

Thank you for purchasing a BN Thermic product. Manufactured to a high standard, this product will, if used according to these instructions and properly maintained, give you years of trouble free performance.



**REGISTER:** PLEASE REGISTER THIS PRODUCT ONLINE TO ACTIVATE YOUR GUARANTEE AT  
[www.bnthermic.co.uk](http://www.bnthermic.co.uk)



**IMPORTANT:** PLEASE READ THESE INSTRUCTIONS, NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS, AND CAUTIONS. USE THIS PRODUCT CORRECTLY, AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY.

## 1. SAFETY INSTRUCTIONS

### 1.1 ELECTRICAL SAFETY

**WARNING!** It is the responsibility of the owner and the operator to read, understand and comply with the following:-

An electrician experienced and qualified in wiring appliances to power supplies MUST be used to connect this control box.

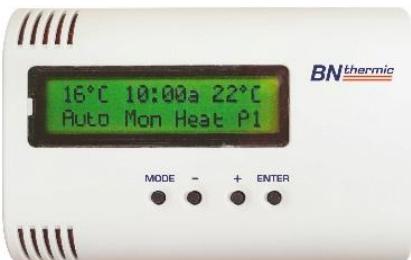
You must check all electrical products, before use, to ensure that they are safe. You must inspect power cables, plugs, sockets and any other connectors for wear or damage. You must ensure that the risk of electric shock is minimised by the installation of appropriate safety devices. A Residual Current Circuit Breaker (RCCB) should be incorporated in the main distribution board.

You must also read and understand the following instructions concerning electrical safety.

- The Health & Safety at Work Act 1974 makes owners of electrical appliances responsible for the safe condition of those appliances and the safety of the appliance operators. If in any doubt about electrical safety, contact a qualified electrician.
- Installation should always be carried out by a qualified electrician in accordance with current electrical regulation.
- Ensure that the cables are always protected against short circuit and overload.
- Regularly inspect the power supply cables for wear or damage and check all connections to ensure that none are loose.
- Important: Ensure that the voltage marked on the appliance matches the power supply to be used.
- DO NOT use worn or damaged cables or connectors. Immediately have any faulty item repaired or replaced by a qualified electrician.
- The unit should be protected by a suitably rated isolator and MCB's.
- This control box is only suitable for indoor use.

### 1.2 GENERAL SAFETY INSTRUCTIONS

- ✓ Remove all packaging and store it away from children.
- ✓ Familiarise yourself with the applications and limitations of the controller.
- ✗ DO NOT use in areas where hazardous gasses or dusts may be present.
- ✗ DO NOT disassemble the control box for any reason. It must be checked by qualified personnel only.
- ✗ DO NOT use this control box to perform a task for which it has not been designed.



Control Switch- PC-C1  
(1 required per system)



Remote Sensor – CXS  
(Optional extra)



## 2. INTRODUCTION & SPECIFICATION

Each PC2-A control box provides output control for RP3-03 and/or RP3-06 radiant ceiling panel heaters from a single point. This approach allows the heating of the building to be adjusted by means of a simple wall-mounted controller, enhancing comfort and improving economy. It incorporates "soft start" which reduces shock loads on the power supply. Each control box can operate up to a maximum of 24 x RP3-03 or 12 x RP3-06 or a combination of the two so long as the total load does not exceed 7.2kW. By using additional PC2-A control boxes, linked together, the number of heaters controlled from a single point is almost endless. All control connections are made by Cat5 cable for super-quick and error-free installation. Frost thermostats can easily be added to make this controller fully compatible with your exact requirements. Each system requires one controller, stock code: - PC-C1.

### Applications

Typical applications include Offices, Showrooms, Trade counters, Care homes and Meeting rooms.

Model No	PC2-A
Input Supply	230V 50Hz AC Single Phase
Maximum Power	7.2kW 32A
Dimensions (W x H x D)	310 x 350 x 80mm
Max Mains Terminal Capacity	6.0mm <sup>2</sup>
Max Heater Terminal Capacity	4.0mm <sup>2</sup>
Fuse (each heater or heater bank)	6.3A
Weight	3.9kg
Case Knockouts	1 x 32mm, 4 x 25mm, 24 x 20mm
Optional Frost Thermostat Code	FST-RS (Can be set between -12°C and +26°C) or RST3-IN (Can be set as low as 5°C)
Cat5 Cables	Available from BN Thermic, stock codes:- 5M – DX05, 10M – DX10 and 20M – DX20

