

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. Please ensure instructions remain with your customer for their reference.



REGISTER: PLEASE REGISTER THIS PRODUCT ONLINE TO ACTIVATE YOUR GUARANTEE AT 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.



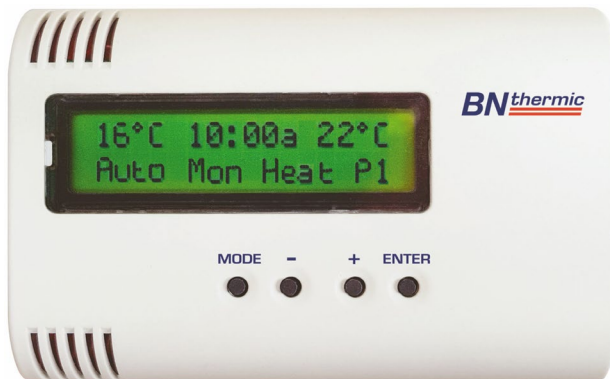
SECTION A – USER INSTRUCTIONS.

For installation instructions go to page 7

1. INTRODUCTION & SPECIFICATION.

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. A backlit LCD screen and easy to use function buttons ensure simplified programming and operation for all users.

The Thermostat includes special features designed to save you energy. All settings are stored in the controller with battery back-up. If you wish to place the thermostat in a different location from the heaters an optional remote sensor can be added to the controller.



CXS – Remote Sensor
(Optional Extra)

Specification

PC-C1- Programmable Multi Heater Controller	
Programming	7 Day or 5/2 Day
Power Supply	Powered from any PC control box through network cable (battery back-up)
Temperature Sensor Specification	$\pm 1^{\circ}\text{C}$ at 20°C
Temperature Adjustment Range	5°C to 30°C
Differential	$\pm 0.5^{\circ}\text{C}$
Plastic	Thermoplastic, flame retardant
Number of Programs Per Day	2, 4 or 6 (Default: 2)
Factory Pre-Set Programs per Day	2, 4 or 6 (Default: 2)
BST/GMT Time Change	Automatic
Tamper Resistant	Various screen / button locks if required to stop misuse
Remote Temperature Sensor	Available as optional extra (Part No CXS)
Connects to a BMS	Yes if required, see section 17 & 18
Dimensions	120mm (L) x 80mm (W) x 35mm (D)
Protection Rating	IP30
Complies with:	EN60730-1 EN 60730-2.7, EMC Directive 2014/30/EU, LVD Directive 2014/35/EU

Special Features

1) Adaptive Start

The Adaptive Start function adjusts the starting time for the heating according to the temperature measured within the room / building. Instead of setting an arbitrary time for the heating to come on, you programme the time that the room / building should be at the desired temperature. Up to 10% of energy costs can be saved, as the warm up time is automatically reduced according to the ambient temperature. Many users set their heating to start a couple of hours before use to warm up the room / building. With the Adaptive Start function you don't need to do this. The actual start time is automatically delayed or advanced to ensure your room / building reaches the set temperature by the programmed time. The Adaptive Start function is designed to work with well insulated rooms / buildings that do not have a throughput of people and doors or windows being opened regularly before the heating period.

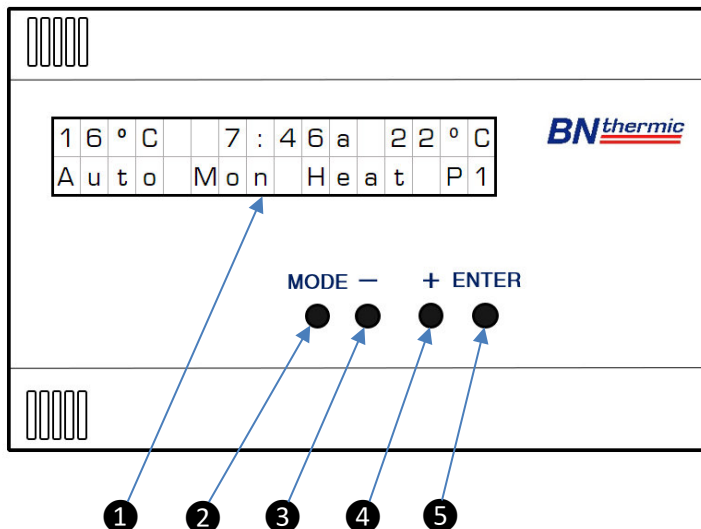
2) Adaptive Stop

Only works when Adaptive Stop in Settings is set to "YES". Reduces the overrun of temperature by turning down the power on each heater as it gets close to the temperature set point. You should not notice the effect on the temperature, but you should see a slight reduction in your energy bill.

