

TECHNICAL INFORMATION

HEATING – zone underheating

One or more underfloor heating zones is underheating. The normal settings of 21°C for day rooms or 18°C for bedrooms are not being reached. Increasing the thermostat setting does not help.

Check that the room thermostat is sensibly positioned within the zone and out of draughts.

- Each room thermostat (or its remote sensor) **MUST** be located within the heated area associated with that thermostat.
- In 'open plan' areas that are split into two or more zones, avoid positioning a room thermostat on the junction with another zone or close to another room thermostat.
- Room thermostats should normally be positioned 1.5m from the floor, out of direct sunlight or draughts and not in corners or above local heat sources such as towel-rails. Other site-specific considerations may however affect the height or location of thermostats.
- In bathrooms and wet rooms the installation of thermostats in bathrooms is governed by IEE regulations. If bathrooms are to operate as separate zones the thermostat will normally be supplied with a remote sensor so that the control unit can be located outside and the sensor unit inside the bathroom. Alternatively a battery powered wireless thermostat or other low voltage thermostat may be sited inside the bathroom. In large bathrooms it may be possible to use a standard mains thermostat in some positions, subject to inspection by an approved electrician and in compliance with IEE Regulations.

CHECK THAT THE ROOM THERMOSTATS ARE NOT CALLING FOR HEAT



- **Basic dial thermostat:** Thermostat should 'click' when turned down past current room temperature. Bathroom dial thermostat (electronic): Red tell-tale light goes off when the thermostat isn't calling for heat.



- **Programmable digital thermostat:** A flame symbol indicates that the thermostat is calling for heat. A flashing battery symbol indicates that the battery needs replacing, or some other internal electrical fault.
- For radio frequency thermostats see the [Radio Frequency Thermostat](#) section below. A wide range of replacement thermostats is available from Nu-Heat.

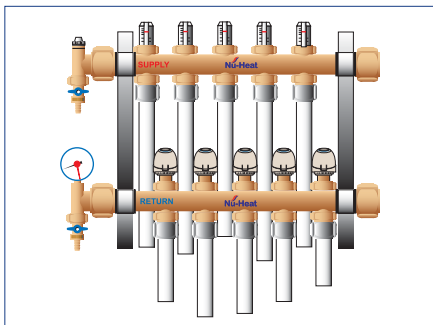
FLOOR COVERINGS



- The floor coverings used with underfloor heating can have a significant impact on its effectiveness. Thick carpet or underlay can reduce the heat output of the floor and lead to poor performance in cold weather. The use of large thick rugs can have a similar effect in some cases.
- In general a firmer, thinner, carpet or underlay will insulate less than a thicker material. Felt underlays in particular should be avoided since they always have a high insulation level.
- The choice of carpet and underlay should include consideration of their thermal insulation value, known as Tog rating. A high Tog rating indicates a high insulation level, undesirable on top of underfloor heating. Tog ratings for carpets and underlays are available from reputable manufacturers and should be obtained wherever possible. In practice the combined insulation value of underlay and carpet added together should be no more than 2.5 Tog.

If the thermostat is operating correctly, and the floor coverings are in line with the specification above, identify your system against the options below.

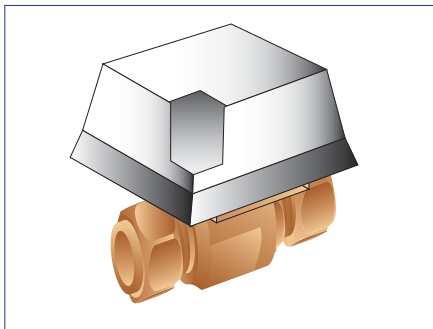
MULTI ZONE OPTIFLO™ MANIFOLD



Check that the relevant actuator on the underfloor heating manifold operates correctly. Actuators take approximately three minutes to respond.

