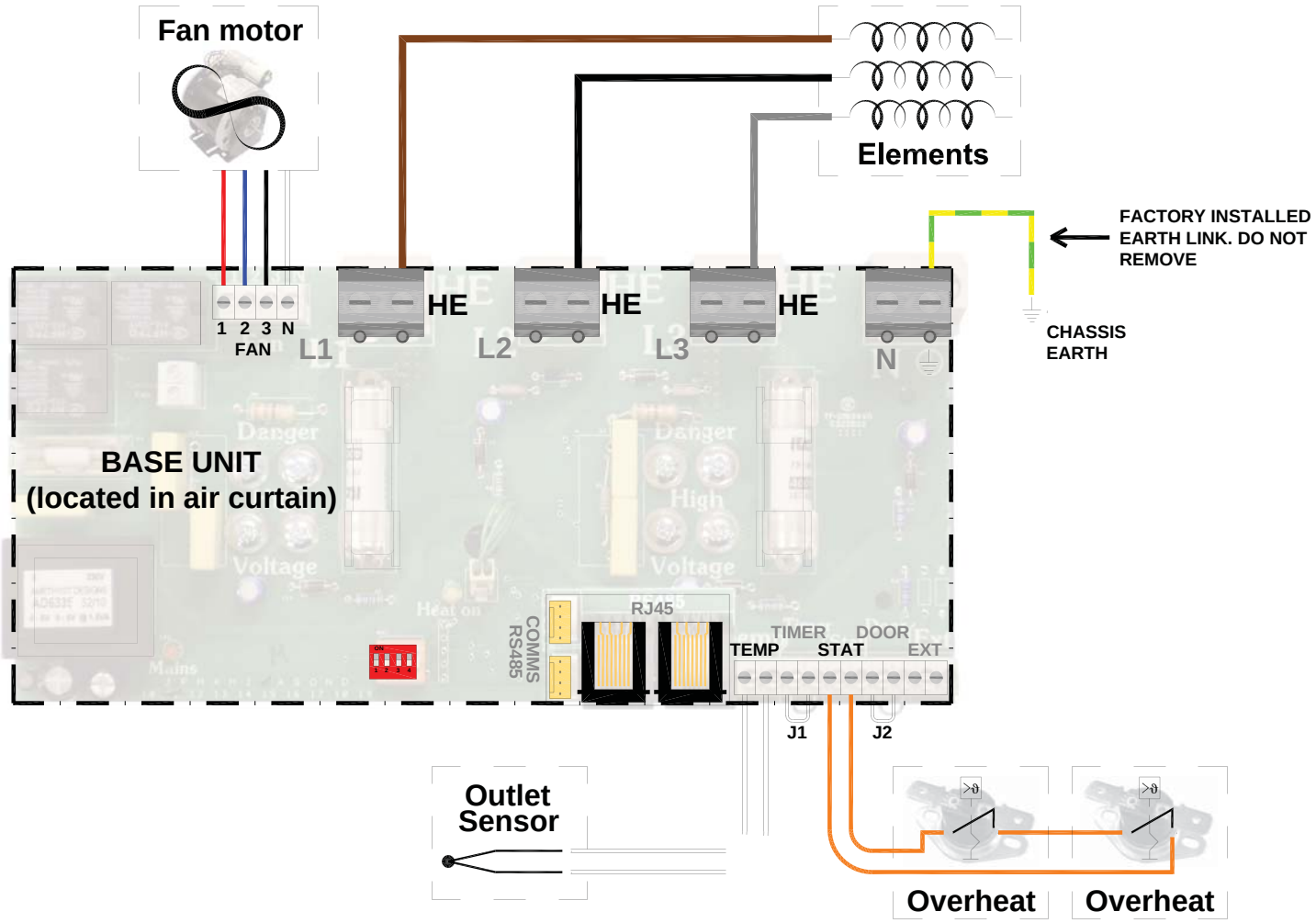
***** Internal/external sensor** to be wired to terminal pair **'EXT'**. refer section 10.2.6.4 - External Temperature.

Protection

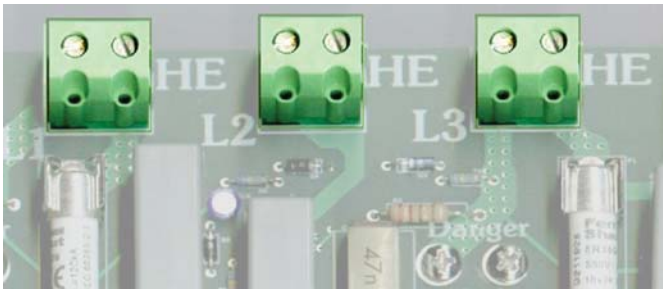
There are two high speed fuses on the base unit to protect the switching thyristors for the heater. An external circuit breaker with the appropriate rating should be installed for the protection of the installation.

Terminal	Description	Cable
N	Neutral	
L1	3 Phase supply	
L2	3 Phase supply	10mm² max
L3	3 Phase supply	
E	Mains Earth	
Timer*	BMS pair (volt -free)	
Door**	Door interlock pair, n.c. (volt free)	1.5mm² max
Ext***	External sensor pair (non-polarised)	

4.17 Factory Installed Wiring. Electrically Heated ACR100/ACR150 with SmartElec3 Control.



The heater element outputs are connected to the right hand side of three terminal blocks and are marked **'HE'**. (See below).



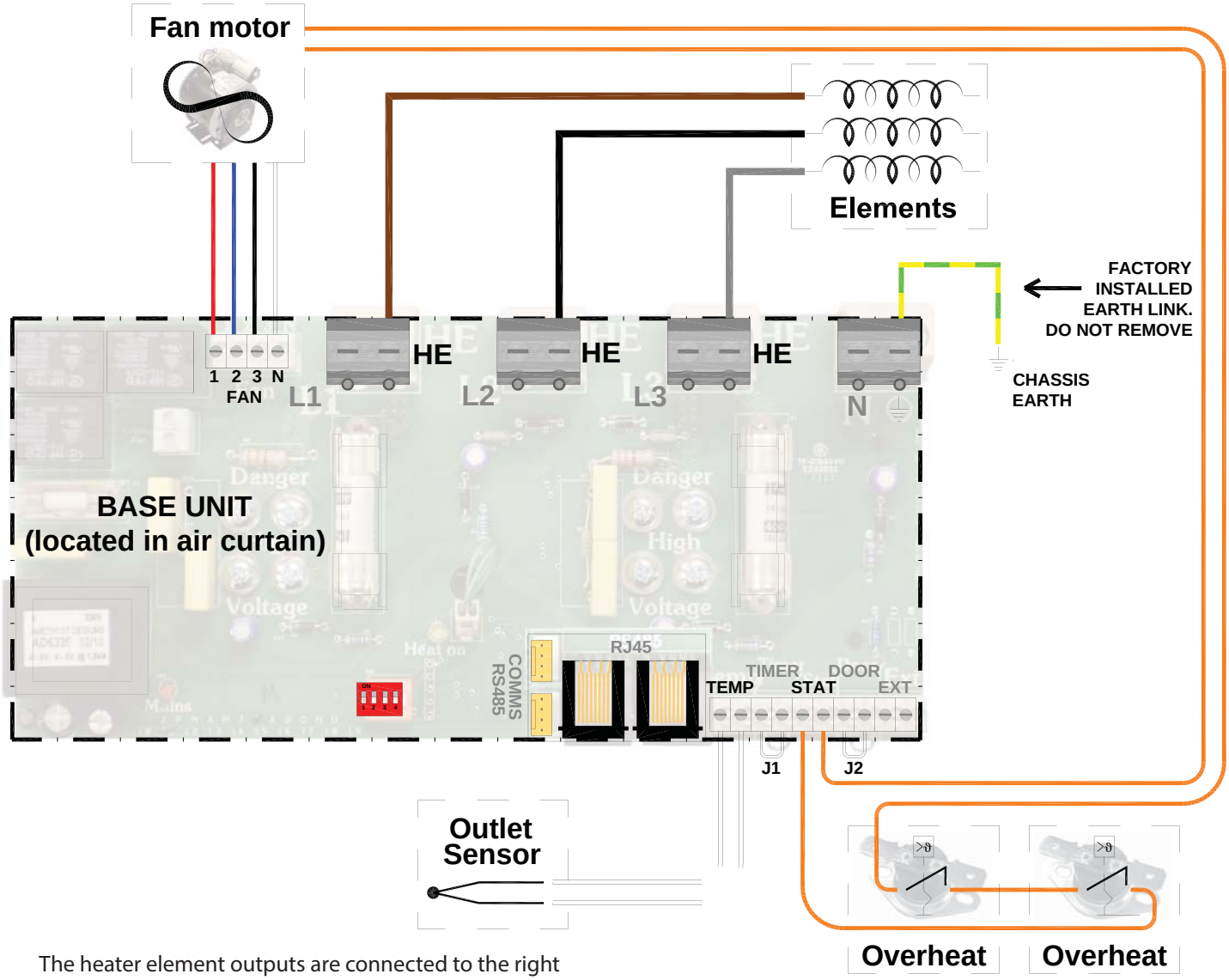
The fan output is connected to a 4 way terminal block marked **'N, 1, 2 and 3'.**

The sensor input (air sensor) is connected to 2 terminals marked **'TEMP'** on the base unit. The sensor is not polarity sensitive.

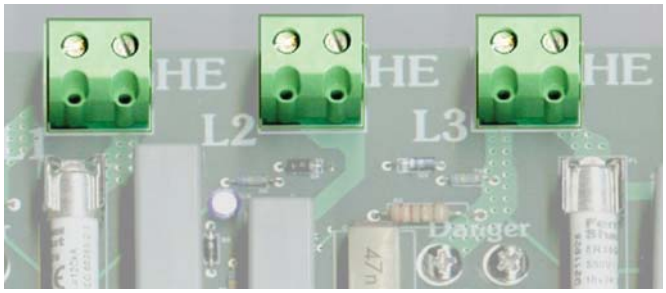
The external thermal trip (volt-free) is connected to 2 terminals marked **'STAT'** on the base unit. The terminals are not polarity sensitive.

Terminal	Description	Cable
HE	Heating elements phase 1	
HE	Heating elements phase 2	10mm² max
HE	Heating elements phase 3	
N	Neutral to fan	
1	Fan - low speed	
2	Fan - medium speed	1.5mm² max
3	Fan - high speed	
Temp	Air sensor pair (non-polarised)	
Stat	Ext thermal trip pair, n.c. (volt-free)	
Comms	Keypad/network connectors	RJ45

4.18 Factory Installed Wiring. Electrically Heated ACR200/ACR120HE/ACR180HE with SmartElec3.



The heater element outputs are connected to the right hand side of three terminal blocks and are marked **'HE'**. (See below).



