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.

R **REGISTER**: PLEASE REGISTER THIS PRODUCT ONLINE TO ACTIVATE YOUR GUARANTEE AT www.bnthermic.co.uk **R**

⚠ **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 4
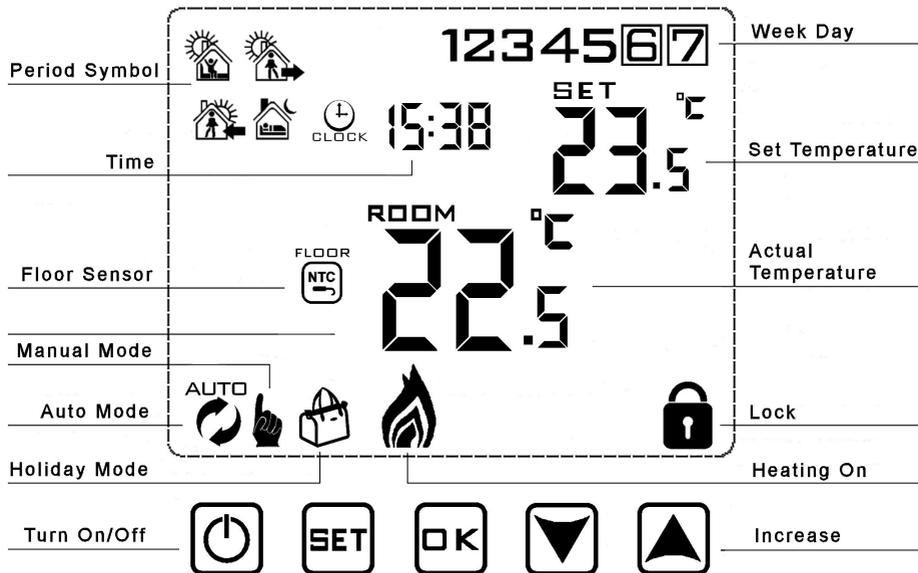
1. INTRODUCTION & SPECIFICATION.

The B16C Thermostat is an easy to install and use 7 Day, 6/1 Day or 5/2 Day Programmable Room Thermostat which offers four time and temperature changes each day. It is designed to provide automatic time and temperature control for underfloor heating using air temperature and a floor sensor. All settings are stored in the controller with battery back-up.

B16C- Programmable Heater Controller	
Programming	7 Day, 6+1 Day or 5+2 Day (Default 5+2 Day)
Power Supply	230V ac 50 Hz 16A Maximum Load (Battery back-up)
Floor Temperature Sensor	NTC (10KΩ) +/- 0.5°C at 20°C
Temperature Range	1°C to 45°C (Default 5°C to 30°C)
Display	LCD + back light that comes on for short period when any button pressed.
Number of Programs Per Day	4
Tamper Resistant	Facility for locking all buttons or just temperature adjustment buttons.
Dimensions	86mm x 86mm x 15mm deep when recessed. Fits standard recess boxes.
Electrical Protection	Class II IP20
Complies with:	EN 301489-1, EMC Directive 2014/30/EU, EN60950-1:2006+a11:2009+a1:2010+a12:2011+ a2:2013

Left labels (top to bottom): Period Symbol, Time, Floor Sensor, Manual Mode, Auto Mode, Holiday Mode, Turn On/Off

Right labels (top to bottom): Week Day, Set Temperature, Actual Temperature, Lock, Heating On, Increase

Display shows: 1234567, CLOCK 15:38, SET 23.5 °C, ROOM FLOOR NTC 22.5 °C, AUTO

Buttons: ⏻ SET OK ▼ ▲

To Set Time and Week Day Number

a) Turn thermostat on by pressing ⏻ button.

b) Press the OK button and the minutes will start to flash. Adjust the minutes by pressing the ▼ or ▲ buttons. When correct, press OK button and the hours will flash. Set these by pressing the ▼ or ▲ buttons. When correct, press OK button and the day number will flash. Set this by pressing the ▼ or ▲ buttons. When correct, press OK. Note that Monday is 1, Tuesday 2 etc. If you don't press a button for 5 seconds display returns to standard mode and you will need to repeat section b.