## 3. INSTALLATION

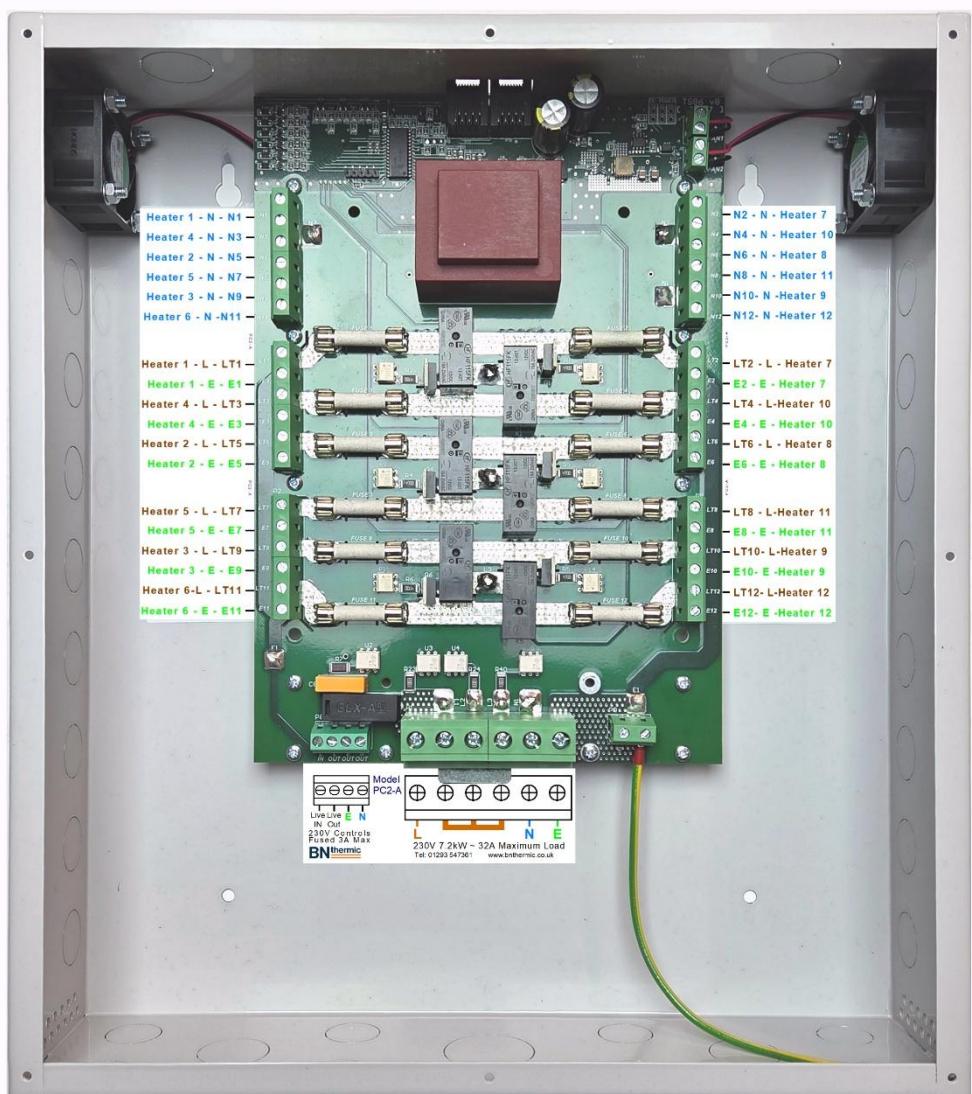
### Mechanical Fixing

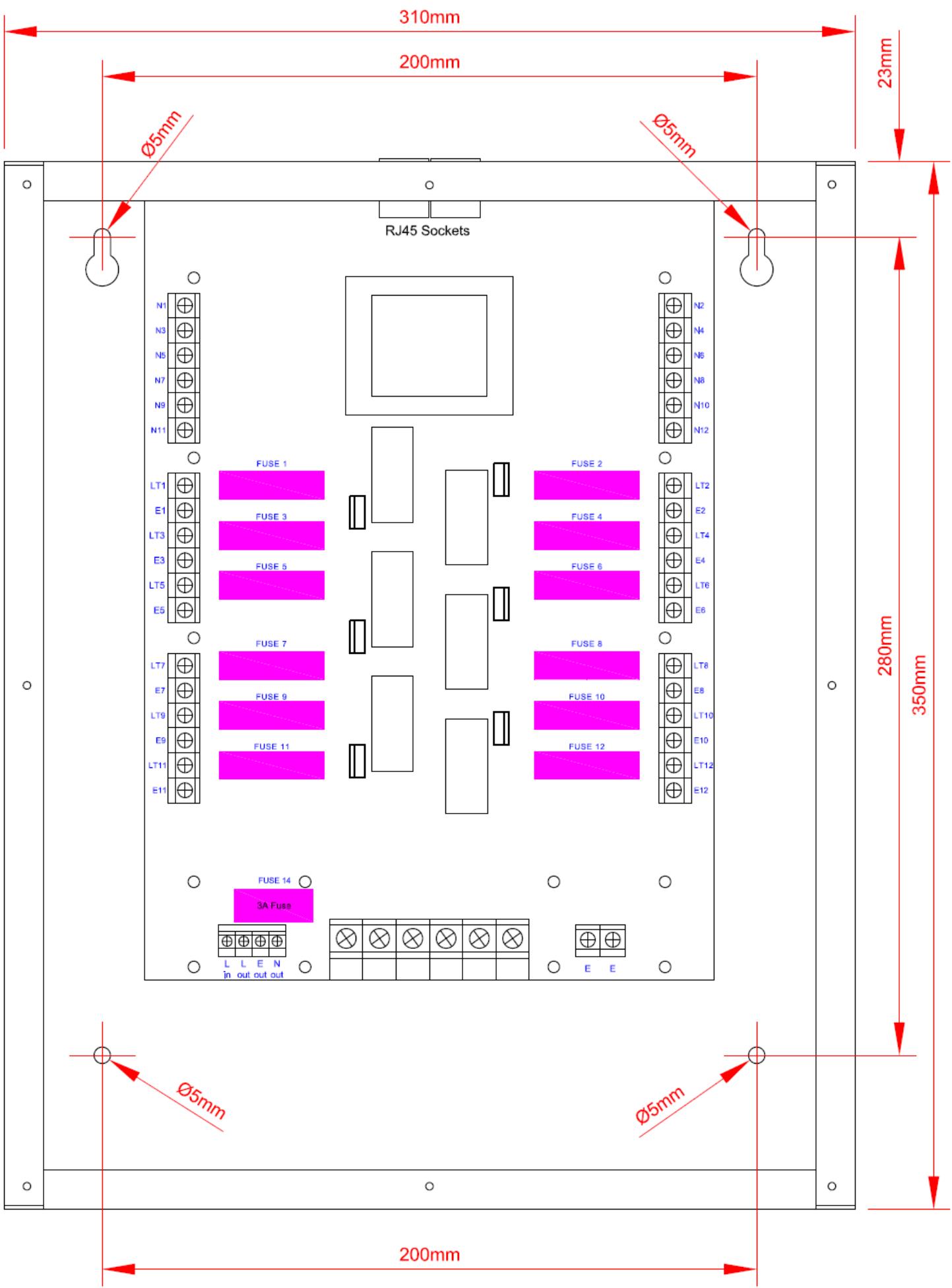
Please note the following when positioning your control box.

- To allow a good airflow a gap of 25mm MUST be left between the left or right side and any object e.g. a wall or other electrical enclosure.
- If mounting two or more control boxes side by side leave a minimum air gap of 50mm between them

**Do NOT use power tools to undo or do up electrical terminal screws or the front cover screws.**

- Remove the front cover, taking care to disconnect the earth wire connected to the inside.
- Carefully remove any knockouts where you require holes. Knockouts are either 20mm, 25mm or 32mm dia.
- Mount the control box using the 4 holes shown, away from any direct source of heat but ideally in the centre of the group of heaters being controlled by this box. By mounting in the centre, you can keep installation costs down by reducing the cable length required to each heater.
- Once all the heaters are connected to the box, replace the front cover making sure the earth cable is first attached.
