



Underfloor heating

user guide

DS thermostats with timeclock





working with you
**before,
during
& after**
your project

**Nu-Heat
Know-How**

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System Ref: _____

Every Nu-Heat system is a custom design. Please record your unique system reference number above for future use.

Welcome

Congratulations, you are the owner of a Nu-Heat warm water underfloor heating system, designed and supplied by Nu-Heat UK Ltd., the largest supplier of domestic underfloor systems in the UK.

This manual is provided to help you understand how the system operates and the correct settings required to get the most from your heating.

Nu-Heat did not install your system, therefore any installation matters should be referred to the contractor concerned. Please record the installer's details below.

For more information on the operation of your system and also troubleshooting help, please visit the Nu-Heat website at nu-heat.co.uk.

Installer details

Company: _____

Contact name: _____

Contact telephone no.: _____

Address: _____



About the Nu-Heat System

Description

Underfloor heating works by pumping warm water through special plastic tubing embedded in the floor. This warms the floor and maintains the room at a comfortable temperature.

Benefits

In particular, underfloor heating systems:

- Provide a more comfortable heated environment,
- Permit unlimited interior design options,
- Increase the useable space within a property.

Moreover, all these benefits are available from a system which can be significantly less expensive to run than a conventional, radiator-based system.

System startup

Once your system has been commissioned it should be fully operational. To initially check that your system is turned on and working please follow these simple steps:

Underfloor heating

Locate the main components of your installation: the boiler, hot water cylinder, underfloor heating pump/Optiflo manifold assembly(s), thermostats, timeclocks, underfloor heating wiring box.

Electricity supply

Ensure that the electrical installation is complete and that the heating system is turned on. The location of the main supply **ON/OFF** switch may vary but is often positioned next to the boiler. There may be additional switches located at each underfloor heating wiring box, which also need to be on.

Water supply

Ensure that the water is turned on ready for domestic hot water operation, check that a high flow of water is available from the cold taps. If there is poor flow or none at all, check that the stop-cock for the property is fully open.



Operation

Your underfloor system is designed for performance and economy. Each heating zone is controlled by its own wall-mounted thermostat. If a room has no thermostat it will be connected to, and controlled by, an adjacent zone.

UNDERFLOOR HEATING

Dial thermostats are timed using the four-channel timeclock. As supplied they will be set up such that when the timeclock is in an **ON** period the room will heat to the setting on the dial, but when the timeclock is in an **OFF** period a **FROST PROTECTION** temperature of 5°C will be maintained.

Less thermally responsive floors, in particular screed floors greater than 65mm thick, will warm up more quickly when the thermostats are changed to operate in a setback mode. This means that when the timeclock is in an **ON**

period the room will heat to the setting on the dial, but when the timeclock is in an **OFF** period a setback temperature, 4°C less than the dial setting, will be maintained. The mode can be selected on each thermostat individually, and is set by altering the 'DIL' switches within the thermostat. See page 6, noting the safety warning.

The best way to find the optimum temperature setting is to set a low comfort temperature on the dial (e.g.18°C) and then turn it up by 1°C each day until the temperature is right.

Consideration should be given to the different floor constructions and finishes used in your property, as these factors will affect the time the system will take to achieve comfort conditions. Allowance should be made for switching the system on in time for the floor to reach comfort conditions by the desired time. Different areas of the property may be linked to different channels on the timeclock (see page 7 for details), but for each of these the timings should be set to account for the slowest-responding room.

Systems with dial thermostats & timeclock

Dial-type room thermostats offer a straightforward method of controlling room temperature.