Programming - The controller is preset to the following times and temperatures:-

Day Number	Period							
	Wake up		Outdoor		Back home		Sleep	
1	06:00	20ºC	08:00	15ºC	17:00	20ºC	22:00	15ºC
2	06:00	20ºC	08:00	15ºC	17:00	20ºC	22:00	15ºC
3	06:00	20ºC	08:00	15ºC	17:00	20ºC	22:00	15ºC
4	06:00	20ºC	08:00	15ºC	17:00	20ºC	22:00	15ºC
5	06:00	20ºC	08:00	15ºC	17:00	20ºC	22:00	15ºC
6	08:00	20ºC	10:00	15ºC	16:00	20ºC	23:00	15ºC
7	08:00	20ºC	10:00	15ºC	16:00	20ºC	23:00	15ºC

By default the controller is set to 5+2 days this means when programming Monday – Friday settings will all be the same and you can then program different settings for Saturday – Sunday. If you require 7 day or 6+1 day settings enter defeult settings and adjust paramenters first (See section 5).

To adjust or program the time & temperature periods

a) Make sure the thermostat is on, or turn on by pressing [⏻] button.

b) Press and hold the [SET] button for 3-5 seconds until the time starts to flash, display will also show "1 2 3 4 5" and the first period symbol will show. Adjust the hours by pressing the [▼] or [▲] buttons. When correct, press [SET] button and the minutes will flash. Set these by pressing the [▼] or [▲] buttons. When correct, press [SET] button and the temperature will flash. Set this by pressing the [▼] or [▲] buttons. When correct, press [SET] and the second period symbol will show and the hours will flash. Now repeat the above to set all 4 periods. Once set, the days will change to 6+7 and you repeat the above procedure to program Saturday and Sunday. Note "1 2 3 4 5" on the display while programming means you are setting all 5 Weekdays "6+7" on the display while setting means you are programming Saturday & Sunday. If you don't press a button for appox 5 seconds the controller will automatically store the settings and exit programming mode.

Run Modes

1 – Turn thermostat On or Off by pressing the [⏻] button.

2 – When "ON" press [SET] to toggle between Auto mode $\overset{AUTO}{\circlearrowright}$ and Manual mode ✋ .

3 – When in Auto mode $\overset{AUTO}{\circlearrowright}$ you can override the set tempreture by pressing the [▼] or [▲] buttons. This override will last until the next program period and is shown by both the $\overset{AUTO}{\circlearrowright}$ and ✋ symbols.

4 – When in Manual mode ✋ you can override the set tempreture by pressing the [▼] or [▲] buttons. Note:- The thermostat will stay in Manual mode with the same set temprature until you switch it to Auto mode or turn the thermostat off.

At any time you can return to the auto temperature set point by pressing the [SET] button until only the Auto mode $\overset{AUTO}{\circlearrowright}$ shows.

All Modes - To view the floor sensor temperature (if pressent) press and hold the [▲] button for about 3 seconds, the display will change and show the reading, when you release the button the display will revert back to showing the air temprature.

Locking the controller

The controller has 2 lock settings selected in the default settings (see section 5). Half lock, when set only allows the On/Off [⏻] button to be pressed. Full lock disables all buttons except the unlock sequence. Putting the controller in lock mode indicated by a 🔒 symbol on the screen is done by pressing and holding the [▼] button until the 🔒 symbol appears. Unlocking is the reverse process.

Holiday Mode

Holiday days (count down) and temprature set point can be set so that the heating runs at a lower temprature whilst you are away and reverts back to normal when you return. To access, make sure controller is on and then press [OK] button for 3-5 seconds until the screen displays Off change to On by using the [▼] or [▲] buttons. Then press [OK] button to set the number of days you are away. Then press [OK] button to set the temperature required while you are away. Holiday mode is shown by a 🛍 symbol displayed on the screen. Once set, to exit holiday mode early press the [SET] button.

3. INSTALLATION SAFETY INSTRUCTIONS.

3.1 ELECTRICAL SAFETY

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

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. If in any doubt consult a qualified electrician.

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.
- Ensure that the cables are always protected against short circuit and overload.
- The unit should be protected by a suitably rated isolator and fuse or MCB.
- This controller is IP20 rated and is suitable for indoor or under cover use only.

3.2 GENERAL SAFETY INSTRUCTIONS

- ✓ Remove all packaging and store it away from children, check the package and controller for visible damage or tampering.
- ✓ Familiarise yourself with the applications and limitations of the controller.
- ✓ Only use recommended attachments and parts. To use unauthorised parts may be dangerous and will invalidate your warranty.
- X **DO NOT** use in areas where hazardous gasses or dusts may be present.
- X **DO NOT** disassemble the controller for any reason. There are no user serviceable parts inside.
- X **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.