- Secure the cover using all 8 screws.





## 4. ELECTRICAL CONNECTIONS

ISOLATE MAINS SUPPLY BEFORE COMMENCING ANY INSTALLATION WORK.

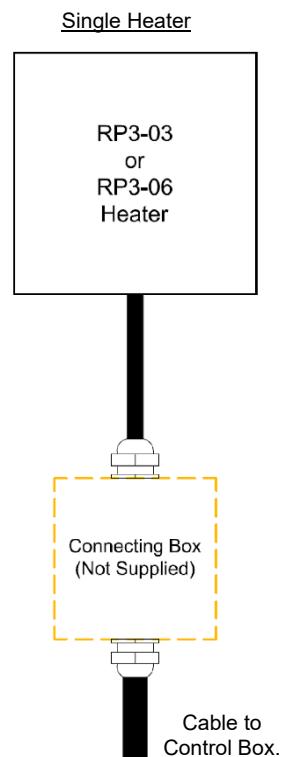
Please make sure you have read the safety instructions and that you are a suitably qualified electrician before continuing.

Drawings opposite show the connection of each heater or heater bank to the PC2-A control box and the mains cable connection.

Each ceiling heater can be wired singularly and / or in a bank of two. They must **not** be wired in banks of 3 or more. You can connect a maximum of 12 x RP3-06 or 24 x RP3-03 ceiling panel heaters per control box, but you can add additionally control boxes giving an almost endless number of heaters controlled by one device. If you wire RP3-06 in banks of two, a maximum of 6 banks may be used. Each ceiling panel heater or heater bank should be wired back to the control box using a minimum of 1mm<sup>2</sup> 3 core cable. If you require very long lengths of cable between heater and control box, check cable size using voltage loss calculations.