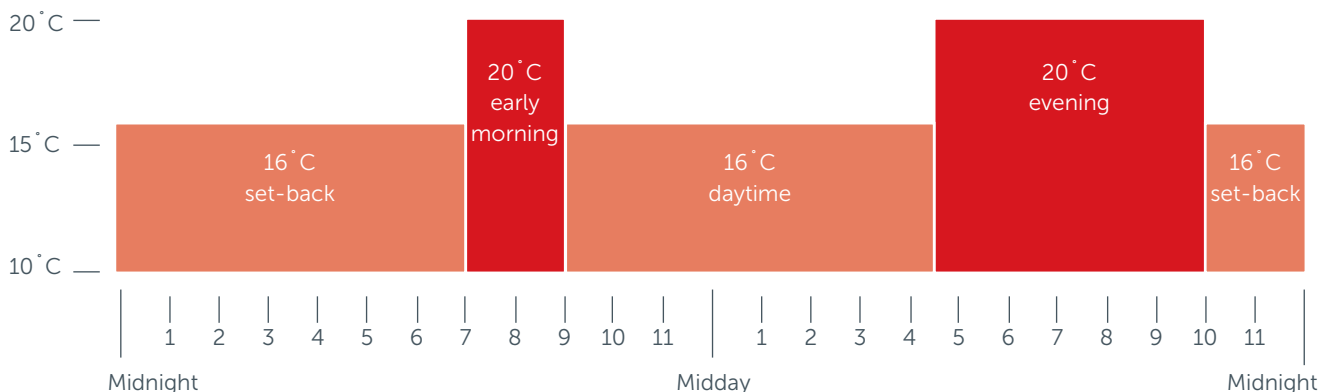
The system will be timed by a multi-channel timeclock, and different channels may have been used for different areas of the property. The dial thermostats have two possible operating modes that affect how they respond to the timeclock:

	TIMECLOCK ON	TIMECLOCK OFF
Thermostat mode: ON/FROST (default)	Thermostat will maintain the temperature set on the dial.	Thermostat is in 'Frost Protection' mode.
Thermostat mode: ON/SETBACK (see page 9)	Thermostat will maintain the temperature set on the dial.	Thermostat will maintain a setback temperature 4 °C below the temperature set on the dial.

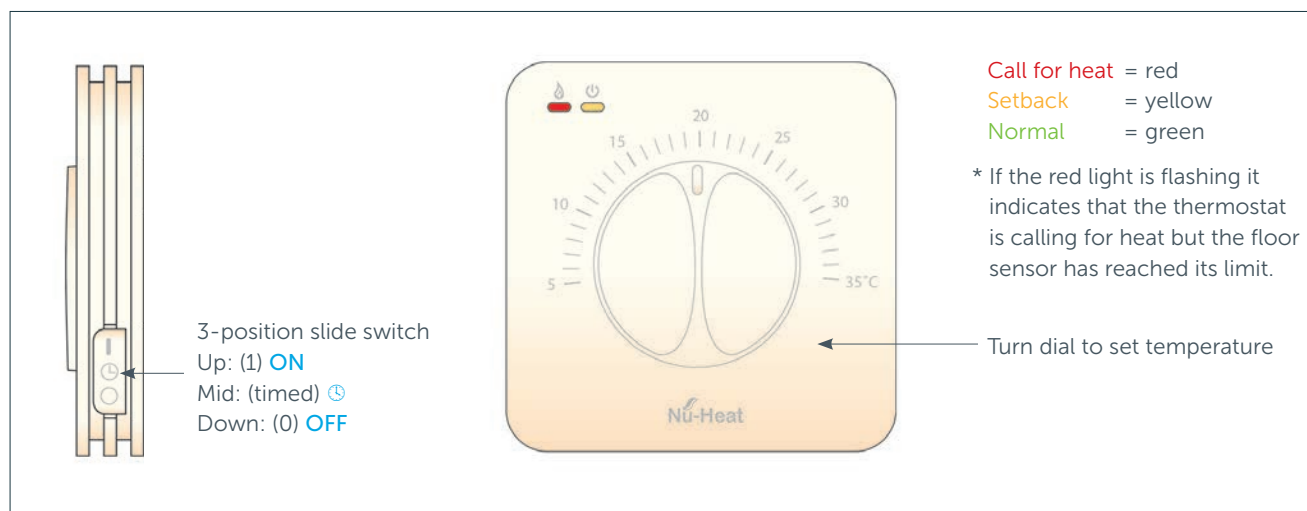
The default thermostat mode is **ON/FROST**.

Setback is required only for rooms with floors that prove slow to heat up.