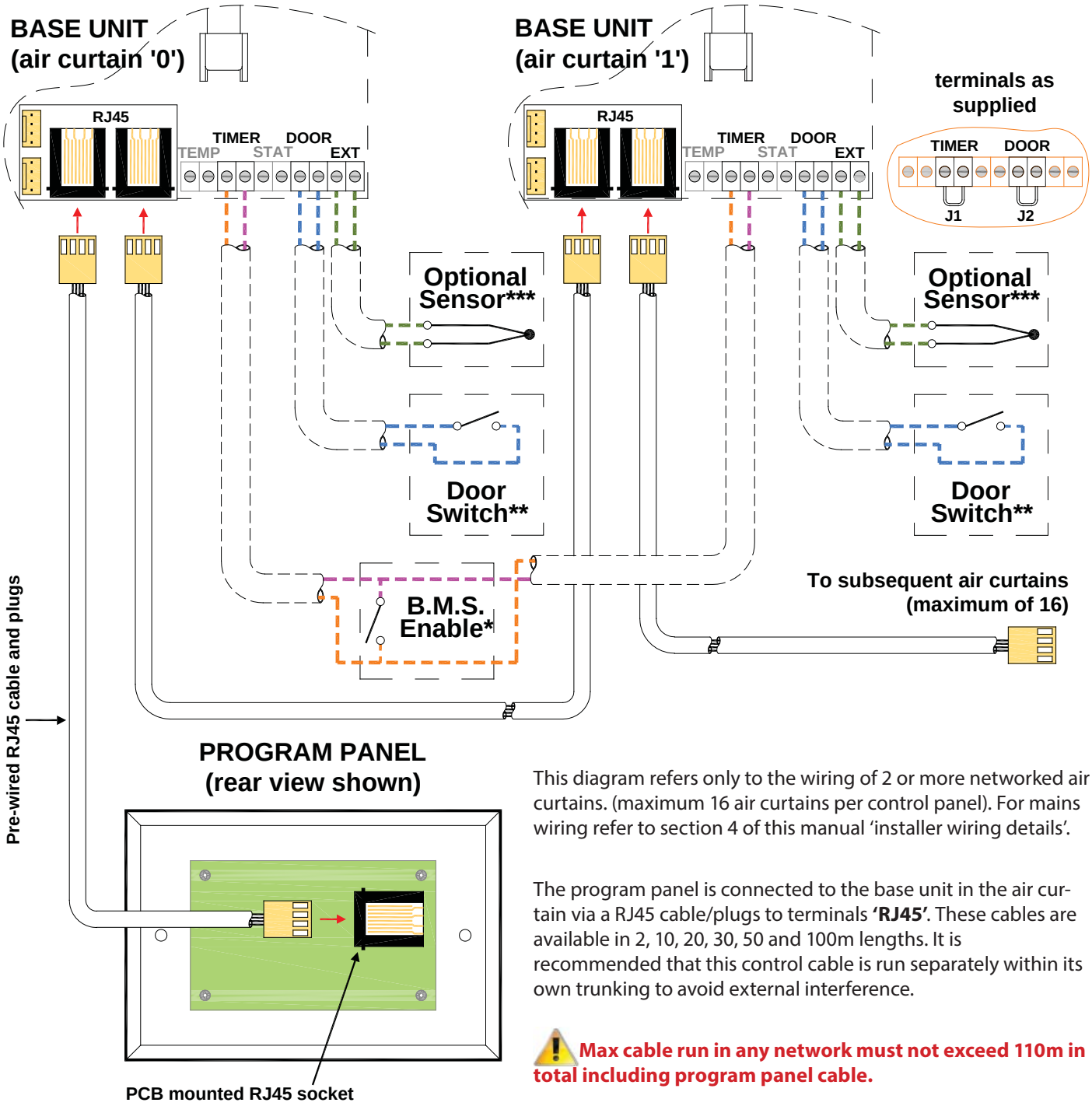
The fan output is connected to a 4 way terminal block marked **'N, 1, 2 and 3'.**

The sensor input (air sensor) is connected to 2 terminals marked **'TEMP'** on the base unit. The sensor is not polarity sensitive.

The external thermal trip (volt-free) is connected to 2 terminals marked **'STAT'** on the base unit. The terminals are not polarity sensitive.

Terminal	Description	Cable
HE	Heating elements phase 1	
HE	Heating elements phase 2	10mm² max
HE	Heating elements phase 3	
N	Neutral to fan	
1	Fan - low speed	
2	Fan - medium speed	1.5mm² max
3	Fan - high speed	
Temp	Air sensor pair (non-polarised)	
Stat	Ext thermal trip pair, n.c. (volt-free)	
Comms	Keypad/network connectors	RJ45

4.19 Network Wiring Electrically Heated with SmartElec3 Control.



This diagram refers only to the wiring of 2 or more networked air curtains. (maximum 16 air curtains per control panel). For mains wiring refer to section 4 of this manual 'installer wiring details'.

The program panel is connected to the base unit in the air curtain via a RJ45 cable/plugs to terminals **'RJ45'**. These cables are available in 2, 10, 20, 30, 50 and 100m lengths. It is recommended that this control cable is run separately within its own trunking to avoid external interference.

Max cable run in any network must not exceed 110m in total including program panel cable.

Note: All air curtains connected within the network system will operate under the settings of the single keypad.

Any air curtain within the network can be connected with and respond to the following optional circuits:

*** External switch** (ie BMS enable) where required, to be volt free and wired in **PARALLEL** via normally open contacts to each terminal pair **'TIMER'.** (Contacts closed to enable). Only air curtain(s) wired this way will respond to the enable signal. Remove factory fitted jumpers J1. **(NOTE: terminals are polarity sensitive)**

**** Door switches** where required, to be volt free and wired to **INDIVIDUAL** base units via normally closed contacts to each terminal pair **'DOOR'.** (Contacts open to enable door mode). Only air curtain(s) wired this way will respond to the door mode. Remove factory fitted jumper J2. refer section 10.2.6.1 - Door link settings.

***** Internal/external sensors**, where required, to be wired to **INDIVIDUAL** base units to each terminal pair **'EXT'**. Only air curtain(s) wired this way will respond to the sensor setting. If a sensor is fitted to more than one air curtain then the value is displayed as an average. refer section 10.2.6.4 - External temperature.

5. Installation Details.

5.1 Mounting

Airbloc units should be installed horizontally directly over the door opening. They are designed for discreet positioning in a suspended ceiling or bulkhead in the doorways of retail or commercial premises. The unit can also be mounted within an optional case for doorways with restricted space or no suspended ceiling or bulkhead.

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 to cover the entire door width.

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

5.2 Electrical Supply.

These units are suitable for connection to a 415 Volt, 50Hz 3 phase and neutral supply for Electrically heated 9-18kW models or 230/240 Volt 50 Hz single phase supply for Electrically heated 6kW, 9kW, Ambient and LPHW models.

Electrically heated models consume 6kW and 9kW at 230 volts and 9kW, 12kW & 18kW at 415 volts when switched to the full heat position depending on their model and capacity size.

The appliance shall be connected to the supply via an appropriate switched fused double pole isolator having a contact separation of greater than 3mm. Test for correct operation and refit the cover.

For connection to the mains supply it will be necessary to open the hinged lid from the unit. The base unit is located on a base plate. It will be necessary to connect the mains supply and the lead from the remote key pad prior to refitting the cover. Wire in accordance to diagrams in section 4.1 to 4.5

For optional SmartElec3 controller, wire as shown in diagrams 4.16 to 4.18

For safety reasons, a sound earth connection must always be made to the unit before it is put to use. The unit should be wired in accordance with IEE Regulations for the Electrical Equipment of Buildings.

5.3 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 detailed in Section 3.

Step 1

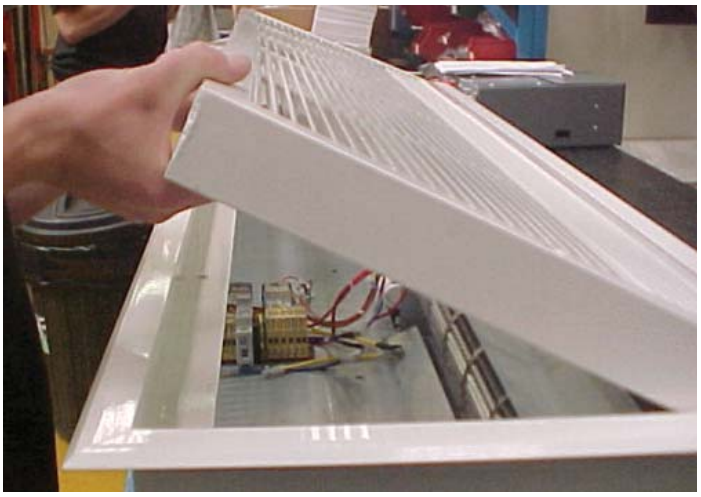
Before fitting or wiring the air curtain, ensure casing faces as below and see general installation guidance notes.

Step 2

Using a 4mm Allen key slacken the captive M6 Allen screws at the side of the grille.

Step 3

Access to the inside of the air curtain grille can be made. Open the grille. The grille is hinged to prevent the inner frame from dropping.

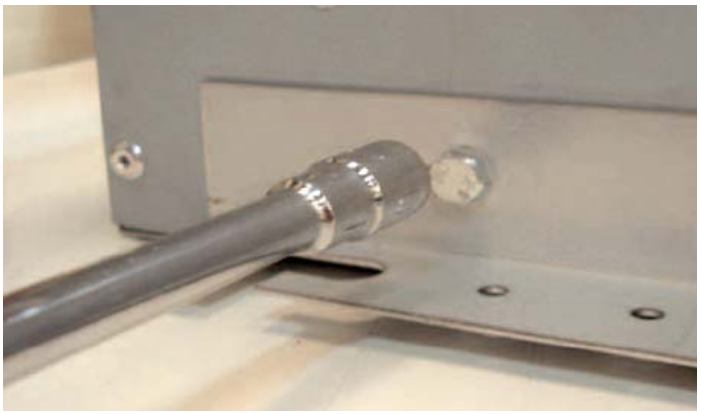


Step 4

The grille assembly can now be removed from the case to allow fitting of the product in the ceiling recess. Remove the screws from the outer frame to the top of the product case.

Step 5

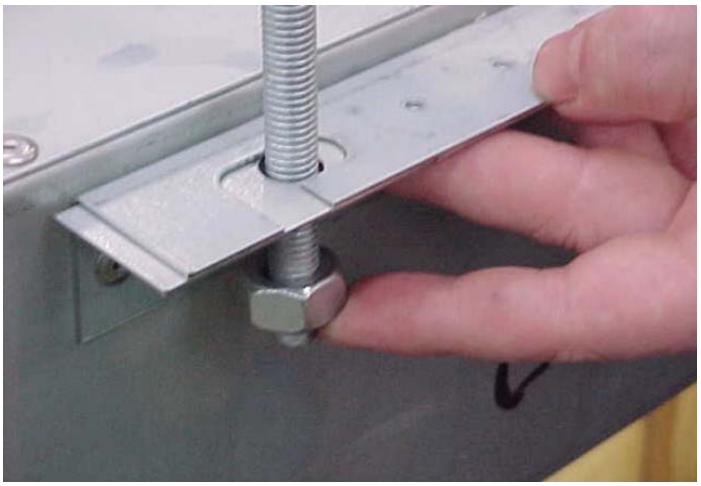
Attachment of the air curtain to the ceiling structure is by means of the two brackets attached to the side of the air curtain. The brackets may be removed to assist in passing the air curtain through the recess then reattached when in-situ.



Step 6

Either drop rods or catenary wire (available from manufacturer) can be used to fasten the air curtain to the ceiling support structure.

Note When using drop rods the casing mounting brackets are slotted and the mounting plates provided must be used on assembly.