- Remove the actuator of the underheating zone from the manifold. Do not remove any other actuators. If the zone now starts to warm, this indicates that the actuator or wiring is faulty. Suitable replacement actuators are available from Nu-Heat, part number OMDA-C.
- If the room is still too cold, check whether there is a different zone that is always too hot, even if its thermostat is turned down. If there is then you may have 'crossed controls' between the zone that is too hot and the zone that is too cold. Go to the [Crossed controls](#) topic below for more information on how to check and correct this.
- With the actuator for the cold zone removed and the thermostat calling for heat check whether there is any reading on the flow gauge. This should be at least as much as shown on the CAD drawing. If not see [Reduced flowrate – Optiflo™ system](#).
- Check the setting on the manifold temperature blending valve against the setting stated on the CAD drawing. Check also that the temperature that is set matches the reading on the temperature gauge on the supply rail of the manifold. If it doesn't please see [Manifold blending valve ineffective](#).
- If all efforts to trace the fault have failed, there may be a damaged cable to a room thermostat. Cables should only be checked for faults by an experienced electrician, see [Damaged cable](#) below.

SYSTEM WITH 2-PORT ZONE VALVES



- Firstly check that the correct zone valve is being operated by the room thermostat.
- It is possible for a zone to not heat if its two-port motorised valve has a fault. To check this, turn the room thermostat to minimum in the zone that is underheating. Check whether the manual lever on the side of the valve can be freely moved, returning on its spring (indicates valve ok).

Set the zone to call for heat by turning up its room thermostat. The underfloor heating pump should run when the zone valve opens. Wait for half an hour and then check the pipes either side of the zone valve, if the pipes are hot on both sides of the valve then the valve has operated correctly.

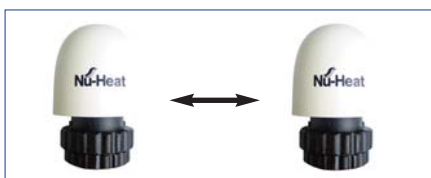
If the pipes on one or both sides of the zone valve remain cool, then either the zone valve, the wiring to it or the wiring to the room thermostat is faulty. Cables should only be checked for faults by an experienced electrician.

A suitable replacement valve is available from Nu-Heat, part number ZV22-C.

- If the valve is operating correctly and the zone still does not get up to temperature it may be that the system is incorrectly balanced. See [Balancing the system](#).
- If re-balancing the system does not improve the heating then it is possible that an airlock is restricting the flow. If there is any suspicion that this is the case then download the datasheet on [Filling and flushing – system with zone valves](#).
- If none of the above resolves the problem then you might be able to increase the temperature on the underfloor blending valve. Note that this should not be set too high otherwise the floor may reach unsafe temperatures. A surface temperature of 29°C is the regulatory maximum. See [UFH blending valve adjustment](#) for more information.

CROSSED CONTROLS – ONE ZONE UNDERHEATS WHILST ANOTHER OVERHEATS

- Turn down room thermostats in all rooms except for the 'hot' and 'cold' rooms under investigation.
- Wait for three minutes, then check the actuators on the manifold. Make a note of which actuator is in the raised (open) position. (Actuator A).
- In the room that is too HOT, turn the thermostat fully UP.
- In the room that is too COLD, turn the thermostat fully DOWN.
- Wait for up to three minutes while watching the actuators for their response. Actuator A should descend to the closed position. Another actuator may raise to the open position.
- Make a note of which actuator is now in the raised (open) position. (Actuator B).
- If the room that was hot becomes cold and the room that was cold becomes hot, then this confirms that the controls are crossed. Note that under normal conditions this may take anything between 3 – 5 hours to be noticeably evident.
- To correct the condition, undo actuators A and B from the manifold and swap them over.



REDUCED FLOWRATE



If any zone is underheating and the flowrate is low there are several possible explanations.

- Firstly, with the actuator removed, check that the pin in the middle of the valve can be depressed using a flat object such as the blade of a screwdriver. When the actuator is removed the valve should be in the raised (open) position, if it cannot be depressed it is probably stuck in the closed position. See [Flow valve jammed](#).
- If the valve is operating correctly and the flow is still too low then the valve may be incorrectly adjusted. See [Setting the flowrates](#).
- If the flowrate cannot be adjusted to the required level then it is possible that an airlock is restricting the flow. Download [Filling and flushing – Optiflo™ system](#) from the website.