Connect Heater Bank 1 or Heater 1 terminal L – LT1, N – N1 and E – E1  
Connect Heater Bank 2 or Heater 2 terminal L – LT5, N – N5 and E – E5  
Connect Heater Bank 3 or Heater 3 terminal L – LT9, N – N9 and E – E9  
Connect Heater Bank 4 or Heater 4 terminal L – LT3, N – N3 and E – E3  
Connect Heater Bank 5 or Heater 5 terminal L – LT7, N – N7 and E – E7  
Connect Heater Bank 6 or Heater 6 terminal L – LT11, N – N11 and E – E11  
Connect Heater Bank 7 or Heater 7 terminal L – LT2, N – N2 and E – E2  
Connect Heater Bank 8 or Heater 8 terminal L – LT6, N – N6 and E – E6  
Connect Heater Bank 9 or Heater 9 terminal L – LT10, N – N10 and E – E10  
Connect Heater Bank 10 or Heater 10 terminal L – LT4, N – N4 and E – E4  
Connect Heater Bank 11 or Heater 11 terminal L – LT8, N – N8 and E – E8  
Connect Heater Bank 12 or Heater 12 terminal L – LT12, N – N12 and E – E12

If you use fewer than 12 Heater Banks or 12 heaters connect in order 1,2,3 etc



### Mains Cable Wiring

To work out mains cable loading add together the wattages of all the heaters.

Then divide by 230 (volts supply) to give you the amp loading. e.g., if you are using 16 heaters, and all were RP3-03 (300W heaters) loading would be 4800W.  $4800 / 230 =$  total load of 21A.

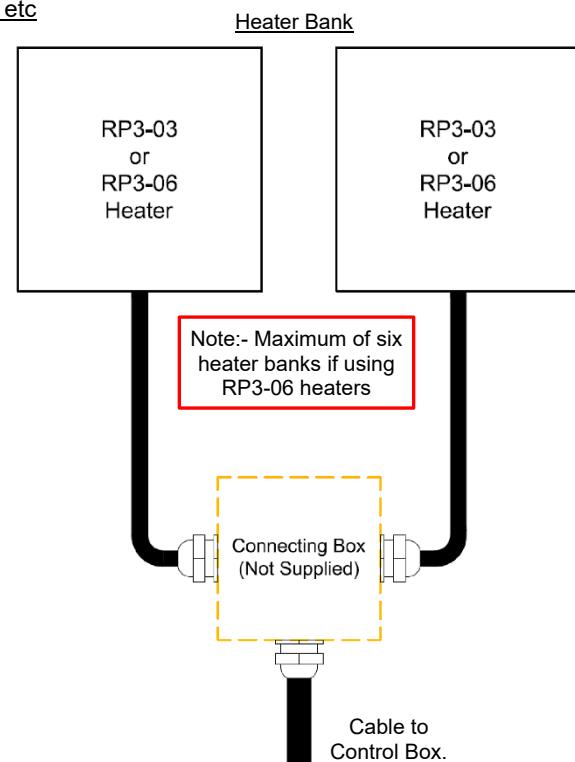
#### **A) Using one or the first control box**

Ensure you are using a suitable mains cable for the total load required.