Step 7

The height between the ceiling face and the face of the air curtain case needs to be adjusted to circa 40mm to enable the grille assembly to fit flush with the ceiling. Adjust accordingly.

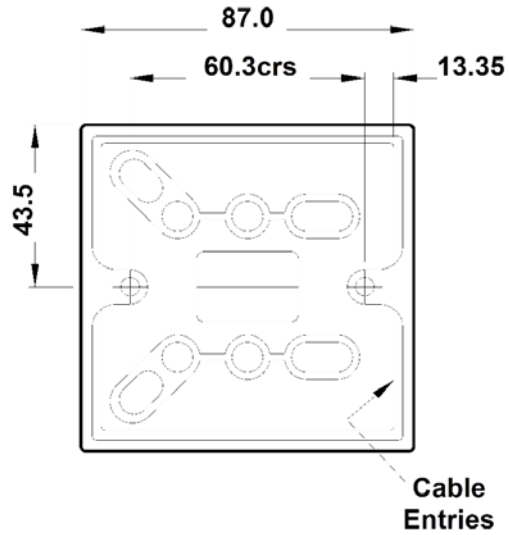
After fitting the product in the ceiling recess and adjusting the height to ensure that the grille sits flush to the ceiling (when re-fitted) take the grille assembly and refit using the screws removed during Step 5.

5.4 AC-ACR-PANEL programmer

The Electronic base unit is pre-installed inside the air curtain. All the external electrical connections are via screw terminals onto this base unit.

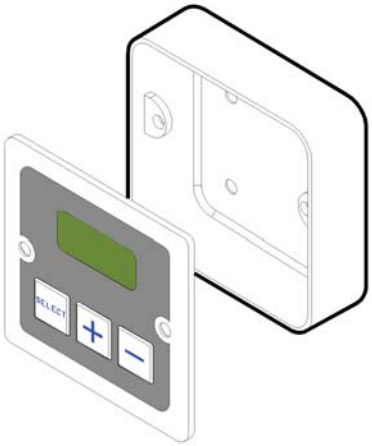
The program keypad is installed on a separate fascia plate and connected to a surface mounted back box in a suitable location. Please see fig 7.

Fig. 7. Surface mount location holes.



Alternatively, the program panel can be flush wall mounted with the addition of a suitable conduit box MK part number 861 ZIC or equivalent.

Fig. 8. Alternative conduit box



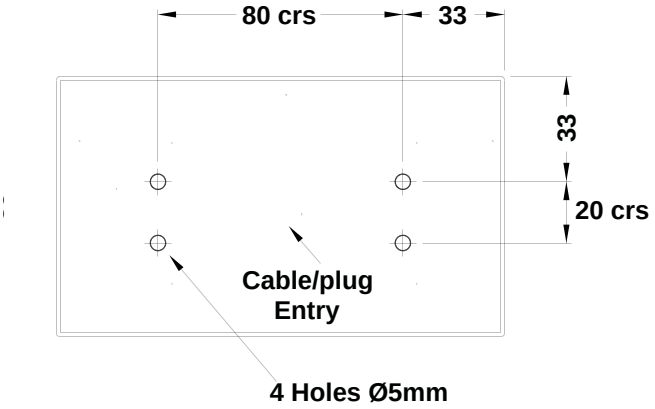
The distance between the base unit and the program panel can be up to 50m maximum.

5.5 Option SmartElec3 Controller

The SmartElec3 base unit is pre-installed inside the air curtain. All the external electrical connections are via screw terminals onto this base unit.

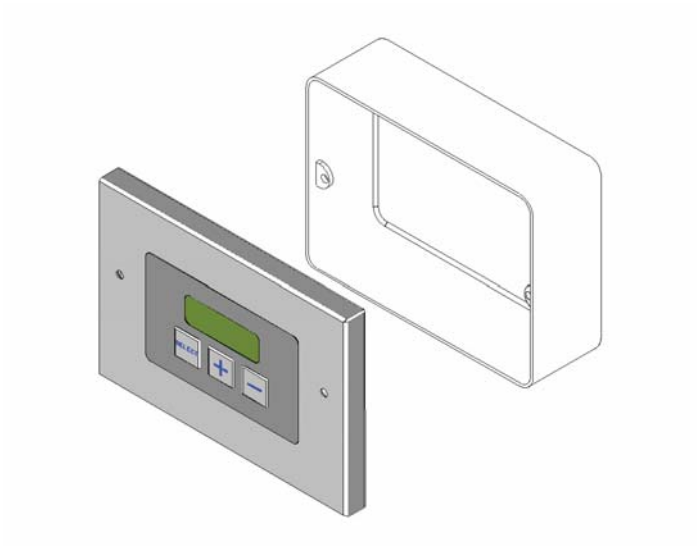
The SmartElec3 program panel is installed in a separate housing and connected to a surface mounted back box in a suitable location. Please see fig.9.

Fig. 9 Surface mount location holes.



Alternatively, the program panel can be flush wall mounted with the addition of a suitable conduit box MK part number 892 ALM or equivalent.

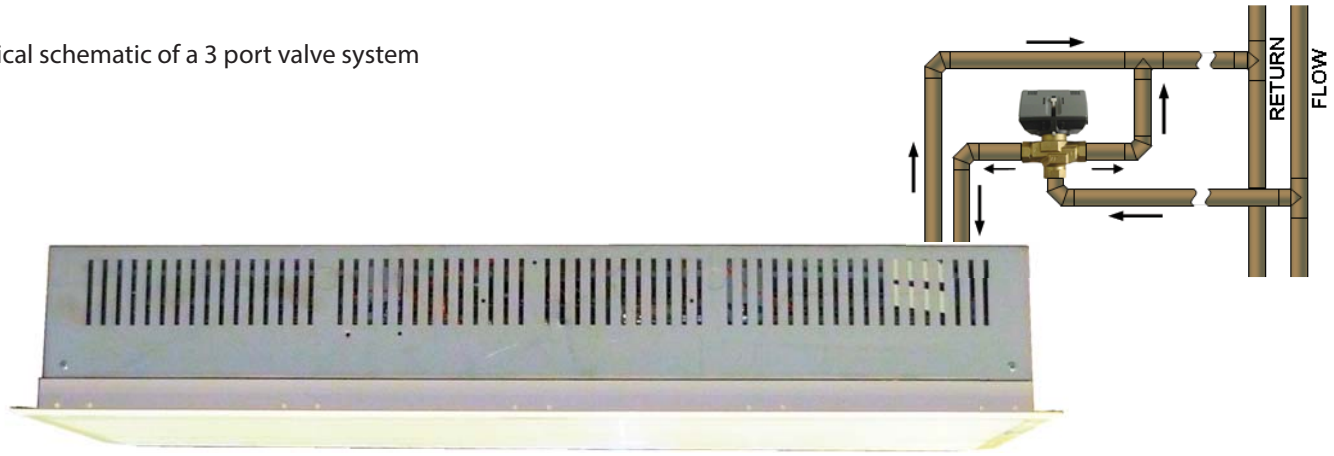
Fig. 10. Alternative conduit box



The distance between the base unit and the program panel can be up to 100m maximum.

5.6 Installation details - LPHW Only

Fig. 11. Typical schematic of a 3 port valve system



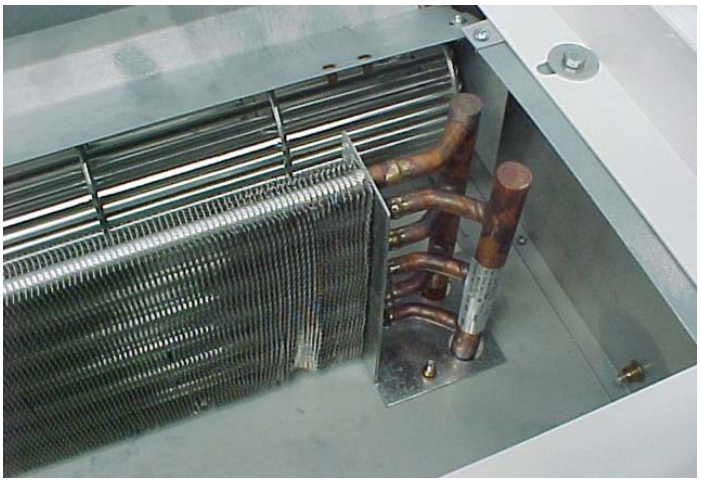
To avoid risk of transit damage to the flow and return connections, **ON LPHW STANDARD CAPACITY ONLY** the heating coil is provided loose inside the case together with the air deflector plate and side supports.

NOTE: HIGH CAPACITY LPHW COILS ARE PRE-FITTED.

To install, unpack the loose items and identify the two side supports as shown below and fit to the inner side of the case using the screws provided.

Note The side supports are handed.

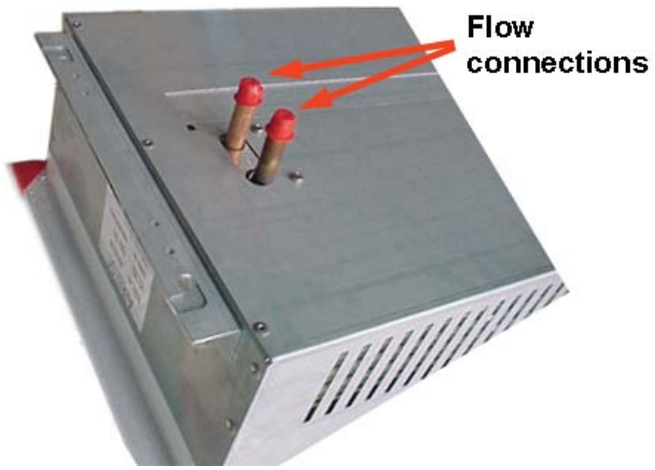
The coils **can be handed for right or left hand** exit by turning the coil through 180°. Prior to installation decide if you require left hand or right hand exit of the flow and return pipes from the product and then fix the coil in position using the screws provided.



After fitting the coil and side supports fit the air deflector plate to the side supports and rotor cut-off plate using the screws provided.

The LPHW copper tubing connections are as shown in fig.12 below and are 15mm outside diameter. Ensure correct water seal fittings are used. We recommend the use of a suitable water mains isolation valve to ease any maintenance.

Fig.12 LPHW connections.



Carefully close the grille and refit the fixing screw.

Test product as shown in the User Instructions.

5.6.1 Three Port Valve

An optional 3 port valve (supplied by others) can be used on the flow and return pipes to divert the hot water from the unit when not in use.

The valve must be fitted in accordance with the manufactures instructions.

When used in conjunction with the standard AC-ACR programmer, the 3 port valve can be wired into the base unit to open the valve when heat is selected (see section 4.5). This valve must operate on 230V.

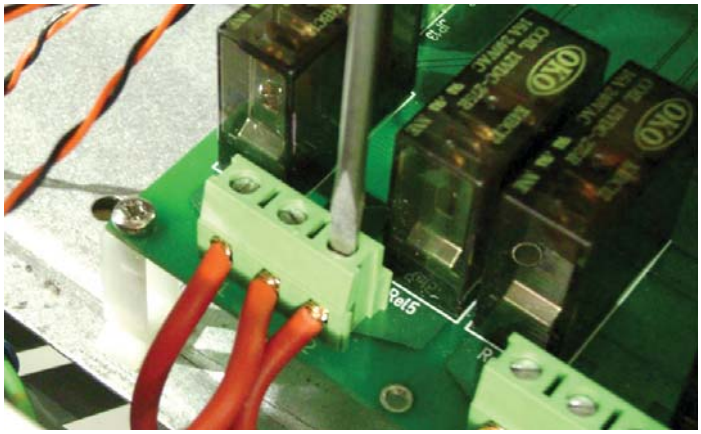
Note: This option can not operate with a SmartElec unit.