THE EFFECT OF SETBACK (for illustration only)



Operating instructions for the standard dial thermostat



3-POSITION SLIDE SWITCH

ON: With the switch in the up-position (1) the thermostat will override the timeclock and the temperature set on the dial will continue to be maintained. This can be used to extend the heating period without the need to adjust the timeclock program.

TIMED: With the switch in the mid-position (⌚) the thermostat will respond to the timeclock. Depending on how the thermostat has been set up at commissioning it will operate in either **ON/FROST** or **ON/SETBACK** mode (see p.7 for details).

OFF: With the switch in the down-position (0) the thermostat will be essentially off and will not maintain comfort conditions but will, however, provide frost protection.

LEAVING THE BUILDING UNOCCUPIED

- If the building is to be left unoccupied for a short period, this is managed by the **HOLIDAY** mode on the timeclock. Individual thermostats will enter **SETBACK** or **FROST** mode according to their settings.
- If the building is to be left unoccupied for a long period, slide the switch on all thermostats to position **0 (OFF)** with frost protection). All thermostats will enter **FROST PROTECTION** mode

SENSORS

The heating system must be turned off and electrically isolated before changing sensor switch settings.

Each thermostat has six sensor operation modes. These can be selected using switches 1-3 accessible from the back of the thermostat, after removing the front panel from the wall.

Internal air sensor: Uses the built in air sensor only.

Set switches **1** to **3 OFF**

Remote air sensor (if installed): Uses the remote air sensor only.

Set switch **2 ON**, switches **1/3 OFF**

Internal air sensor & floor limiting sensor (if installed): Uses the built in air sensor but also uses the remote floor sensor to ensure the floor temperature doesn't exceed a chosen limit. Should the floor temperature be exceeded (even if the desired room temperature has not) the heating will turn off.

	Floor temp. limit	Applies to:
Set switch 1 on , switches 2 and 3 OFF	25 °C	Most bamboo floor coverings*
Set switch 1 and 3 ON , switch 2 OFF	27 °C	Most wood or vinyl floor coverings*
Set switch 1 and 2 OFF , switch 3 ON	29 °C	General limit for bedrooms and living areas
Set switch 1, 2 and 3 ON	32 °C	Limit for bathrooms and en-suites

* Subject to the approval of the flooring supplier.

HEATING OPTIONS

Each thermostat also has two control modes, selected using internal switch 4; this can be accessed inside the thermostat after removing the front panel.

Thermostat to be **SET-BACK** by 4 °C when the timeclock dictates an off period. Set switch **4** to **ON**.

Thermostat to be in **FROST PROTECTION** mode when the timeclock dictates an off period. Set switch **4** to **OFF**.

Operating instructions for the timeclock

ZONES

The timeclock can independently control 4 'time zones', normally allocated as follows:

- 1 Time zone 1: e.g. Ground Floor
- 2 Time zone 2: e.g. Bedrooms
- 3 Time zone 3: e.g. Guest rooms, etc.
- 4 Hot water time control

Note:

Rooms are allocated to time zones during installation.

SETTING THE CLOCK

The timeclock is 24 hour. To set it, follow these steps:

- 1 From the main menu, press **CLOCK**.
- 2 Use the **▼/▲** keys to set the hour.
- 3 Use the **▼/▲** keys to set the minute.
- 4 Press **DAY** repeatedly to set the day of the week.
- 5 Press **DONE** to store.

PROGRAMMING A HOLIDAY

The timeclock can be programmed to switch all time zones to setback or frost protection mode for a set number of days – ideal for when you are going away. To use the **HOLIDAY** function, follow these steps:

- 1 From the main menu, press **HOLIDAY**.
- 2 Select the number of days you are going away for. The holiday will start immediately, but will count tomorrow as the first day.
- 3 To cancel the holiday early, reduce the holiday days to **00** and press **DONE**.

Note: If a domestic water cylinder is out of use for a number of days, a hygiene purge should be performed before use.

NORMAL RUN MODE

In normal **RUN** mode, the timeclock will display the current time. It can also be set to show the status for a particular time zone. To display the status of a time zone, press **ZONE 1 – ZONE 4**. This screen will be displayed until you press **DONE** and return to the main menu.