MANIFOLD BLENDING VALVE INEFFECTIVE – SYSTEMS WITH AN OPTIFLO™ MANIFOLD



- For systems with the blending valve attached directly to the manifold.
- With the underfloor heating pump running, one or more actuators should be open, with flow showing on the flow gauge, and with the pipework to the manifold being hot, if the zones are still not warming then the blending valve is ineffective.
- The temperature gauge on the supply rail should show the same temperature as set on the blending valve. Sometimes this gauge is incorrectly positioned on the supply isolating valve before the manifold, where it will be measuring boiler temperature. It should, in this case, be relocated to the pocket at the end of the supply rail of the manifold.
- Check that the temperature sensing phial is attached to the supply (top) rail of the manifold, and as close to the pump end of the manifold as possible.
- Check that the blending valve head is firmly attached to the valve.
- If, with both of the above in order, there is still no temperature in the zones after an hour then remove the head and, using a flat object like a screwdriver blade, check that the valve pin can be pressed in (note the spring is quite strong, but does not require excessive force). If it does not move then the valve body will require replacement. This can be purchased from Nu-Heat with the part code MPBV075-C.
- If the valve is free to move then the head will probably require replacement. The part code for this is MPPT-C.

DAMAGED CABLE



- Underfloor heating zone is overheating or underheating due to a damaged cable to a thermostat, zone valve / valve actuator. Cables can be damaged during installation or during subsequent decoration, floor laying or building modifications. A damaged cable may result in current trips, no call-for-heat or permanent calls-for-heat. An electrician should be called to locate and replace the damaged cable.

BALANCING THE SYSTEM



- For systems with zone valves there will be a balancing valve on the return pipework (usually positioned near the motorised valve). These should generally be left open as much as possible, however if any of the zones is not getting up to temperature it may be possible that other zones are 'robbing' flow, and 'starving' the zone in question.
- If this is the case the balancing valve on the cold zone should be left fully open, and the others should be partially restricted. It may require some experimentation before the system is fully balanced, but when it is all zones should warm up at a similar rate.

UFH BLENDING VALVE ADJUSTMENT – SYSTEMS WITHOUT A CENTRAL OPTIFLO™ MANIFOLD



- As supplied the underfloor blending valve would be set to 43°C. It should have been adjusted during commissioning of the system however it may require increasing, if it has been set low.
- The adjusting knob may be locked in which case you will need to undo the allen screw, remove the knob, remove the locking ring, and then replace the knob and allen screw. The valve can be adjusted freely.
- The scale on the blending valve corresponds approximately to:
(Position = Temperature, °C) 1 = 30°, 2 = 40°, 3 = 50°, 4 = 60° and 5 = 70°.
- The exact setting will only be found by trial and error, starting at around 40°C and gradually increasing until a comfortable temperature is found. Beware that some floor coverings may be sensitive to excessive temperature.

WIRELESS THERMOSTATS – CHECK COMMUNICATION BETWEEN THE THERMOSTAT AND RECEIVER



To check thermostat communication with base receiver (single channel base receivers):

- Reduce the temperature set on the thermostat by pressing the ▼ (down) button until the flame symbol disappears.
- Check that the green channel light on the base receiver is off.
- Increase the temperature set on the thermostat by pressing the ▲ (up) button until the flame symbol appears. Check that the green channel light on the base receiver comes on.
- If unable to get a response, bring the thermostat close to the base receiver and try again. If communication can be established close to the base receiver, but not when the thermostat is mounted in the zone, then the signal may be being blocked. Reposition the wireless thermostat or the base receiver so that reliable communication can be established.

To check thermostat communication with base receiver (multiple channel base receivers):

- Reduce the temperature set on every wireless thermostat by pressing the ▼ (down) button until the flame symbol disappears on each thermostat.
- Perform communication check for the first wireless thermostat, as for single channel unit above. Leave the thermostat calling for heat so that one green channel light on the base receiver remains lit.
- Perform communication check for the second wireless thermostat, as for single channel unit above. Leave the thermostat calling for heat so that two green channel lights on the base receiver remain lit.
- Continue for each wireless thermostat until there is a green channel light showing for each wireless thermostat.

To set up communication between thermostats and base receiver(s):

- Bring the wireless thermostat unit(s) close to the base receiver(s).
- With the first thermostat, press and hold the ▼ (down) button and + (plus) button together for three seconds. The thermostat now transmits continuously for five minutes.
- At the base receiver, press and hold PROG and CH1 until the green channel light flashes.
- At the thermostat, press the ▼ (down) button on its own to cancel signal transmission.
- For multi channel base receivers having more than one thermostat, repeat for the next thermostat but use the PROG and CH2 buttons, or PROG and CH3 buttons on the base receiver.