Connect Live – L  
Connect Neutral – N  
Connect Earth – E

#### **B) Using multi control boxes**

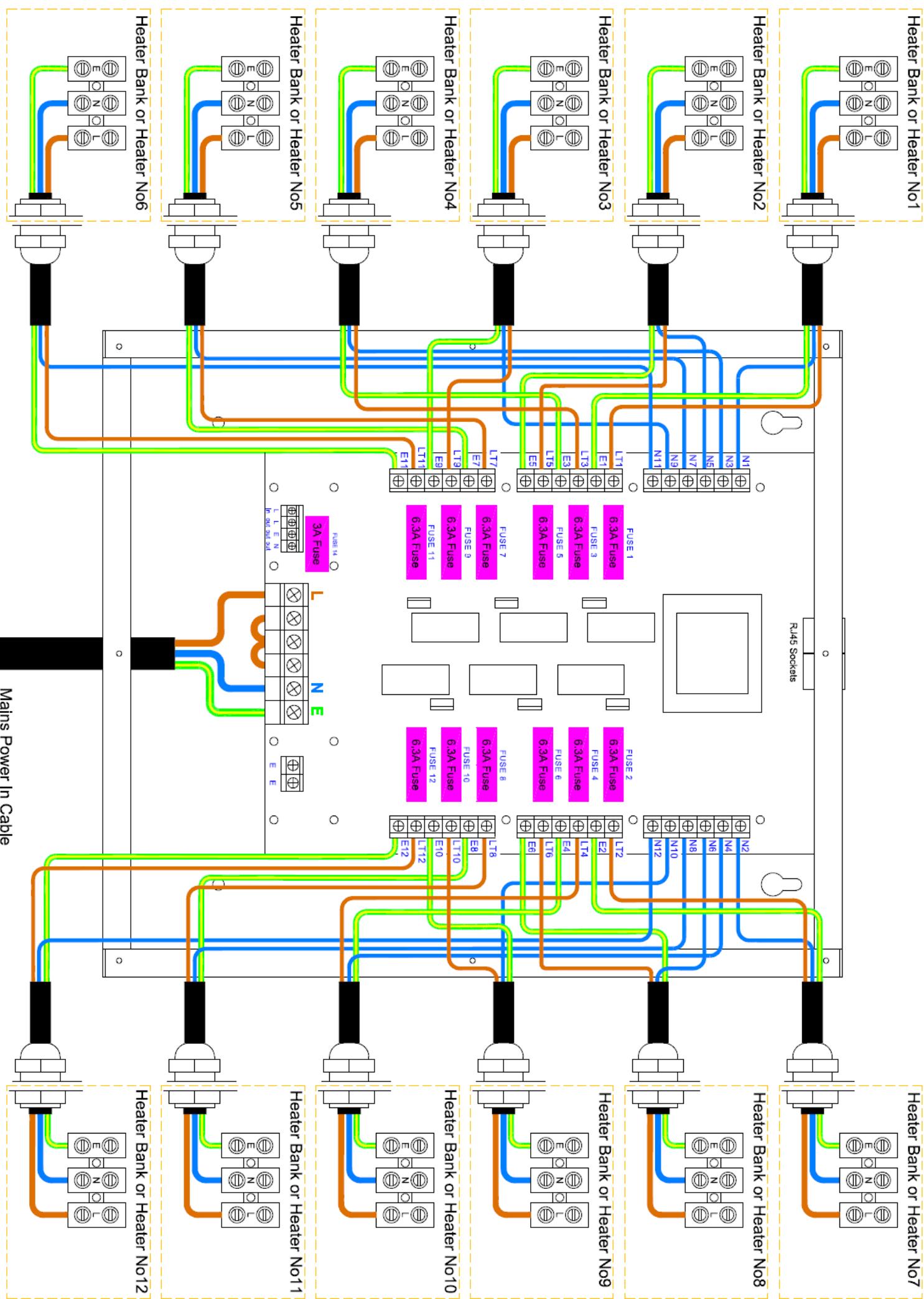
Please follow the instructions for wiring multi control boxes on Page 6.



### Network Cables

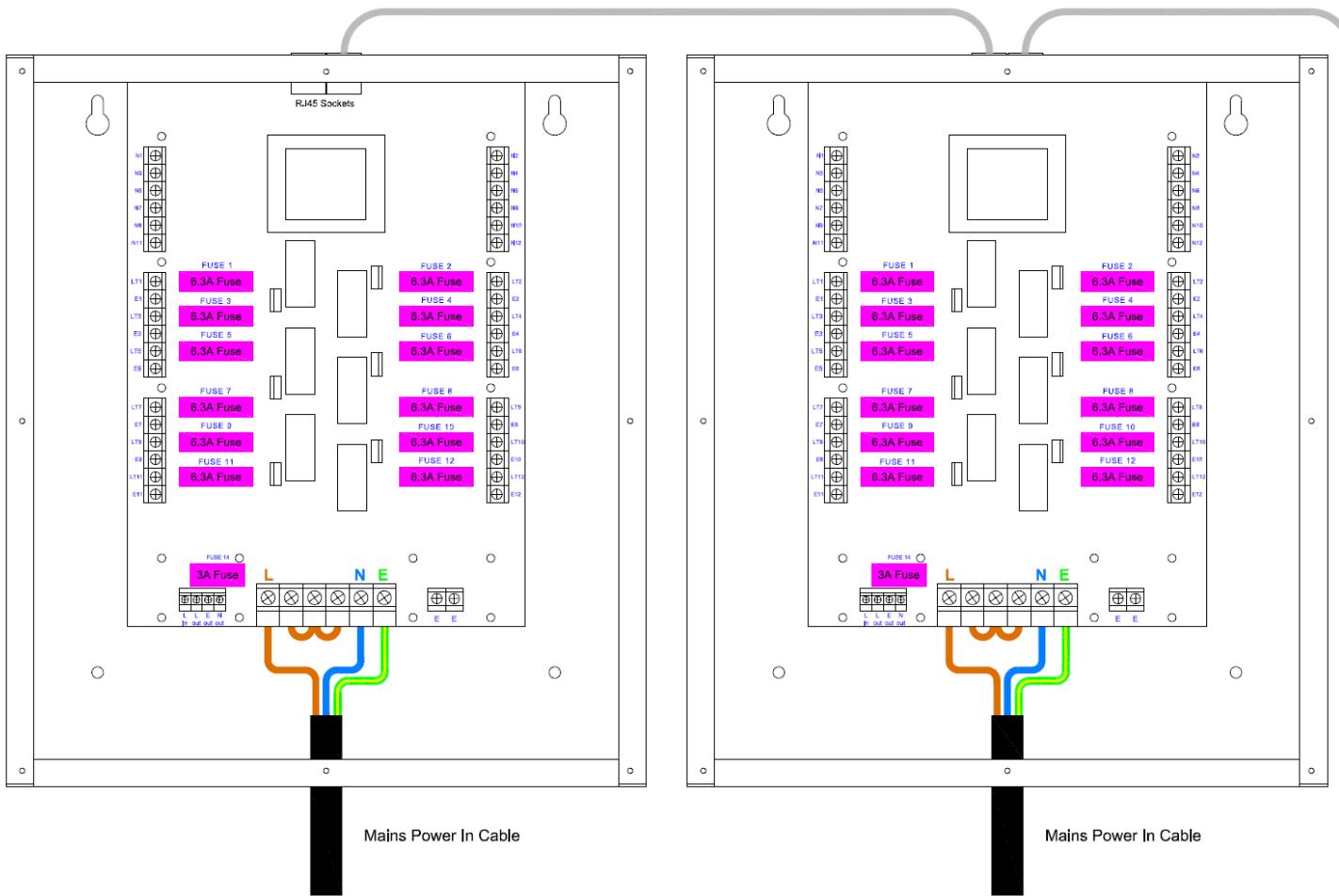
Network sockets on the control boxes are bi-directional. This means that either may be used for in or out. One socket has a plug already in place. This is solely to be used to stop objects falling into the socket if not being used. Remove if you require to use the socket. See section 7 to 10 for more information.