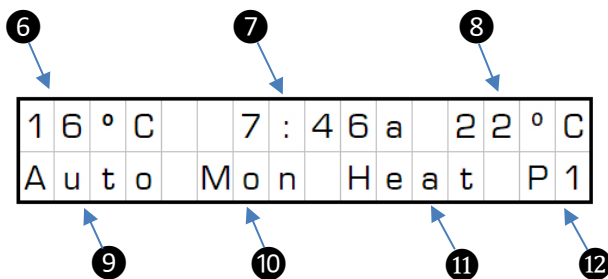
3) Various screen locks

To stop the problem with passers by pressing buttons and adjusting the thermostat there are various ways of locking the screen and disabling the buttons from working.

2. QUICK OPERATING GUIDE.



- ❶ **Main Display** :- Back lit when you touch any button displays actual temperature, set temperature, time, day of week, program number and mode of operation.
- ❷ **Mode button** :- Used to select mode of operation (Auto / Off / Program).
- ❸ **- button** :- Used to decrease a settable value e.g. when in "Auto" mode decreases the set point temperature until next program.
- ❹ **+ button** :- Used to increase a settable value e.g. when in "Auto" mode increases the set point temperature until next program.
- ❺ **Enter button** :- Generally used to store information in programming mode.



- ❻ Actual temperature.
- ❼ Time of day 12 hour format (a = am p = pm).
- ❽ Set point temperature.
- ❾ Mode of operation (Auto , Off or Program).
- ❿ Day of the week.
- ⓫ Shows "Heat" when set point below actual temperature and heaters are ON.
- ⓬ Shows which program number you are on for the today (P1, P2, P3 etc) or the program number from yesterday if the controller has not reached the change over time for today's first program (YP2, YP4 or YP6 equal yesterday's P2, P4 or P6)

3. FACTORY PRE-SET PROGRAMMES.

This Programmable Controller has been designed to be a simple to use thermostat, requiring minimal user intervention with a pre-programmed heating profile. By default, the controller is set to 2 programs per day if you wish to change this to 4 or 6 programs (see section 19 / 21 Page 10).

Pre-Set Time / Temperatures

	2 Programs per Day		4 Programs per Day		6 Programs per Day	
P1	8am	20°C	8am	20°C	7am	20°C
P2	6pm	5°C	12pm	15°C	9am	15°C
P3	-	-	2pm	20°C	12pm	20°C
P4	-	-	6pm	5°C	2pm	15°C
P5	-	-	-	-	4pm	20°C
P6	-	-	-	-	10pm	5°C

NOTE:- The same times and temperatures are set for each day of the week if you don't require heating for one day for example a Sunday this needs to be changed by entering the programming mode and either setting the time and / or temperature to stop the controller from turning the heaters on. e.g. if you are on 2 programs a day and you don't require any heat on a Sunday just go into Sunday's setting and change the temperature for P1 from 20°C down to 5°C (see section 5 page 5 for more information).

4. SELECTING THE DIFFERENT MODES.

If none of the thermostat button locks are in operation, by pressing the **MODE** button you can toggle through the following different operating modes.

1. **AUTO** – This is the normal mode where the thermostat will turn the heaters on and off according to the programs that have been set. If you need to adjust these programs, see section 5.

Mode →

1	6	°	C			7	:	4	6	a		2	2	°	C
A	u	t	o			M	o	n		H	e	a	t		P 1

2. **OFF** – All heaters are turned off and will remain off until mode is changed.