5.7 Installation wiring

With the grille door open, connect the electrical supply and program panel interconnecting wiring/factory supplied cables to the relevant terminals on the controller base unit.

Connect any interconnecting wiring/factory supplied cables to the programme panel.

Connect any optional wiring as required.

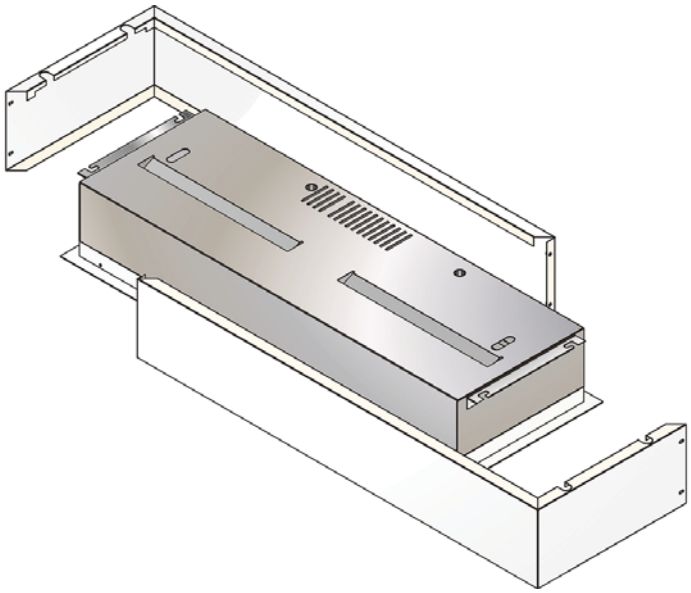


For full details see wiring diagrams in section 4. Ensure the correct diagram is used based on the information from the air curtain data plate and optional manufactures information.

5.8 Installation details - optional Case

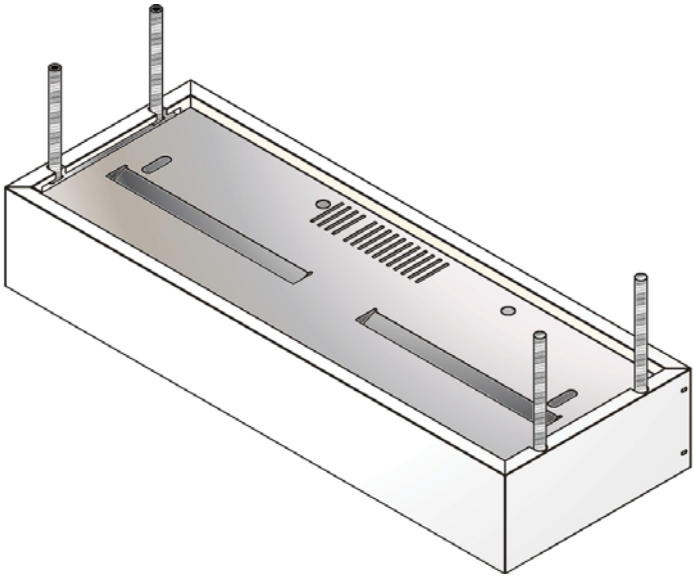
The ACR unit can also be mounted within an optional pre-coated outer case for use in doorways with restricted space or areas with no suspended ceiling or bulkhead.

The cases either come in two halves (as shown) for the 1000mm and 1500mm or four individual sides for the 2000mm.



Install the ACR unit using drop rods as previously described.

The sides of the case simply 'wrap' around the exposed body of the air curtain fixing at two edges (all four edges in the case of the 2000mm), with screws.



WARNING:
THIS AIR CURTAIN SHOULD NOT BE INSTALLED WHERE THERE IS A CORROSIVE ATMOSPHERE.

6. Service & Maintenance.

ALWAYS ENSURE THAT THE MAIN EXTERNAL ELECTRICITY SUPPLY IS SWITCHED OFF BEFORE COMMENCING ANY MAINTENANCE ON THIS HEATER

To obtain the best results from the heater, it is essential to avoid the accumulation of dust and dirt within the unit on the air inlet and discharge grilles. For this reason regular cleaning is necessary, paying particular attention to the removal of dirt build up on the rotor blades.

Cleaning of the fan is best carried out with a soft brush.

A single drop of light oil should be applied to the motor bearing from time to time.

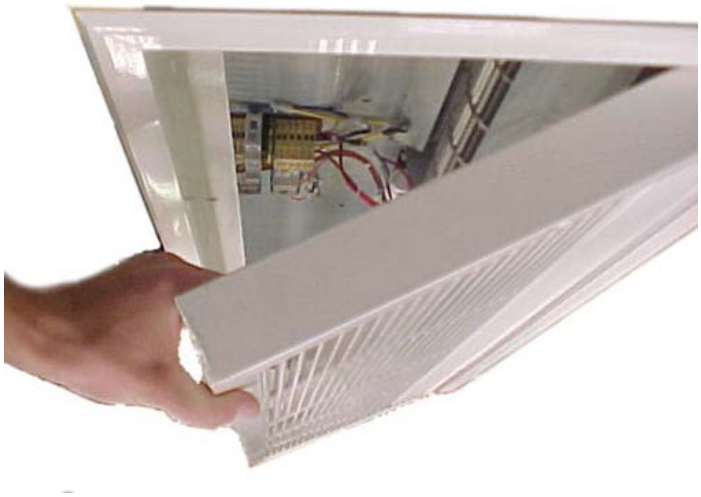
The product should be serviced annually. Servicing shall be undertaken by a competent person. Airbloc offer a service facility, call 01384 489700.

Step 1

Using a 4mm Allen key slacken the captive M6 Allen screws at the side of the grille.

Step 2

Open the grille. The grille is hinged to prevent the inner frame from dropping. Access to the inside of the air curtain grille can be made.



Step 3

With a soft brush clean away any dust from the motor and elements.

Check all connections and components for soundness or signs of deterioration and replace as necessary.

Re-assemble and test.

7. Spare Parts.

Note Any spare part components that are not approved by Nortek Global HVAC (UK) LTD could invalidate the approval of the appliance and validity of the warranty.

7.1 General

Item	Desc.	ACR100SE06/ ACR100SE09 ACR100SW9/ ACR100SA	ACR150SE06/ ACR150SE12/ ACR150SW12/ ACR150SA	ACR200SE09/ ACR200SE18/ ACR200SW18/ ACR200SA	ACR120HE12/ ACR120HW12/ ACR120HA	ACR180HE18/ ACR180HW18/ ACR180HA
	Motor	100003		100012	100535	
	Contactor (where reqd)	n/a		900078	n/a	900078
	Rotor Left Hand*	100001	100006	100010	100539	100540
	Rotor Right Hand*	100002	100007	100011	100536	100537
	Thermal Cut Out (where reqd)			900001		

** Right hand & left hand when viewed from outside the building looking into the door opening.*

7.2 AC-ACR-PANEL Controller

Due to the nature of it's construction, it is not advisable to repair damaged electronic components on either the AC-ACR base unit or AC-ACR-PANEL programmer

	Program Keypad	AC-ACR-PANEL
	Base Unit	AC-ACR-PCB
	Outside Air Sensor	SC-OS

7.3 SmartElec3 Controller

⚠ Due to the nature of it's construction, it is not advisable to repair damaged electronic components on either the SELEC3BU45 base unit or AC-ACRRP45 programmer

Item	Desc.	All models
	Program Panel	108221-RJ45
	Panel P.C.B.	AC-ACRRP45
	Base Unit	SELEC3BU45
	Heat Sensor	SELEC2HS
	Fuse	900471

Item	Desc.	All models
	Control Fuse	900473
	Outdoor Sensor	SC/OS
	Data cable c/w plugs	2M RJ45-CABLE-2 10M RJ45-CABLE-10 20M RJ45-CABLE-20 30M RJ45-CABLE-30 50M RJ45-CABLE-50 100M RJ45-CABLE-100

7.4 Heat Mediums

Electric Element

Item	Rating	6kW	9kW	12kW	18kW
	SE 1Pha	101565/107817	107818	-	-
	length	1.0m/1.5m	2.0m	-	-
	HE 3Pha	-	100004	100008	100013
	length	-	1.0m	1.5m	2.0m
	HE 3Pha	-	-	100526	100527
	length	-	-	1.0m	1.5m

LPHW coil

Item	Rating	9kW	12kW	18kW
	SE	100197	101280	100199
	length	1.0m	1.5m	2.0
	HE		103680	103607
	length		1.0m	1.5m

8. Fault Finding.

8.1 General

If the air curtain does not operate after running through the detail provided in Section 6, then a suitably competent service engineer should be called to identify the nature of the fault.

Note The manufacturer operates a service function from the address provided in these instructions.

All Air Curtains are fitted with fuse protection and motor thermal protection.

Other faults in relation to the element, motor and wiring should be identified using conventional fault finding techniques.

In the event that electrical components are replaced, please ensure that electrical safety checks in accordance with the regulations in force in the country of use are undertaken.

8.2 Electrically heated units only.

For the service engineer, please note that there is a thermal cut-out incorporated in the air curtain which needs to be manually reset. The cut-out is located near to the mains terminal block.

Re-setting the thermal cut-out may help to identify the nature of the fault however we do not recommend re-set without a thorough investigation into why the cut-out operated.

Fig. 13. Thermal Cut-out

8.3 Electronic Controller.

If the air curtain goes into thermal trip (overheat) the AC-ACR-PANEL keypad displays an 'ERR' code. Refer to air curtain instructions to remedy.

The electronic control base unit is protected from any short circuit on the air sensor or heatsink sensor as the short circuit will cause the temperature to go high and trigger over temperature alarm.

8.4 SmartElec3 Controllers.

The SmartElec3 control raises an alarm if any of its inputs are outside their normal working scope. Alarms are displayed on the program panel as a code with a prefix "E" 0 E6. The first number represents the air curtain address. See chart over.

As the alarms are mutually exclusive, the first alarm code displayed on the program panel will stay on until the fault has been cleared.

Apart from the communication failure alarm 0 -- which could be due to a broken connection of the data link and air curtain not found alarm, E rr which could be due to incorrect addressing, all other alarms will cause the base unit to switch off the heater output.

The SmartElec3 base unit is protected from any short circuit on the air sensor 0 E1 or heat sink sensor 0 E4 as the error will cause the temperature to rise and trigger over temperature alarm. 0 E1

There are five basic checks to perform should 'X--' 0 -- appear on the program panel display. These are as follows:

1: Continuity: Use a multimeter to check continuity between each end of all four cores at the plugs

2: Short circuit: Use a multimeter to check that there are no short circuits between any of the four cores.

N.B. This test should be done with both ends of the cable disconnected to avoid false readings.

3: Plugs: Check that the plugs are firmly seated on the circuit board pins in both the program panel and on the base unit.