**PLEASE CHECK ALL CONNECTIONS BEFORE TURNING ON AS INCORRECT WIRING IS NOT COVERED BY THE GUARANTEE**



## 5. USING MULTI CONTROL BOXES

If you are using more than one control box and have a 3 phase power supply, please follow the instructions below to help keep a balanced load on all phases.



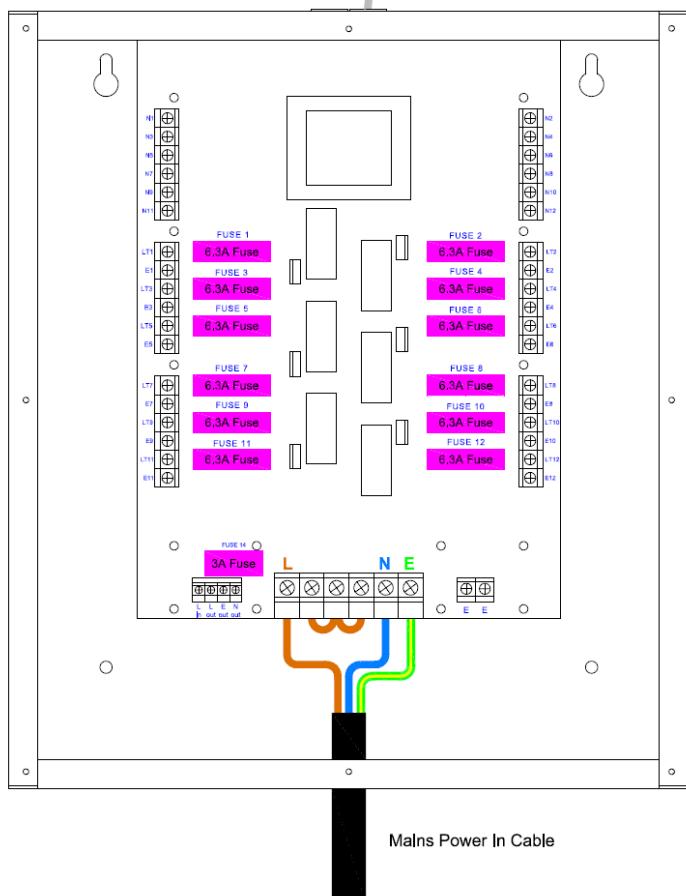
### Mains Power Connections

Brown Wire (Live) to the L Terminal  
 Blue Wire (Neutral) to the N Terminal  
 Earth Wire (Yellow / Green) to the E Terminal

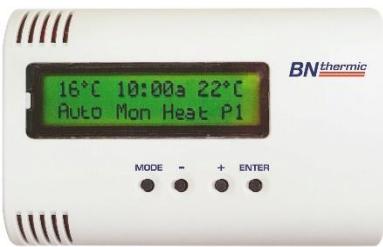
If using multi boxes and you have a 3 phase supply we recommend that each box is added to a different phase to help balance the load in the building.