Mode →

2	0	°	C			3	:	2	1	p					
O	f	f				M	o	n							

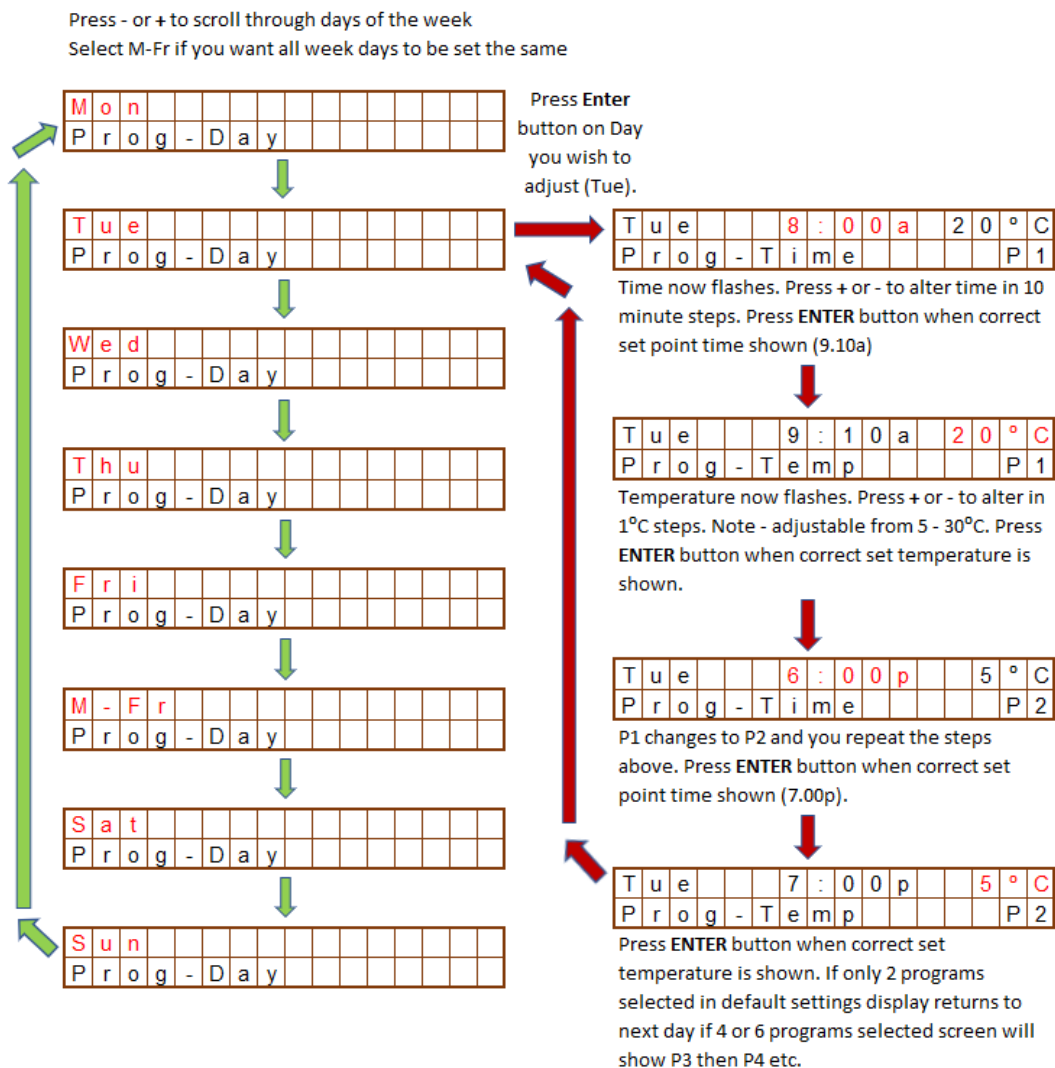
3. **PROG** – Used to enter the time and temperature programming.

5. CHANGING THE PROGRAM SETTINGS.

If you wish to change the number of programs per day go to "Master Settings" section 19 page 10 and adjust the number of programs per day before continuing.

Using the **MODE** button toggle the display to **PROG** and then follow the instructions below to set.

If you don't press any button for 2 mins the display will exit the settings mode.



PLEASE NOTE:- When programming each day, you must press enter on each screen (even if you don't adjust the time or temperature on a particular screen) until the display returns to showing the day of the week. The programmer only stores the data you insert on the last press of "Enter" as you return to the day. If you exit early or it times out the new data won't be stored.

6. TEMPORARY ADJUSTING TEMPERATURE SET POINT IN AUTO MODE.

The set point can be temporarily adjusted in auto mode by pressing the **+** or **-** buttons. This is only allowed if the screen is not locked. NOTE:- This will only adjust the set point until the next programme.

7. PERMANENT LOCKING TEMPERATURE SET POINT IN AUTO MODE.

The Set Point can be changed and locked in Auto mode if required.

1. First adjust the Set Point to desired temperature by pressing the **+** or **-** buttons.
2. Then to Lock the "Set Point" press the **-** button and the **ENTER** button simultaneously and hold for 3 seconds until the "**Auto**" on the display changes to "**Lock**".
3. Unlocking is the reversal of the above.