SELECTING 5/2 OR 7 DAY PROGRAMMING

Each Time zone can be programmed to work in **5/2** (Weekday/ Weekend) or **7 DAY** mode. To setup the required mode, follow these steps:

- 1 Press **ZONE 1**.
- 2 Press **DAY**.
- 3 Set **00** to work in 5/2 day mode.
- 4 Set **01** to work in 7 day mode.
- 5 Press **DONE**.

ADJUSTING THE SWITCHING TIMES

Each time zone has 4 **ON/OFF** times. Follow these steps to program the switching times:

- 1 Select the time zone you wish to program, for example **ZONE 1**.
- 2 Press **EDIT**.
- 3 If the time zone is operating in **5/2** day mode, you will see Mon,Tue, Wed, Thu, Fri on the display.

If it is operating in **7** day mode, you will see Mon.
- 4 Press **DAY** to select the day to program.
- 5 You can now set the **ON** time by using the **▼/▲** keys.

If fewer switching times are required they can be ignored by setting to **--/--** using the **▼/▲** keys.
- 6 Press **OFF**, and set the **OFF** time.
- 7 Press button for Time 2, Time 3 and Time 4.
- 8 Press **DAY** to programme the other days, repeating from stage 5.
- 9 Press **DONE** to store.

MODE SELECT

Each time zone can operate in 3 modes:

AUTO: The time zone will work to the programmed switching times.

OFF: The time zone will switch off putting the thermostat into setback or frost mode.

CONSTANT: The time zone will stay on.

To set the mode for the time zone, follow these steps:

- 1 Select the time zone you wish to program, for example **ZONE 1**.
- 2 Repeatedly press **MODE** until the desired mode is displayed.
- 3 Press **DONE** to store.

BOOST FACILITY

Each time zone has a boost facility allowing you to turn it on for a number of hours. This is ideal for when you need to extend the time period but do not wish to reprogram the time clock settings.

To use the **BOOST** facility, follow these steps:

- 1 Select the time zone you wish to program, for example **ZONE 1**.
- 2 Press **BOOST**.
- 3 Enter the desired boost period (in hours).
- 4 Press **DONE**.
- 5 The remaining boost time will be displayed on-screen.
- 6 To cancel the boost early, repeat the steps above reducing the boost time to **00**.

COPY FUNCTION

The timeclock has a copy function, enabling you to copy switching times from one time zone to another. To use the **COPY** function, follow these steps:

- 1 Select the zone and press **EDIT**.
- 2 Press **COPY**.
- 3 Select each time zone you want to copy to and press **DONE**.

CLEANING

Before cleaning the screen of the timeclock, press **SCREEN** to disable all functions for 15 seconds. While the countdown timer is showing the screen can be cleaned without activating any functions.

General system checks



The expansion vessel and filling loop is usually positioned near the boiler.



Adjust the temperature of the boiler water by turning the boiler control thermostat.



Never set the boiler water temperature lower than the cylinder thermostat.

SYSTEM PRESSURE

The majority of heating systems are sealed and include an expansion vessel which maintains the system pressure. This red vessel would normally be found positioned near to the boiler.

If you have a combination boiler or system boiler the main pump and expansion vessel will be inside the boiler. The best way to identify this is that the boiler will have a pressure gauge on its panel.

You will need to check the system pressure regularly as it is normal for a system to lose a small amount of pressure. The gauge should read

approximately between 1 and 2 bar depending on whether the system is cold or hot.

If the pressure is below 1 bar, top the pressure up to 1 bar by opening the valve on the filling loop connected to the red vessel (or boiler if no red vessel is visible). Only top up when the system is cold. If your system rapidly loses pressure you need to consult a heating engineer.

If there is no red expansion vessel or gauge on the boiler then your system is not sealed but open vented and will be topped up automatically by a feed tank and ballcock in the loft.

BOILER THERMOSTAT

The temperature of water generated by your boiler is altered by adjusting the boiler control thermostat dial.