4: Addressing: (Network versions only). If two or more air curtains are networked, check that each base unit has a unique address as described in section 10.4

5: Network cables: Ensure that the total run of all cables in the network does not exceed 110m including the cable to the program panel.

If a panel has never before been run, it automatically starts in engineer's mode when first powered-up. To exit this mode, press and hold the + Button.

Alternatively, the engineer's mode automatically self-clears after approximately 10 minutes of non-activity on the switches.

The system can be reset by powering-up the panel whilst holding down both the SELECT and — buttons.

The display shows the 'start' pattern but then goes blank.

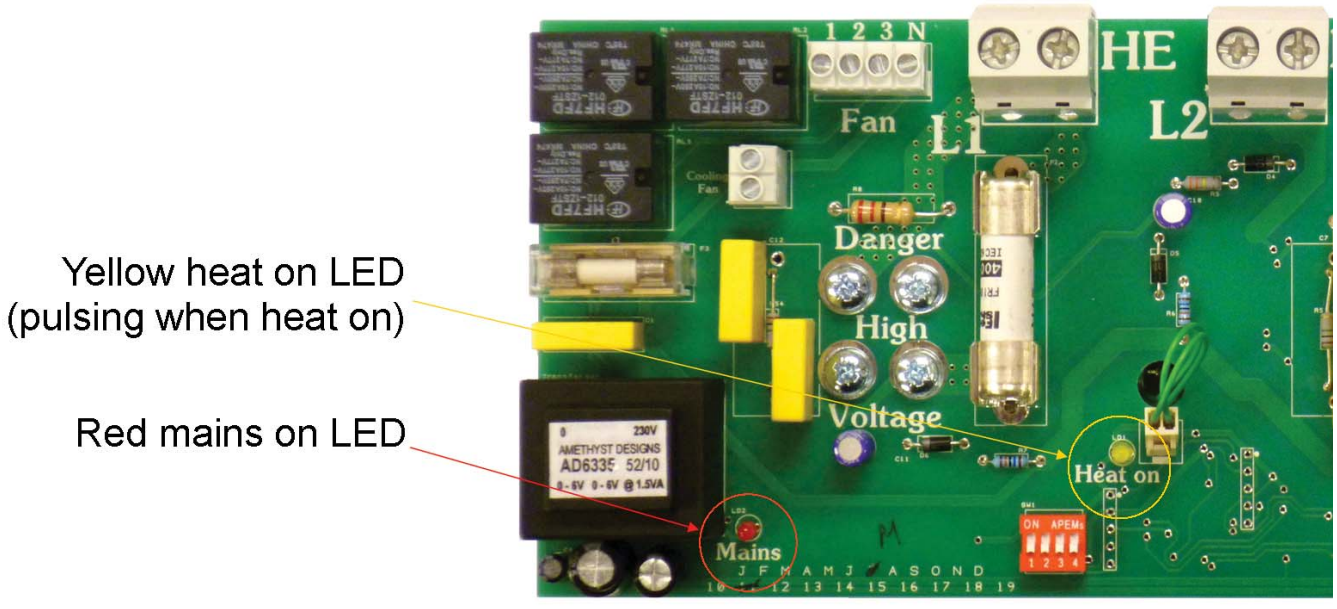
Release the buttons where upon the display resumes and the system addressing commences, finding only those air curtains which are actually connected and working.

If E n9 appears on the display, press and hold the + button for a few seconds then release. The display will then return to the normal mode.

8.4.1 SmartElec3 Fault Codes

Code	Description	Symptom	Possible Cause	Remedy
# _ _	Communications failure	No control on unit	Bad data cable connection Damaged cable	Check data cables and plugs Replace damaged cable
# E1	Air sensor temp too high or Air sensor failure	Fan operating, no heat	High ambient air temperature Incorrect impeller rotation Motor failure Air sensor cable disconnected Air sensor broken	Check ventilation Check rotation of impeller Check motor, replace if necessary Check cable Replace air sensor
# E3	Heatsink too hot	Fan operating, no heat	High ambient air/faulty base unit	Replace SmartCom base unit
# E4	Heatsink sensor failure	Fan operating, no heat	Heatsink sensor wiring disconnected/faulty Heatsink sensor faulty	Check wiring Replace SmartCom base unit
# E5	Ext. temp sensor failure	Unit runs but no external temperature control	External temperature sensor faulty	Repair faulty wiring Replace faulty sensor
# E6	Overheat stat open circuit	Fan operating, no heat	Overheat stat open circuit	Replace overheat thermostat

8.4.2 SmartElec3 base unit LED indicator location/function



9. Parts Replacement.

Warning
Ensure electrical power is isolated from the product.

For access follow steps 1 - 4 as stated in Section 6

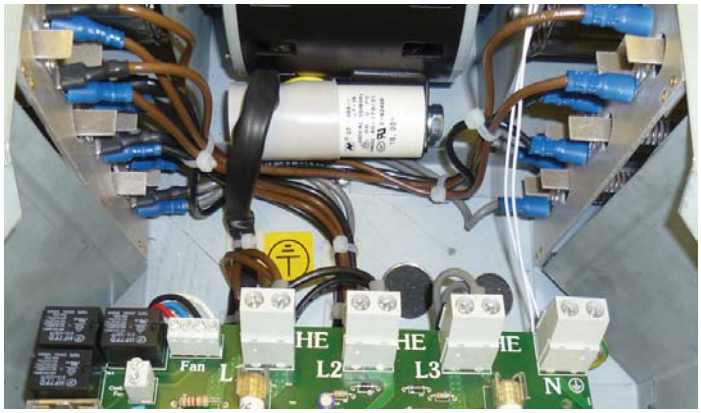
9.1.1 Electrical element replacement SE.

Step 1

Using a 4mm Allen key slacken the M6 Allen screws at the side of the grille. Access to the inside of the air curtain grille can be made. Open the grille. The grille is hinged to prevent the inner frame from dropping.

Step 2

Disconnect element wires and if necessary remove cut-off plate fixing screws.

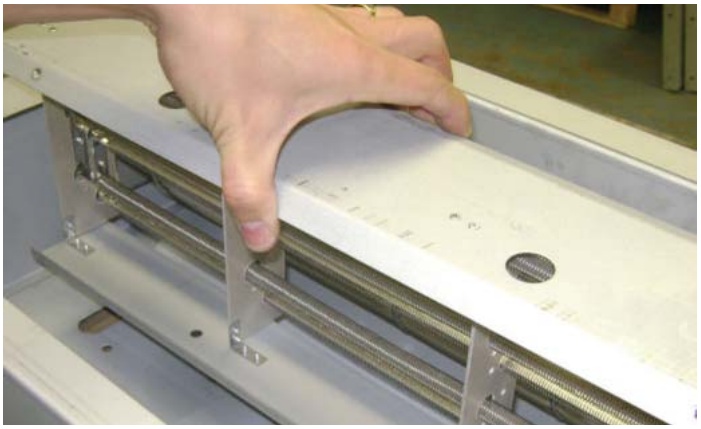


Step 3

Remove element top fixing screws. Locate and remove element fixing screws by inserting a screwdriver through the hole indicated below.

Step 4

Lift out element cartridge, replace as required.



9.1.2 Electrical element replacement HE.

Step 1

Using a 4mm Allen key slacken screws securing the grille. Remove 4 screws securing the top of the case and remove. Slacken two hinging bolts on both ends. Remove three bolts securing the access plate. Carefully hinge down the access plate.

Note: Take the weight as access plate swings down.

Step 2

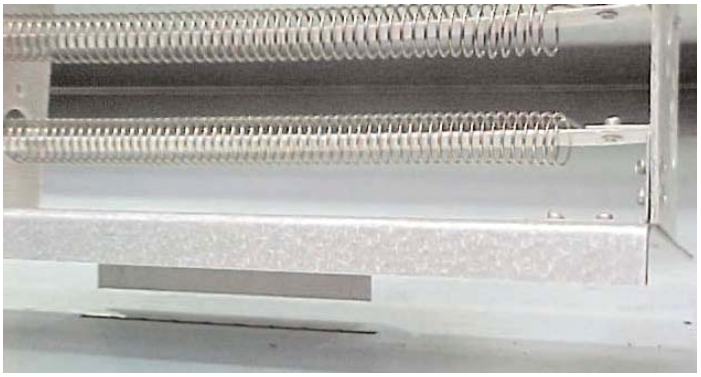
Carefully remove connections to the elements, noting wiring configuration.

Step 3

Remove two bolts securing elements.

Step 4

Lift out element cartridge, replace as required.



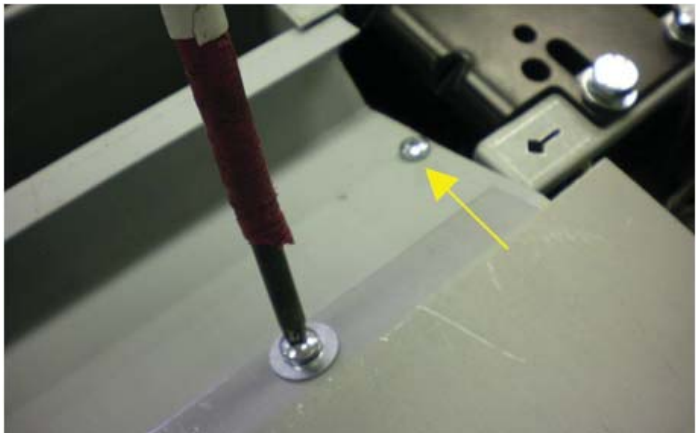
9.2.1 Rotor and motor replacement SE

Step 1

Using a 4mm Allen key slacken the M6 Allen screws at the side of the grille. Access to the inside of the air curtain grille can be made. Open the grille. The grille is hinged to prevent the inner frame from dropping.

Step 2

Remove fastenings securing the motor end of the deflector plate, including the single side screw (arrowed).



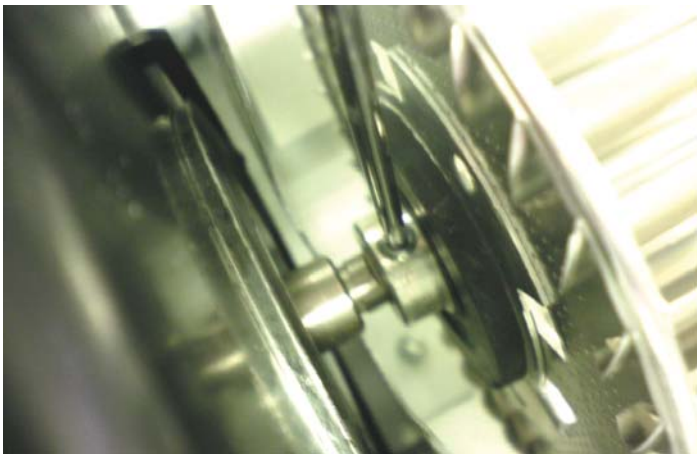
Step 3

Remove the four screws securing the rotor support bracket and the opposite end of the deflector plate. Remove plate.