NOTE:- The display will still operate BUT all 4 buttons will be disabled (except the unlock combination!) and the temperature set point will not change. When you unlock the controller, it will resume in Auto Mode. This feature is useful if you wish to set the thermostat to a frost stat mode to protect a building when not in general use.

8. LOCKING THE CONTROLLER OFF.

The Controller can be locked in the OFF position disabling it from working.

1. To lock the controller "OFF" press the **-** button and the **MODE** button simultaneously and hold for 3 seconds until the display changes to "Lock" and "OFF" appears where set temperature is normally displayed.
2. Unlocking is the reversal of the above.

NOTE:- When you unlock the controller it will revert back to **AUTO** Mode and either turn the heaters on if below temperature set point or they will remain off if above.

9. LOCKING THE CONTROLLER.

The controller can only be locked in its standard modes (**AUTO** or **OFF**).

1. First select the mode you wish to lock the controller in.
2. Now lock the display pressing the **+** button and the **ENTER** button simultaneously and hold for 3 seconds until the three **x** appear on the display.
3. Unlocking is the reversal of the above.

NOTE:- The display and programs will still operate BUT all 4 buttons will be disabled (except the unlock combination!).

10. FROST PROTECTION.

The thermostat can be used to protect areas from dropping below certain temperatures (normally 5°C for frost protection)

If required simply follow section 7 above but set the temperature to 5°C before locking the thermostat.

SECTION B – INSTALLATION AND MASTER SETTINGS.

11. INSTALLATION SAFETY INSTRUCTIONS.

11.1 ELECTRICAL SAFETY

WARNING! Under No circumstances may you take a 230V supply to this controller. The controller works on low voltage (less than 30V) and to ensure the system is safe 230V supplies **MUST** be kept away from this controller. **WARNING!** It is the responsibility of the owner and the operator to read, understand and comply with the following:

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 or a competent person in accordance with current electrical regulation.

11.2 GENERAL SAFETY INSTRUCTIONS

Remove all packaging and store it away from children, check the package for visible damage or tampering.

Only use recommended attachments and parts. To use unauthorised parts may be dangerous and will invalidate your warranty.

DO NOT use in areas where hazardous gases or dusts may be present.

DO NOT disassemble the controller for any reason. The circuit board has no user serviceable parts.

DO NOT use this controller to perform a task for which it has not been designed.

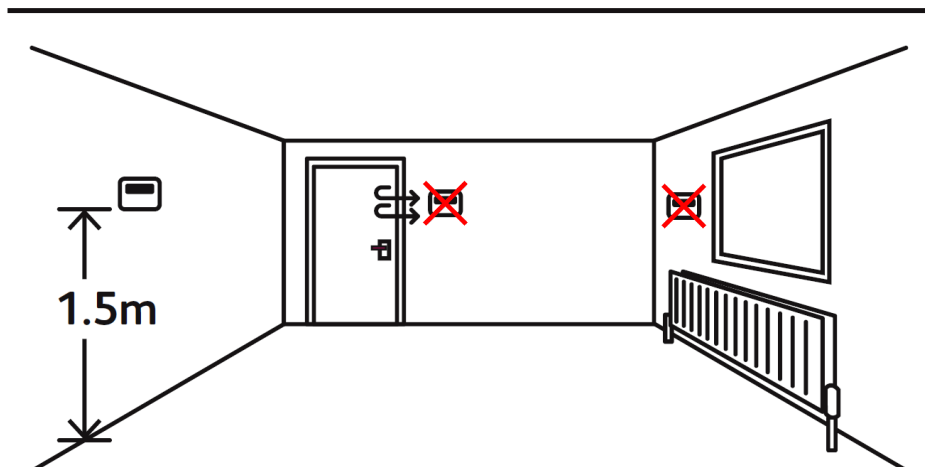
Please leave the user instructions with the end user where they should be kept in a safe place for further reference.

12. INSTALLATION.

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.



13. 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.

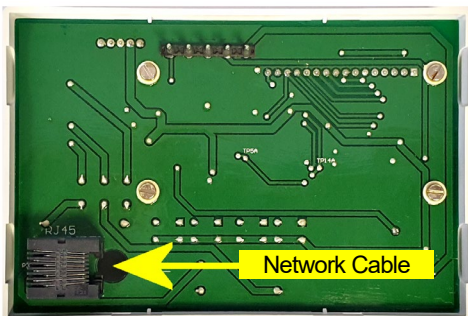


14. ELECTRICAL CONNECTIONS.

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.