If you have a hot water cylinder it is important that the boiler water temperature is always at least 5°C above the temperature of your cylinder thermostat.

General sequence of operation

Every time heat is required in a room the following sequence is initiated:

If the heating is in an **ON** period and the room requires heating, the room thermostat will call for heat:

- 1 A red LED light will appear on the thermostat.

The floor pump, either on the Optiflo manifold serving that zone, or on the remote-mounted pump module will be switched on.

The actuator on the Optiflo manifold circuit connected to the

zone will open, indicated by the button on top of the actuator head rising.

The flow gauge on this circuit will indicate flow and the flow pipe will get warm.

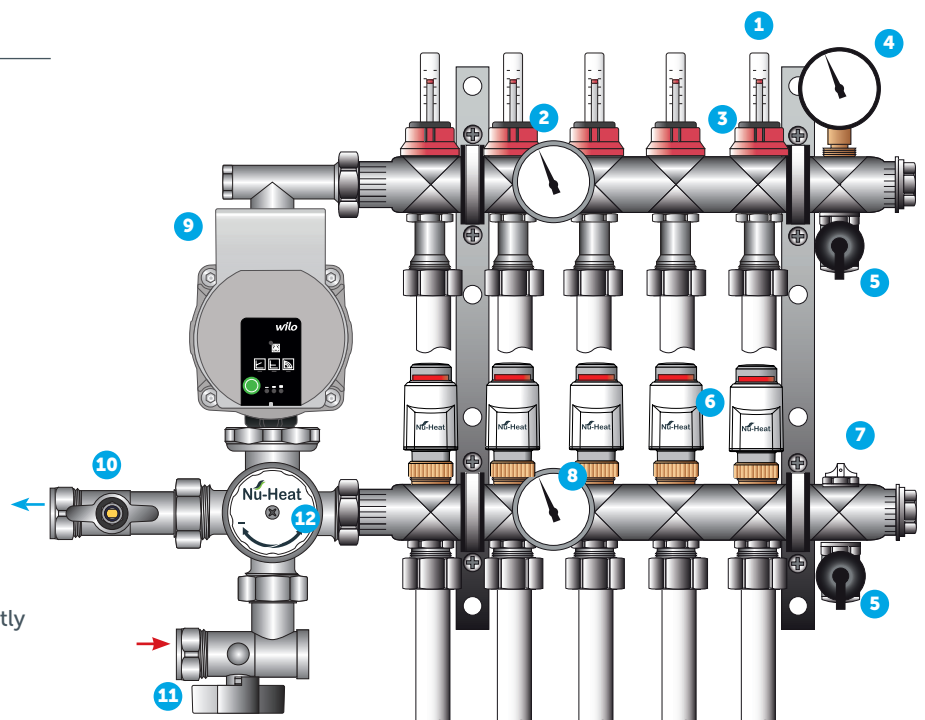
Over a period of time as the room comes up to temperature, the return pipe will warm up as well.

For standard systems with conventional boilers/cylinders or combination boilers the boiler and boiler pump are turned on to supply and circulate heat.

MANIFOLD COMPONENTS

- 1 Flow gauges
- 2 Flow temperature gauge
- 3 Flow adjustment
- 4 Pressure gauge
- 5 Filling/drain off valve
- 6 Actuators
- 7 Manual air vent
- 8 Return temperature gauge
- 9 Floor heating pump (direct mounted)
- 10 Main isolating valve (return)
- 11 Main isolating valve (flow)
- 12 Temperature blending valve

Note: Pump may be mounted directly or installed remotely.



Seasonal adjustments

Underfloor heating can be left active all year round as it is thermostatically controlled by the room temperature. In warm weather it will simply not come on.



If you require to turn the heating off (for example when servicing) always use the main heating isolation switch.

LEAVING THE PROPERTY UNOCCUPIED IN WINTER

Rather than turning the heating system off, it is possible to leave background heating on as frost protection.

Each room/zone can be set to frost protection individually. Please refer to the instructions (*Leaving the Building Unoccupied* on page 8), which detail how the thermostat can be put into **FROST PROTECTION** mode.