4.1 CHOOSING A LOCATION FOR YOUR B16C

The B16C 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.
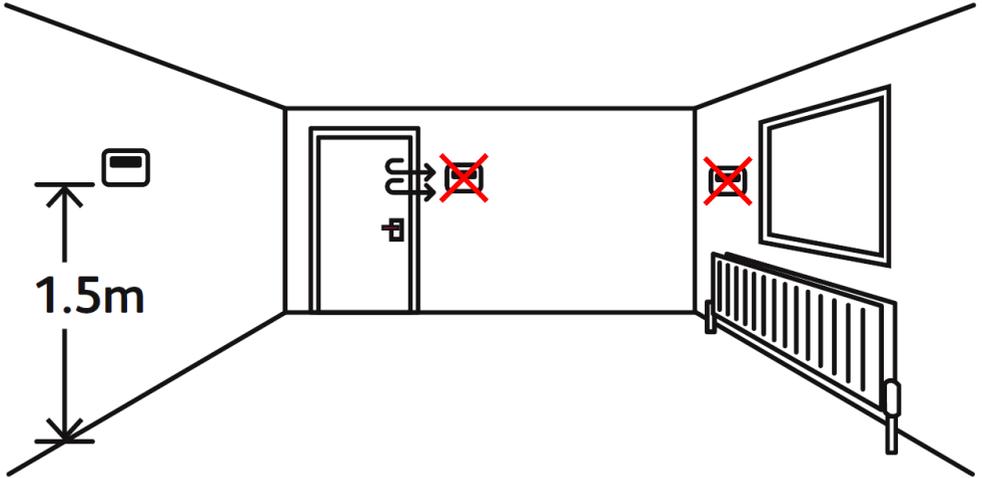
4.2 INSTALLING THE B16C

The thermostat requires a one gang back box having a minimum depth of 35mm.

1) Remove the front screen from the thermostat by gently using a screwdriver underneath the front lip to release the two plastic clips. Gently pull the screen towards you releasing the internal plug which allows the two parts to be separated.
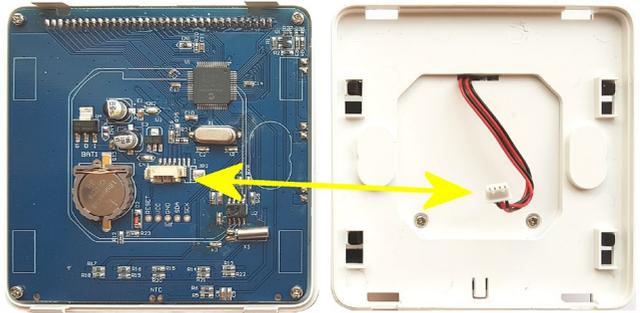
2) Now remove the plastic centre housing from the back plate by gently lifting in the direction shown in the picture. Once lifted gently pull towards you exposing the black metal back plate.

3) Wire the thermostat as per picture 1 making sure all the terminals are done up tightly. An under floor sensor must be used (supplied) and this MUST only be wired to terminals 5 and 6. Polarity of the sensor does not matter. Do NOT exceed total load of 16A. For loads greater than this, use a contactor with the thermostat controlling the coil of the contactor.
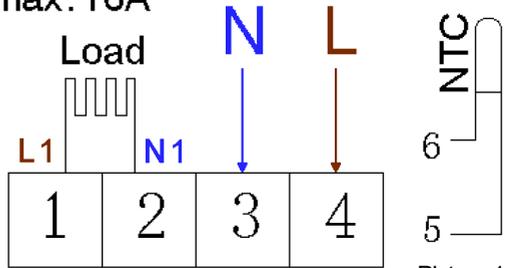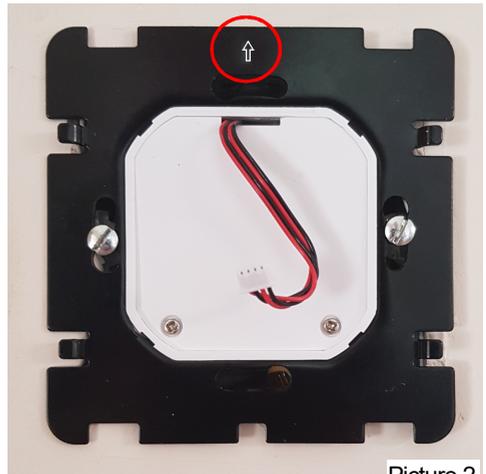

Picture 1

4) Once all the connections have been made, make sure the arrow on the back plate faces upwards and secure to the back box using two screws. See picture 2 to the right.