Box 1 – Phase 1  
 Box 2 – Phase 2  
 Box 3 – Phase 3  
 Box 4 – Phase 1  
 Box 5 – Phase 2  
 Box 6 – Phase 3

**PLEASE CHECK ALL CONNECTIONS BEFORE TURNING ON AS INCORRECT WIRING IS NOT COVERED BY THE GUARANTEE**



## 6. ADDING THE PC-C1 CONTROLLER



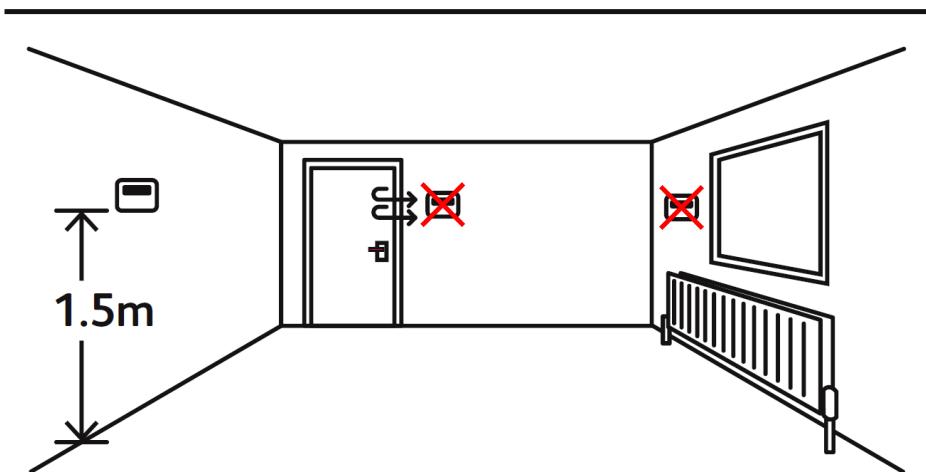
The PC-C1 Thermostat is an easy to install and use 7 Day, or 5/2 day programmable room thermostat which offers two, four or six time and temperature changes each day, with different programmes available for weekdays and for weekends. It is designed to provide automatic time and temperature control of multi heating control systems. All heaters follow suit. If you are using this wall controller with multi control boxes, you can turn the power off or isolate any control box and the remaining boxes will continue to operate without changing any of the control link cables. This is a design feature of the system.

## 7. LOCATION OF CONTROLLER

### CHOOSING A LOCATION FOR YOUR PC-C1

The PC-C1 controller should be mounted on an internal wall approximately 1.5 meters from floor level and should be in a position away from draughts, direct heat and sunlight.

Ensure that there will be enough space on the left hand side of the controller to allow free air movement though the controller so it can detect the room temperature. If you wish to place the controller in a separate area such as an adjacent room or cupboard, a remote sensor will be required to detect the temperature. Remote sensor part number CXS. Recommended maximum length of network cable between the controller and control box is 50 meters.



## 8. MOUNTING THE CONTROLLER.

To remove the back plate from the front of the controller gently push the bottom of the back plate whilst gently prising the front panel away. The bottom of the controller must be released from the back plate first before gently unclipping the top.

Screw to the wall ensuring the "UP arrows" are pointing the correct way and the green terminal block is at the top.

The PC-C1 can also be mounted on a single gang flush wiring box using the 2 x semi-circular slotted holes in the back. DO NOT overtighten the fixing screws as you will deform the box and the connection block in the back will not engage with the circuit board correctly.



## 9. ELECTRICAL CONNECTIONS.

A network cable is used to connect the controller to any of the PC control boxes (read notes below regarding cables)

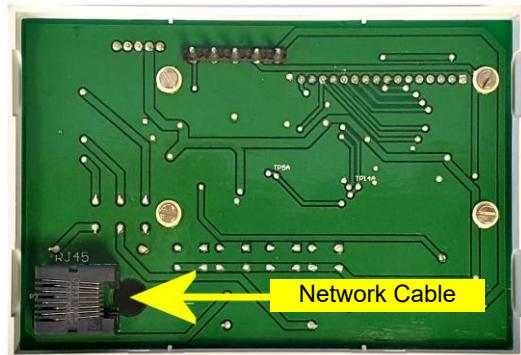
- We recommend you use our network cables as they have been thoroughly tested with all heaters and controllers and are 100% totally compatible.
- Problems arising from using non-standard or inferior network cables are not covered by the guarantee.
- Network cables with "wings" on the boot connections will not fit into the controller socket.

Bring sufficient length of network cable through one of the knockouts in the back plate to allow a lazy loop to be formed before plugging into the back of the circuit board. If you are not fitting additional sensors or linking the controller to a building management system (BMS) leave the links in the back plate in position.