Step 4

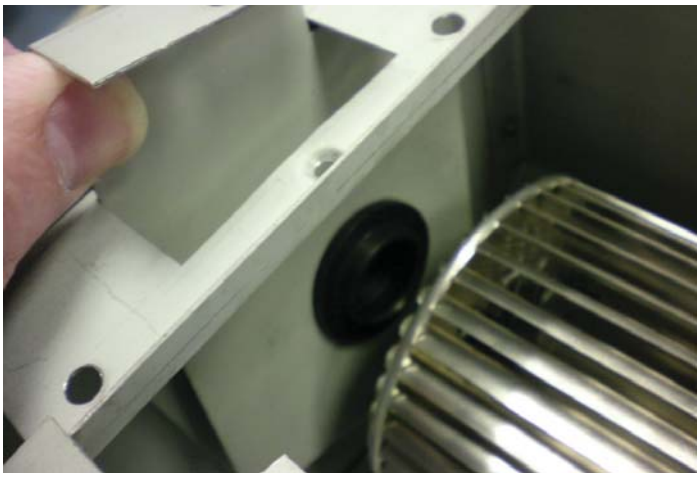
Using a 2.5mm Allen key, slacken the rotor hub grub screw.

Note: when refitting ensure that the grub screw bears on the flat of the motor shaft.



Step 5

Push the rotor support bracket away from the rotor to release the rotor bearing.

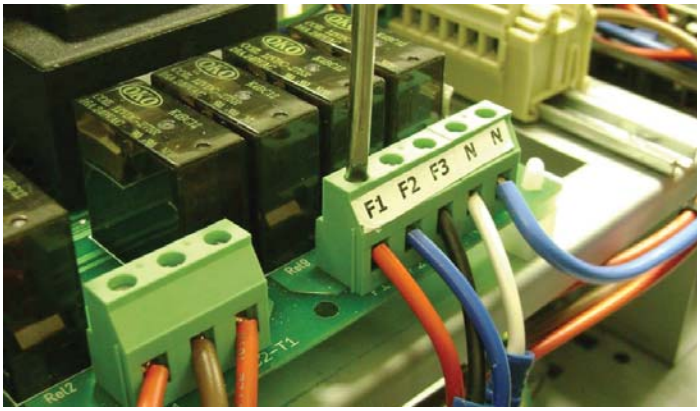


Step 6

Lift the rotor clear of the motor shaft then remove it from the air curtain.

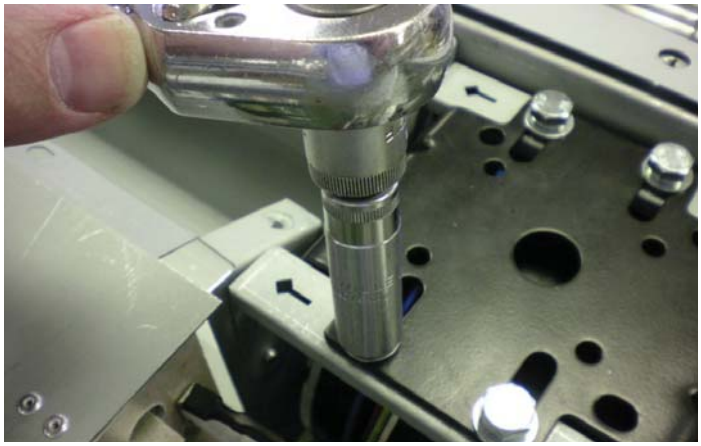
Step 7

Disconnect fan motor cables including the earth which is bolted to the chassis. (SmartElec shown over)).



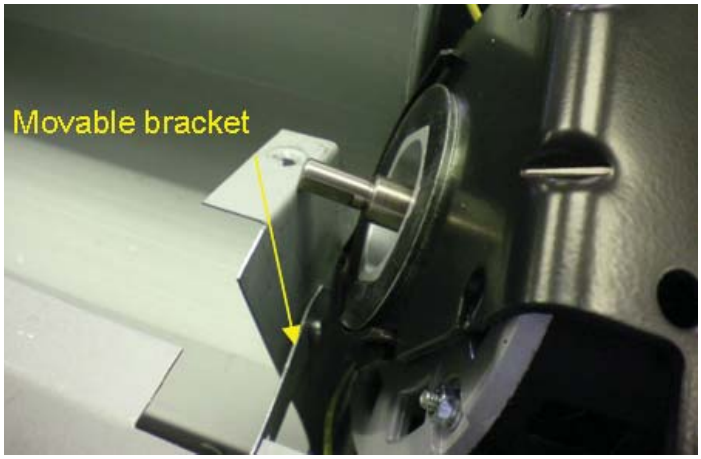
Step 8

Remove the four 10mm bolts securing the motor to its bracket.



Step 9

Swing the movable bracket clear and remove the motor.



9.2.2 Rotor and motor replacement HE

Step 1

Using a pozidrive screwdriver undo screws securing the grille and remove.

Remove 4 screws securing the top of the case and remove. Slacken two hinging bolts on both ends.

Remove three bolts securing the access plate.

Carefully hinge down the access plate.

Note Take the weight as access plate swings down.

Step 2

Remove 6 screws securing access panel and carefully remove panel.

Step 3

Remove 8 bolts securing wheel assembly.

Step 4

Turn retaining latch to release chassis.

Step 5

Holding handle, carefully pull motor and air wheel assembly forward.

Step 6

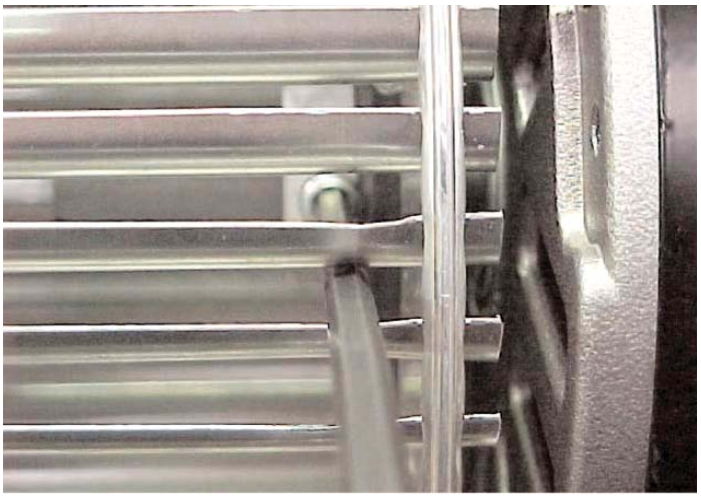
Remove screw securing rotor bearing plate.

Repeat for opposite side.

Step 7

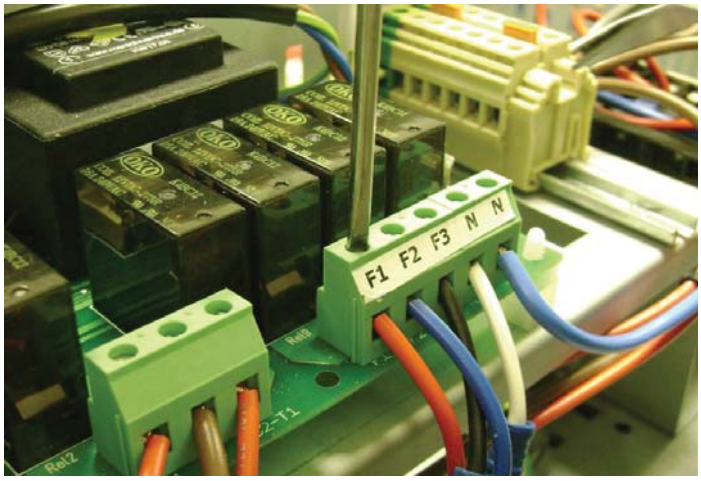
Slacken grub screw securing rotors to the motor shaft, remove rotor.

Repeat for opposite rotor.



Step 8

Disconnect the wires from the motor to the controller base unit.



Step 9

Remove the bolts securing the motor to the chassis.

Remove motor from air curtain.

Replace motor in reverse order. Carefully close the grille and refit the fixing screw.

Test product as shown in the User Instructions.

9.3 LPHW coil replacement.

Step 1

Using a 4mm Allen key slacken screws securing the grille.

Remove 4 screws securing the top of the case and remove.

Slacken two hinging bolts on both ends.

Remove three bolts securing the access plate.

Carefully hinge down the access plate.

Note: Take the weight as access plate swings down.

Step 2

Disconnect flow connections with appropriate tools.

Step 3

Remove the air deflector plate and the side support plates, retaining the screws.

Step 4

Remove coil fixing screws from the outside of the air curtain body.

Step 5

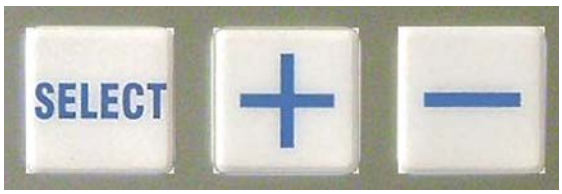
Withdraw the coil.

Replace LPHW coil in reverse order.

10. User Instructions.

fig.14. AC-ACR-PANEL Programmer

10.1.1 Keypad Buttons



The SELECT button will allow you to navigate.

The + button will allow you to increase the setting.

The — button will allow you to decrease the setting.

10.1.2 Operation

On first power up, the display panel will have the following default settings:

- F. 0 (no fan)
- H. 0 (no heat)
- 1. 16 (°C. Heat set point - Auto mode only)
- 2. 7 (°C. half heat set point - Auto mode only)
- D. 2 (fan speed in door switch mode)

Note: Subsequent power ups will retain any entered settings in the display panel internal memory.

Press the + or — buttons to toggle between the 'F' (Fan), 'H' (Heat) and On/Off Parameters.

Prefix 'F' denotes the FAN SPEED. This can be either 1: slow ; 2: medium or 3: fast speed. 0 setting denotes the unit is OFF.

To alter the current speed, press the SELECT button. The value will start flashing.

Press the + or — buttons to increase/decrease the desired setting.

Press the SELECT button to confirm new setting. A delay of 7 seconds will return to the original display.

Prefix 'H' denotes the HEAT setting. This can be either 1: low heat; or 2: high heat. 0 setting denotes the unit is set at fan only.

To alter the current setting, press the SELECT button. The value will start flashing.

Press the + or — buttons to increase/decrease the desired setting.

Press the SELECT button to confirm new setting. A delay of 7 seconds will return to the original display.

The next parameter will either turn the unit On or Off.

To turn the unit Off, press the SELECT button. 'On' will start flashing.

Press the — button. 'Off' will start flashing.

Press the SELECT button to confirm new setting.

To turn the unit On, press the SELECT button. 'Off' will start flashing.

Press the + button to alter to 'On.

Press the SELECT button to confirm new setting. A delay of 7 seconds will return to the 'F' Fan parameter.

10.1.3 Engineers settings

10.1.3.1 Auto Mode

The controller can be set to automatic control only when used in conjunction with an optional outside sensor.

To access the engineers setting, first ensure that the display is in the (H) HEAT parameter. Press and hold the SELECT button for 5 seconds. Set point '1' will appear.

If the outside air temperature is above this value, there is no heat power. If the outside temperature falls below this value but is above set point 2, then the heat will be at half power. (Range: 0 - 30 degrees).

To alter the setting, press the SELECT button then the + or — buttons to increase/decrease the desired setting.

Press the SELECT button to confirm new value and use the + button to move to the next setting. (A delay of 7 seconds will return to the original display.)

If you have previously pressed the SELECT button, Set point '2' will appear.