Picture 2

Picture 3

5) Slide on the centre housing until it clips into position. See picture 3 above.

6) Finally push the plug into the socket on the front screen and clip onto the centre housing. Note:- The plug only fits one way around so don't force it.

5. CHANGING THE MASTER / DEFAULT SETTINGS.

There are various master / default settings that can be changed by entering the default settings. To enter these settings, turn off the thermostat by pressing the ⏻ button. Then press and hold the SET button for 3-5 seconds until the A1 appears on the screen. You are now in settings mode and if you don't press any button for 5 seconds the display reverts back to off mode.
Press SET button to switch to next option and press ▼ or ▲ buttons to adjust the data. If you wish to exit the settings without waiting 5 seconds press the ⏻ button.

No.	Setting Options	Data Setting Function	Default
A1	Temperature calibration	-9ºC to +9ºC in 0.5ºC steps. (Can be used to tune temperature reading so it matches another thermostat)	0ºC
A2	Differential between set point and On and Off	0.5ºC - 2.5ºC in 0.5ºC steps.	0.5ºC
A3	Floor sensor differential	1ºC - 9ºC in 1ºC steps.	2ºC
A4	Sensors used	N1= Built in sensor only. N2= Floor sensor only N3= Built in sensor and floor sensor. If floor sensor temperature is higher than its set point (A6) load will turn off (indicated by 🔥 flashing) until temperature drops when heating will continue until room temperature is reached.	N3
A5	lock settings	0 = half lock 1 = full lock	0
A6	Maximum set point of floor sensor.	5ºC - 45ºC	27ºC
A7	Minimum set point of floor sensor.	1ºC - 10ºC or ━ ━ (━ ━ = Not active)	5ºC
A8	Minimum set point of internal sensor.	1ºC - 10ºC	5ºC
A9	Maximum set point of internal sensor.	20ºC - 45ºC	30ºC
AA	Power Cut function.	0 = Power heating as per controller memory. 1 = Shut down controller after power cut. 2 = Shutdown heating but turn controller on after power cut.	0
AB	Programming selection	0 = 5 + 2 (same settings Mon-Fri + Sat-Sun) 1 = 6 + 1 (same settings Mon-Sat + Sun) 2 = 7 (different settings each day Mon-Sun)	0
AC	Window Opening detection	━ ━ = Not active 10 - 20ºC = Sudden drop set point at which heating turns off.	━ ━
AD	Window Opening OFF period	5 - 40 minutes (only if AC above is set to a temperature and not ━ ━).	10
AE	Factory Reset	Press & hold ☐ᴋ key until whole screen shows.	

6. BATTERY REPLACEMENT.

The thermostat contains an internal battery that maintains the settings should you have a power failure.
If you find the settings are not remembered after a power cut, the battery needs replacing.

- Before replacing the battery, ensure the mains power is completely turned off and isolated.
    1) Remove the front screen panel as per instruction 1 on page 5.
    2) Disconnect the plug connecting the front screen to the back of the controller.
    3) Replace the battery with another ensuring polarity is correct.
    4) Dispose of the old battery correctly.
    5) Reassemble is reversal of above.
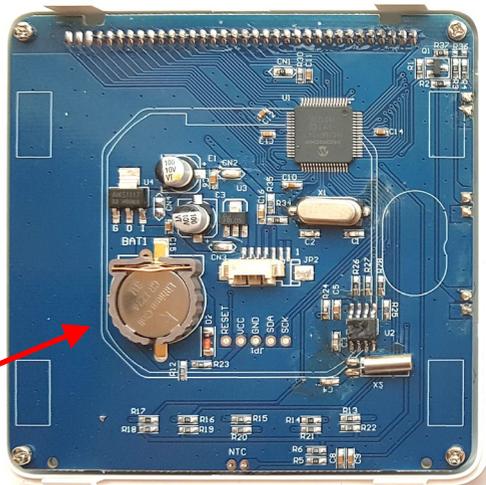
Battery - CR1220 Lithium Cell

7. SENSOR FAULT CODES.

E1 or E2 fault codes are displayed if the sensors are faulty or are not connected. The thermostat will stop heating until the fault is corrected.

If in the master settings shown overleaf, you have selected N3 for option A4 (Sensors used) you MUST have a floor sensor present and working otherwise the display will show fault code E2 and will not work.

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.

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