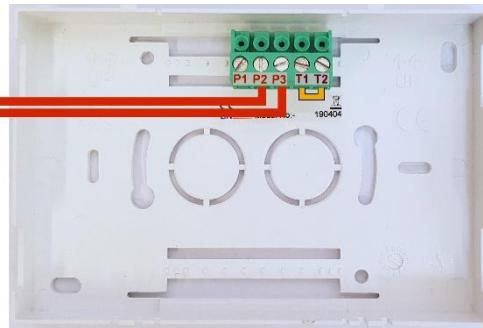
### To refit the front panel to the back

Locate the 2 holes on the top of the front cover onto the two lugs on the top of the back box. Now gently click the bottom of the front cover onto the back box. No force should be applied if the front cover does not fit easily the network cable is possibly caught please check before trying again.

If you are not fitting an additional sensor or switches go to section 12.



## 10. USING A REMOTE SENSOR (CXS) WITH THE CONTROLLER.



- 1) Remove the existing link  between P1 and P2.
- 2) DO NOT remove the link  between T1 and T2.
- 3) Using any insulated copper wire connect the remote sensor to terminals P2 and P3.

## 11. USING WITH A BMS SYSTEM

The control system can be used in conjunction with a Zero Volt or 230V building management system (BMS). Please read section 17 and 18 of the PC-C1 Controller instructions where this is explained in more detail.

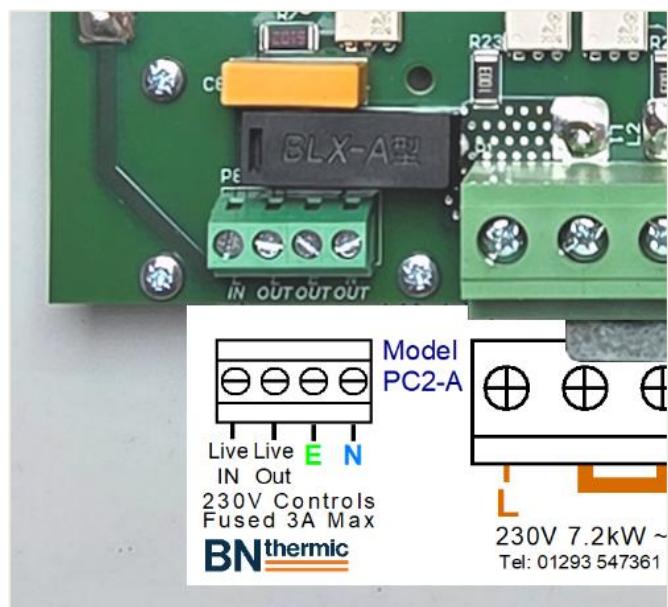
## 12. USING A FROST PROTECTION THERMOSTAT WITH THE CONTROL BOX

You can add a frost thermostat to protect your building. This needs to be connected directly to a control box. With linked multi control box systems every control box can have its own frost thermostat connected to cover different areas of the building. Should any thermostat turn on, all control boxes will operate turning on all the heaters. Only when all frost thermostats turn off, will all the heaters turn off. Please note the frost thermostat will always override any other controller connected to the system.

### Connecting a frost thermostat

Connect Live Out terminal on the circuit board to the common terminal on the frost thermostat (this is 230V and protected with a 3A fuse).

Connect the Live IN terminal on the circuit board to the terminal on the thermostat that becomes live when the temperature drops to the set point. If required, you can connect a neutral to the N terminal and earth to the E terminal on the circuit board.



## 13. TROUBLE SHOOTING AND SOLUTIONS

We recommend using a qualified electrician before attempting any fault finding.

No heaters working but the power is turned on – First check the thermostat is asking for heat, secondly if it is a new installation check the network cable between the thermostat and the control box. 85% of faults are caused by faulty self-assembly of network cables. We always recommend you purchase our or factory made and tested network cables rather than making your own.

Single heater not working - Check the corresponding fuse in the control box. If it has failed replace with another 6.3A fuse size 6.35mm x 32mm long.

**NOTE:** It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.



### WEEE REGULATIONS:

This appliance bears the symbol of the crossed waste bin. This indicates that, at the end of its useful life, it must not be disposed of as domestic waste but must be taken to a collection centre for waste electrical and electronic equipment. It is the user's responsibility to dispose of this appliance through the appropriate channels. Failure to do so may incur penalties established by laws governing waste disposal.

**IMPORTANT:** No liability is accepted for incorrect use of this product.

**WARRANTY:** Your BN Thermic product is guaranteed for one year from date of purchase. We will repair or replace at our discretion any part found to be defective. We cannot assume any consequential liability. This guarantee in no way prejudices your rights under common law and is offered as an addition to consumer liability rights.

**REGISTER:** Activate your warranty by registering online at [www.bnthermic.co.uk](http://www.bnthermic.co.uk) and retain this installation data for future reference.

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