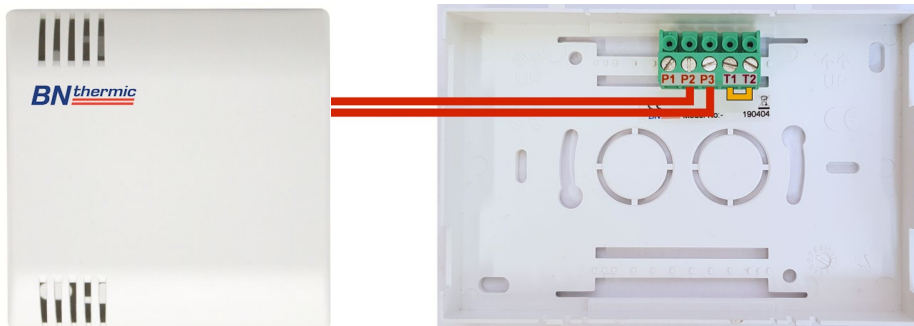


To refit the front panel to the back

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 19.

15. USING A REMOTE SENSOR (CXs) WITH THE CONTROLLER.

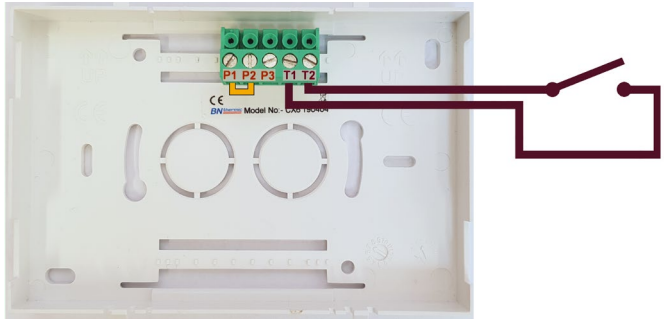


- 1) Remove the existing link  between P1 and P2.
- 2) DO NOT remove the link  between T1 and T2.
- 3) Using any insulated copper wire connect the remote sensor to terminals P2 and P3.

16. USING WITH AN EXTERNAL SWITCH OR KEY SWITCH.

You can disable or enable the controller from working by removing the link between T1 and T2 and connecting the two terminals to a zero volt switch. **AT NO TIME MUST A VOLTAGE BE SENT DOWN THESE WIRES.**

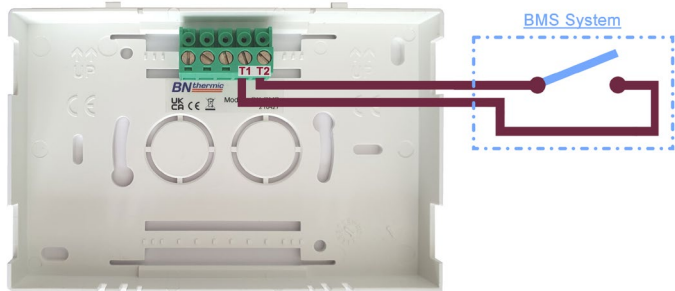
With the link removed or broken the controller turns OFF all the heaters and locks the buttons on the front from working. When re-made controller goes into AUTO Mode and turns heaters ON if required.



17. USING WITH A ZERO VOLT BMS SYSTEM.

You can also connect the controller to a building management system (BMS). This is done by removing the link between T1 and T2 and connecting the two terminals to a zero volt output which is controlled by the BMS. The PC-C1 will be locked in the off mode with the BMS off.

AT NO TIME MUST A VOLTAGE BE SENT DOWN THESE WIRES FROM THE BMS.



18. USING WITH A 230V OUTPUT BMS SYSTEM.

You MUST use a VI Interface if you require 230V connections.

Remove the cover from the VI Interface and secure to a suitable surface.

Connect the PC-C1 Controller to the VI Interface. Connect terminal T1 to T1 and Terminal T2 to T2 as shown below. Connect the L Terminal on the VI Interface to the switchable L terminal on your BMS. Connect the N terminal on the VI Interface to the Neutral connection on your BMS. The PC-C1 will be locked in the off mode with the BMS off.



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

19. CONNECTING THE CONTROLLER TO THE CONTROL BOXES

Network sockets on the control box or boxes are bi-directional. This means that either socket may be used for in or out.

- 1) Connect the PC-C1 controller into any control box socket.
- 2) Daisy chain all control boxes together using network cables.
- 3) Use the supplied blanking plug in any network socket that is not required to stop objects accidentally falling into them.

20. CHANGING THE MASTER / DEFAULT SETTINGS.

There are various master / "default settings" that can be changed by entering the default settings.