If the outside air temperature falls below this value, the heat will be at full power. If the outside temperature is above this value but is below set point 1, then the heat will be at half power. (Range: 0 - 30 degrees)

To alter the setting, press the SELECT button then the + or — buttons to increase/decrease the desired setting.

Press the SELECT button to confirm new value.

Press the + button, setting "A.Of" will appear.

This setting will enable the Auto Mode. (Range: On/Off)

To alter the setting, press the SELECT button then the + or — buttons to toggle between the "A.Of" and "A.On" modes.

"A.On" enables the air curtain to run under automatic control from the optional outdoor sensor. "A.Of" enables the air curtain to run under normal control.

To return to the engineering setting mode press and hold the SELECT button for 5 seconds.

To return to normal operating mode press and hold the SELECT button for 5 seconds.

10.1.3.2 Door Switch Mode

The controller can be set to a preset fan speed when the door opens. This function can only be used in conjunction with a door switch.

To access the engineers setting, first ensure that the display is in the (F) FAN parameter. Press and hold the SELECT button for 5 seconds. Setting 'd' will appear.

The air curtain operates as normal under the program of the Fan and Heat settings. As the door opens the air curtain changes state to the settings preset in this mode. As the door closes, the air curtain returns to normal. (Range: 1: slow ; 2: medium or 3: fast speed. 0 setting denotes the unit is OFF.)

To alter the setting, press the SELECT button then the + or − buttons to increase/decrease the desired setting.

Press the SELECT button to confirm new setting. A delay of 2 seconds will return to the original display.

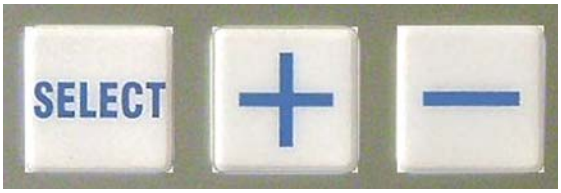
Note: All air curtains connected within the network system will operate in unison under the user settings of the single keypad.

Any air curtain can respond to optional circuits i.e. External switch (BMS); or Door switch or Internal/external sensors, ON AN INDIVIDUAL BASES.

10.2 Option SmartElec3 Controller

fig.15. SmartElec3 Programmer

10.2.1 Keypad buttons



The buttons have the following functions:

SELECT Press the select button to allow navigation.

\+ Press the + button to increase a setting.

− Press the - button to decrease a setting.

10.2.2 Keypad display

10.2.2.1 Normal mode displays

First power up

No air curtains found

Curtain address and temperature set point

10.2.2.2 Normal Operation

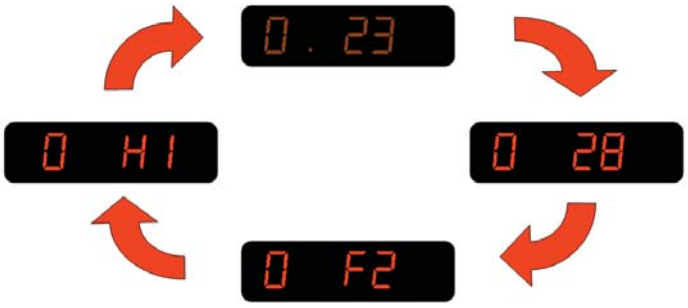
During normal operation mode the display is dimmed.

Pressing the SELECT button, will put the panel into active mode. If no button is pressed for several seconds the display reverts to normal mode.

During normal operation the unit will display for example: 0 25 where '0' is the curtain address, and '25' the temperature measured for the unit.

Where multiple air curtains exist in a network, the display scrolls through each unit in turn, changing approximately once every second.

If the air curtain is in operation and under heat demand, a 'decimal point' 0. 23 is shown after the air curtain address.



Where multiple air curtains exist in a network and controlled from a single keypad, these will be detected and displayed in turn, for example:

Any air curtain in the network can be accessed by pressing the SELECT button when it's address appears on the display.
The settings can then be accessed as previously described.

10.2.3 OFF mode.

During normal operation, press and hold the − button for approximately two seconds. The display blanks until you release the button. The heating and fans are now turned off. Releasing the button in less than this time and the action has no effect.

Where multiple air curtains exist in a network, this action turns off all air curtains.

12.2.4 Settings Mode

10.2.4.1 Activate settings display

To enter the Settings mode press the SELECT button. This will illuminate the screen. Press the SELECT button till the desired setting is shown.

By pressing the SELECT button it will also advance to the next setting.

Note: If a setting has been altered by using the + or − buttons, it must be confirmed by pressing the SELECT button.

10.2.4.2 Settings displays

Press the SELECT button to advance through the settings. The displays will scroll as follows:

10.2.5 Set-up configurations

10.2.5.1 Set fan speed

Once the display becomes illuminated press the the SELECT button once. Display shows the fan speed.

Press + to increase fan speed.

Press − to decrease fan speed.

Three speeds and an 'off' setting are available:

0 F1 Speed 1 0 F2 Speed 2

0 F3 Speed 3 0 F0 Fan 'off'

10.2.5.2 Set heat

Press the SELECT button again Display shows the heat setting.

Press + to set heat 'on'.

Press − to set heat 'off'.

If no button pressed for 2 seconds, display will revert to normal user. e.g. 0 25

10.2.5.3 Set temperature

Press the SELECT button once to allow changes to be made.

Press + to increase temperature set point. (max 35°C)

Press — to decrease temperature set point. (min 16°C)

Display shows for example: 

10.2.5.4 Networked air curtains

Where multiple air curtains exist in a network and controlled from a single keypad, these will be detected and displayed in turn, for example:

Any air curtain in the network can be accessed by pressing SELECT when it's address appears on the display.
The settings can then be changed as previously described.

10.2.6 Engineers settings

Other options are available in engineer's mode.

To access the engineers mode either: press and hold the + button for a few seconds until the display goes blank, then press SELECT briefly. The display will show 

or
Power-up the system with the SELECT and + buttons pressed and release when the display goes blank the display will show 

As in normal mode, Engineers set-up mode is started by pressing the SELECT button whereupon the display will illuminate. Advance through the normal modes settings of temperature, fan and heat by pressing the SELECT button.

Pressing the SELECT button again advances to further options to allow other settings of the system. The engineers set-up options listed herewith depend various factors e.g. optional door switch, multiple air curtains etc.

Notes: If a panel has never before been run, it automatically starts in engineer's mode when first powered-up.

Engineer's mode automatically self-clears after approximately 10 minutes of non-activity on the switches.

10.2.6.1: Door link settings:

This provides an alternative fan speed and heat setting which is activated only when the door link is open circuit.

The fan speed is accessed by pressing the the SELECT button until the display shows: 

Use the + and — buttons to change the setting.

Fan OFF

Fan speed 1

Fan speed 2

Fan speed 3

The temperature setting when the door link is open circuit is accessed by pressing the SELECT button until the display shows:


Use the + and — buttons to alter the temperature value.

Heat OFF

5°C

10°C

15°C

20°C

25°C

30°C

35°C

10.2.6.2 Link-group interlock

If there is more than one air curtain, a group interlock option may be set. This provides an alternative fan speed and heat setting when activated by certain external connections on individual air curtains.

This function is accessed by pressing the SELECT button until the display shows 

(where '0' is the air curtain address to be used as a master unit for interlocks.)

See table to follow for possible settings.

0 d0	Default setting
0 d1 or 0 d1	Master setting range
0 d2	Other air curtains

See table below for possible settings.

Master setting	Function
1	Timer/BMS interlock
2	Door interlock
3	Timer/BMS/door interlock
4	Stat interlock
5	Timer/BMS/stat interlock
6	Stat/door interlock
7	Timer/BMS/stat/door interlock

10.2.6.3 All air curtains

This function is accessed by pressing the SELECT button until the display shows ≡ 35

Using this setting all air curtains in a network respond to the same settings. Settings for individual air curtains can still be changed if required.

10.2.6.4 External temperature

This is only displayed if the factory supplied optional external temperature sensor is connected to the air curtain.

This function is accessed by pressing the SELECT button until the display shows: o 25

Use the + and − buttons to change to the desired temperature setting.

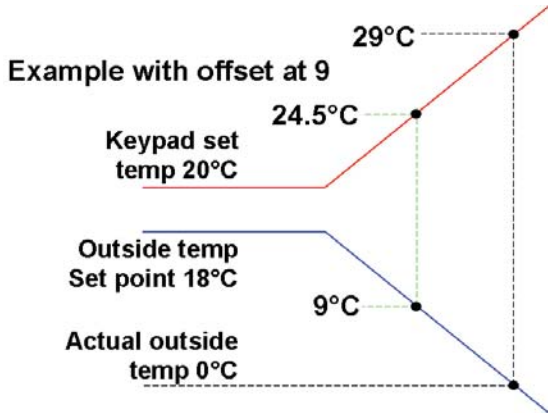
If the external temperature is equal to the set temperature, all air curtains are turned off. The temperature must then drop to 3°C below the set temperature before the air curtains are turned back on.

Note: for multiple air curtains - more than one can have an external sensor connected. When this is the case the sensor values are displayed as an average. (If one external sensor goes faulty, the average is worked out from the remaining working ones).

10.2.6.5 External temperature offset

This function is accessed by pressing the SELECT button until the display shows: oo4

This setting allows the temperature setpoint to be automatically increased as the external temperature falls to, or below, zero. For instance, a setting of 4 means a +4°C offset at 0°C. The maximum offset is 9°C. If this feature is not required the setting should be: oo0



Note: When more than one air curtain is used, this feature will only work under the 'all controllers' setting.

10.2.6.6 Temperature limits

This function is accessed by pressing the SELECT button until the display shows:
35 and 16 respectively
i.e. maximum and minimum set limits for set temperature.

Use the + and − buttons to change to the desired limit temperature settings.

The maximum (default 35°C) may be set any where between the current minimum and 50°C, and the minimum, (default 16°C) may be set anywhere between 3°C and the current maximum.

To exit the engineers mode press and hold the + button for a few seconds.

10.2.7 Power-up Manual Reset

The system can be reset by powering-up the panel whilst holding down the SELECT and − buttons. The display shows the 'start' pattern but then goes blank.

Release the buttons where upon the display resumes and the system addressing commences, finding only those air curtains which are actually connected and working.

If E n9 appears on the display, press and hold the + button for a few seconds then release. The display will then return to the normal mode.

10.2.8 Air curtain addressing

All air curtains work on an address to communicate with the keypad and are supplied with an default address of '0'.

Where multiple air curtains exist in a network they must be re-addressed using a unique address (0-9/A-F). This is achieved using a 4 way bitswitch mounted on the base unit PCB (see photo opposite

The keypad will check all addresses on first power up and this is displayed as the first digit on the display (in a network set up, all addressees will be viewed in rotation).

Note: If any address is altered after initial power up or an air curtain removed after initial installation, the keypad will also retain the original address although unable to respond.

To remove this unwanted address(s) follow the details in 12.2.7 Power-up Manual Reset.