INSTANT HOT WATER AND HEATED TOWEL RAIL

Hot water and heated towel rails will be available all year round regardless of your requirement for underfloor heating (systems with EnergyPro hot water loop).

System adjustments

If additional heat is required in a selected room or rooms the water flow rate(s) serving these areas can be increased.



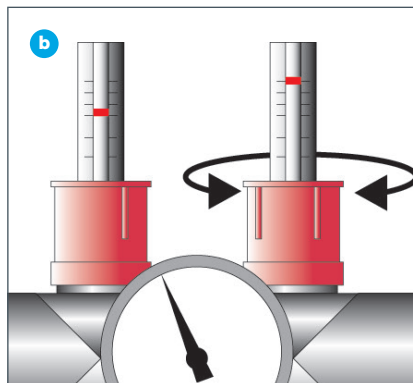
To do this:

When the system is operating, turn the thermostat up in that room.

Identify from the pipe markings at the manifold which actuator head serves the zone you want to change.

Note: If the zones are not clearly marked turn off all the other room stats. The zone that is operating will be shown by a raised button on the top of the actuator (a) and the flow gauge will indicate a flow reading (b).

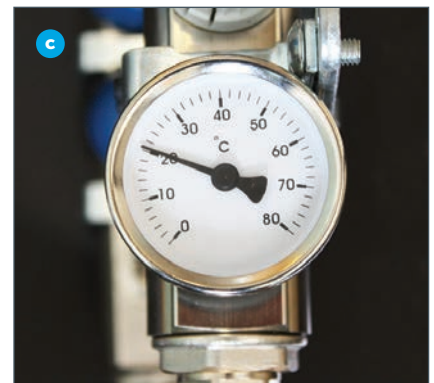
Please note that the button can take up to 3 minutes to respond.



Turn the flow gauge – anti-clockwise for more flow, clockwise for less.

The red flow indicator will drop further the greater the flow rate.

Note: Adjust a little at a time to suit your requirements. Increasing the flow to one zone may decrease the flow to others. There is a limit to how much extra flow can be achieved and if, after adjusting one or several zones, further action is required the flow temperature can be increased.



To do this:-

With the system running note the water flow temperature on the gauge (c) on the top rail of the manifold. This temperature can be increased (see d1 and d2 below).

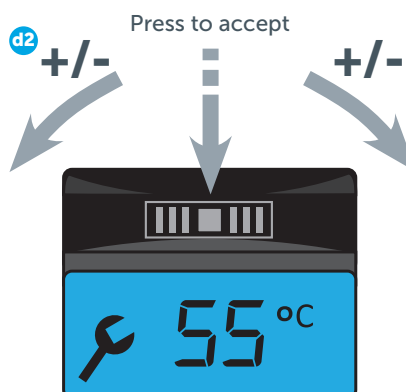
Note: Adjust a little at a time to suit your requirements.



Direct-mounted pump module (d1)

To increase the temperature:

- 1 Turn the control head anticlockwise



Remote pump module (d2)

To increase the temperature:

- 1 Push the button above the illuminated display in and across to the right to scroll to the temperature menu.
- 2 Adjust the temperature by pushing the button to the left or right.
- 3 Press the button again to confirm the change.

Servicing requirements

MONTHLY

Check the expansion vessel water pressure as displayed on the gauge, the pressure should normally be between 1 bar and 2 bar depending on whether the system is cold or hot.

Please refer to *General System Checks* (page 12) for further information.

ANNUALLY

Underfloor heating

Whilst there is no requirement for annual servicing it is important that the level of central heating inhibitor is sufficient to protect the system.

Energy efficiency (ErP)

The DS thermostat is rated as Class I under Section 5.2.1.2 Temperature control, of EU Commission Delegated Regulation No. 811/2013.



Product support

For further information on the operation of your underfloor heating system and troubleshooting help, please visit the Nu-Heat website at nu-heat.co.uk.



Online www.nu-heat.co.uk Follow us [@nuheatuk](https://twitter.com/nuheatuk) See our videos [/nuheatuk](https://www.youtube.com/channel/UCnuheatuk) Freephone 0800 731 1976 or 01404 549770

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