To enter these settings, press the **MODE** button and the **ENTER** button simultaneously and hold for 3 seconds. You are now in settings mode shown in diagram to the right. If you don't press any button for 2 minutes display reverts back to AUTO mode. If you wish to exit the settings screen press **MODE** button and the **ENTER** button simultaneously.

21. SETTING THE TIME AND DATE.

The time and date are factory set so it will not normally be necessary to do this on site.

If you need to change the time after entering the settings screen (shown above) press the **MODE** button until the display shows **Settings - Time** and the Hour is flashing.

Now using **+** and **-** buttons adjust to correct hour (24h format) and then press **ENTER** button and minutes will start to flash. Now using **+** and **-** buttons adjust to correct minutes and then press **ENTER** button.

If you need to change the date after entering the settings screen (shown above) press the **MODE** button until the display shows **Settings - Date** and the Month is flashing.

Now using **+** and **-** buttons adjust to correct month and then press **ENTER** button and day will start to flash. Now using **+** and **-** buttons adjust to correct day and then press **ENTER** button and year will start to flash. Now using **+** and **-** buttons adjust to correct year and then press **ENTER** button.

Note:- If you forget to press the **ENTER** button the new setting will not be stored

22. OTHER SETTINGS.

S.Time – (Auto) Automatic adjustment of British Summer Time can be turned on or off here.

Temp Offset – (0°C) Used if you wish to fine turn or calibrate the thermostat, can adjust the temperature up or down by 1,2,3,4 or 5°C.

Progs / Day – (2) Set the number of programs per day you require either 2, 4 or 6.

Adapt Start – (Off) Turns on or off adaptive start see page 2 for full description on how it works.

Adapt Stop – (Off) Turns on or off adaptive stop see page 2 for full description on how it works.

Reset to New – (NO) Rests the controller to its "NEW"(original) factory settings. Select YES and press **Enter** to reset. Warning: resetting to new changes all user inputs and master settings back to factory settings which are shown in green above. Only the current time and date settings are not affected.

Press and hold **Mode** & **Enter** buttons simultaneously for 3 seconds to activate menu

If no button is pressed for 2 minutes controller returns to normal screen or press **Mode** & **Enter** buttons simultaneously to exit.



23. FAULT FINDING.

Thermostat screen is blank.

The controller receives its power through the network cable linking the thermostat to the control box or boxes. Check that this cable is connected and that there is power to at least one of the control boxes in the system. Most of the problems that occur are due to installers manufacturing their own network cables and either getting two wires crossed or not quite crimping all 8 pins of the network plug correctly. For this reason, we strongly recommend you use our or another manufacturer's network cables that are pre-made and already tested.

Can I use straight or cross over network cables?

Either or both can be used on the system and they will not affect the working of the heaters.

All the heaters were working now one has stopped.

Check the mains wiring to the heater affected and the heaters fuse inside the control box as the controller is not capable of turning off just one heater.

Buttons don't work on the controller.

The controller is designed with various button locks to stop miss use of the controller. Please look at the screen of the controller and follow the corresponding instructions below to unlock.

1	6	°	C			7	:	4	6	a		L	o	c	k
O	f	f		*	M	o	n	*				*			

To Unlock the controller, press the - button and the **MODE** button simultaneously and hold for 3 seconds until the display changes.

1	6	°	C			7	:	4	6	a		2	2	°	C
L	o	c	k			M	o	n		H	e	a	t		P 1

To Unlock the controller, press the - button and the **ENTER** button simultaneously and hold for 3 seconds until the display changes.

1	6	°	C			7	:	4	6	a		2	2	°	C
A	u	t	o	*		M	o	n	*		H	e	a	t	*
															P 1

or

2	0	°	C			3	:	2	1	p					
O	f	f		*	M	o	n	*				*			

To Unlock the controller, press the + button and the **ENTER** button simultaneously and hold for 3 seconds until the display changes.

1	6	°	C			7	:	4	6	a		L	o	c	k
O	f	f		*	M	o	n	*				L	i	n	k

This lock is applied by an external switch and cannot be undone by pressing any combination of buttons. (see section 16, 17 & 18 for more information).

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.

REGISTER: Activate your warranty by registering online at www.bnthermic.co.uk and retain this installation data for future reference.

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.

BN Thermic Ltd,
34 Stephenson Way,
Crawley, RH10 1TN
Tel: +44 (0) 1293 547361
sales@bnthermic.co.uk
www.bnthermic.co.uk