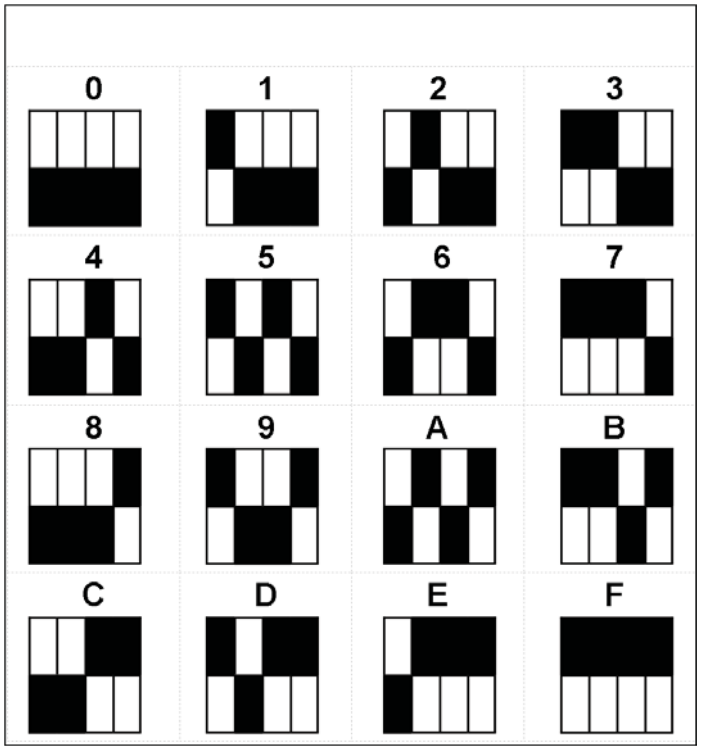
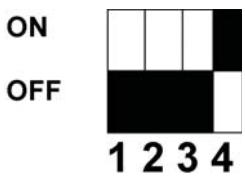


fig. 16. Air curtain address numbers

The black shaded areas represent the switch position.

This example shows the air curtain set to No.8



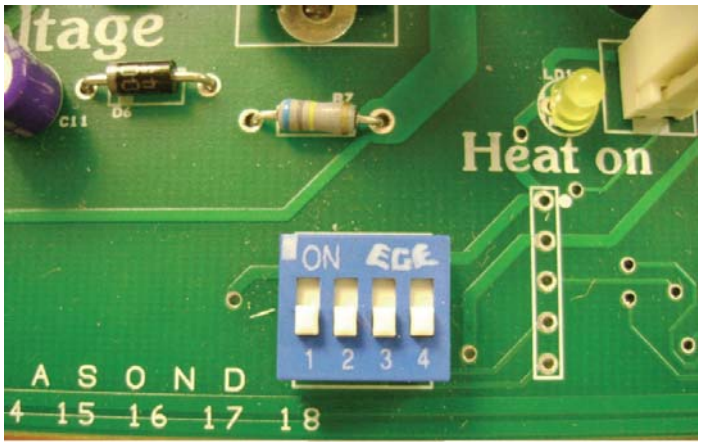
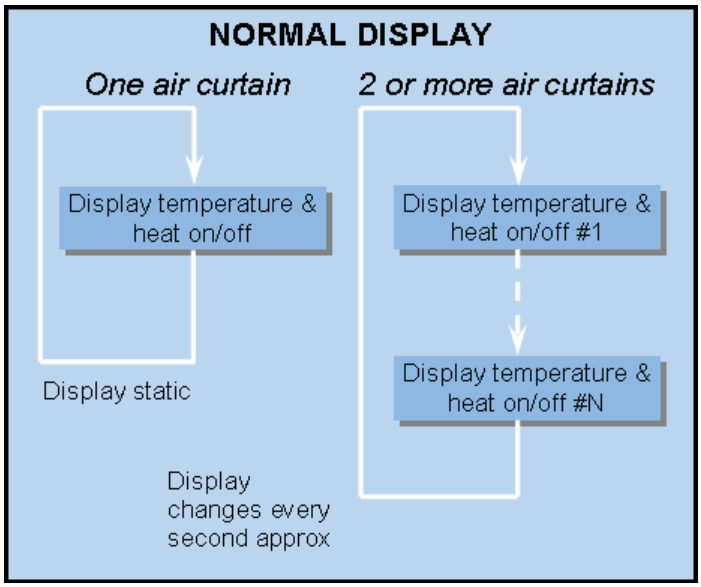


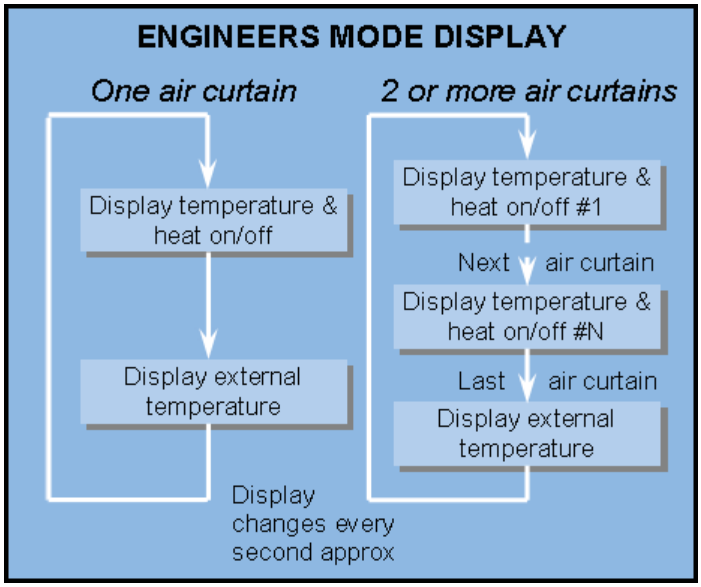
fig. 17. Bitswitch position on PCB

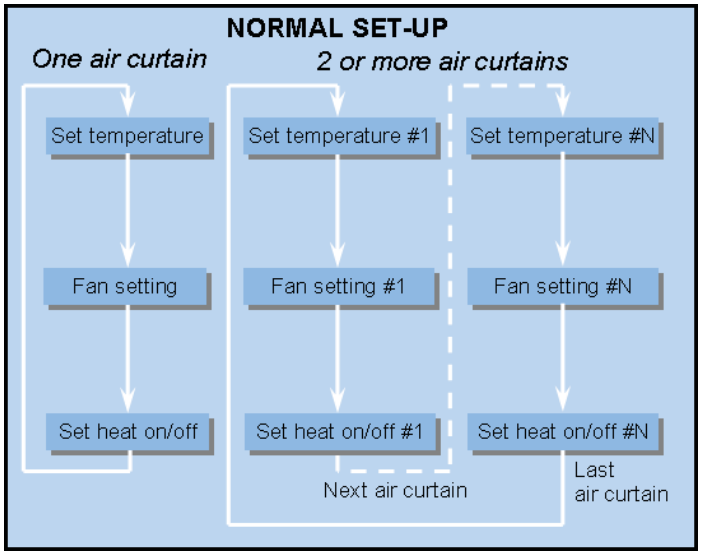
WARNING:

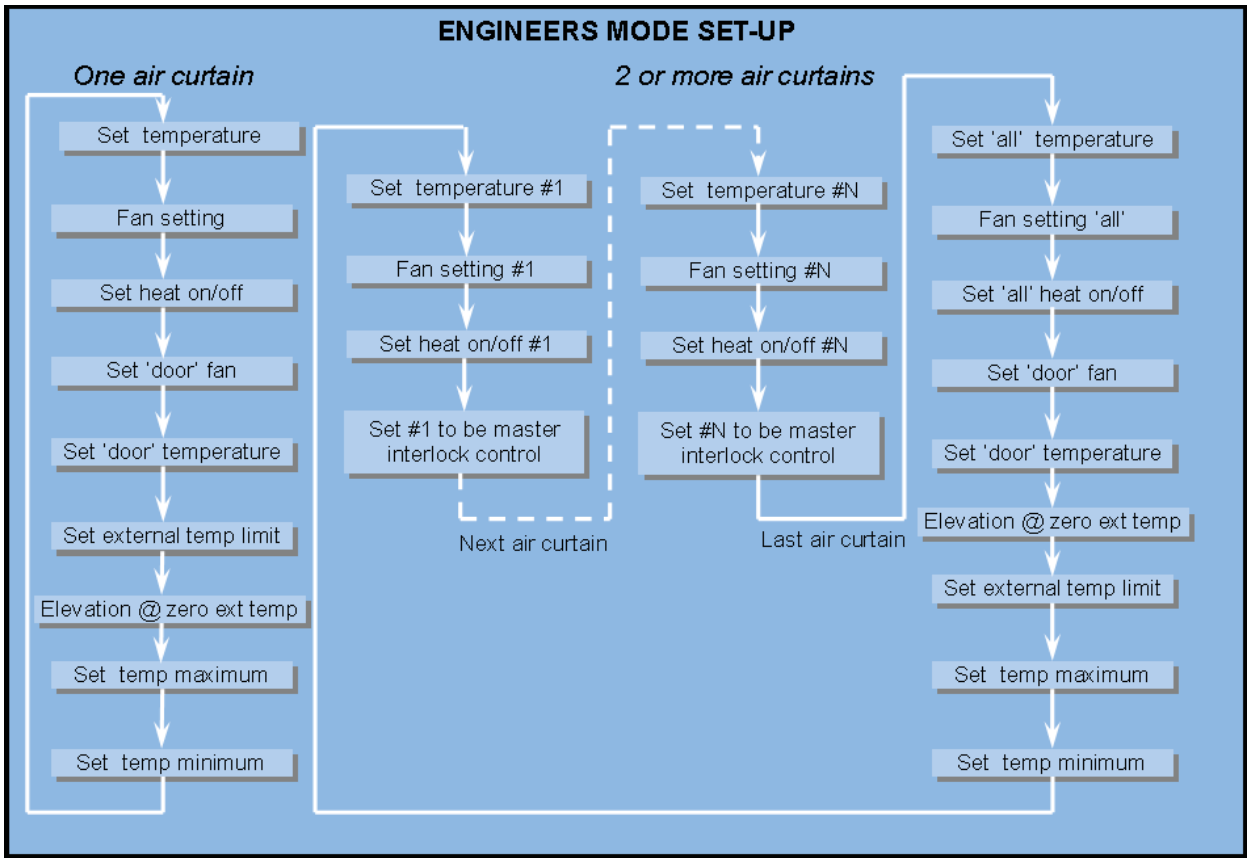
THIS AIR CURTAIN SHOULD NOT BE INSTALLED WHERE THERE IS A CORROSIVE ATMOSPHERE

12.2.9 Keypad sequences






NORMAL SET-UP
One air curtain
2 or more air curtains
Set temperature
Set temperature #1
Set temperature #N
Fan setting
Fan setting #1
Fan setting #N
Set heat on/off
Set heat on/off #1
Set heat on/off #N
Next air curtain
Last
air curtain


ENGINEERS MODE SET-UP
One air curtain
2 or more air curtains
Set temperature
Fan setting
Set heat on/off
Set 'door' fan
Set 'door' temperature
Set external temp limit
Elevation @ zero ext temp
Set temp maximum
Set temp minimum
Set temperature #1
Fan setting #1
Set heat on/off #1
Set #1 to be master interlock control
Next air curtain
Set temperature #N
Fan setting #N
Set heat on/off #N
Set #N to be master interlock control
Last air curtain
Set 'all' temperature
Fan setting 'all'
Set 'all' heat on/off
Set 'door' fan
Set 'door' temperature
Elevation @ zero ext temp
Set external temp limit
Set temp maximum
Set temp minimum

Notes

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Replaces Document reference number: GB/AIR/048/1015

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