

# RetroTherm® LITE INSTALLATION GUIDE

Floor Covering

Latex Screed

RetroTherm® Lite Panel

16mm Pipe

Concrete Floor

## Key Benefits:

- Ideal for retrofit or new build
- Ultra-light panel, easy to install
- Unique pipe return design
- Unique pipe return design

RetroTherm® LITE



## INTRODUCTION

Our RetroTherm® LITE underfloor heating solution uses a 20mm high density XPS foil faced (100mu) insulation board and 16mm pipes to create a thermal mass transferring the heat to the floor above.

Suitable for both retrofit and new build applications, the low profile panels provide excellent heat outputs whilst keeping floor height build up to a minimum.

The RetroTherm® LITE system is complimented when combined with hard floor finishes such as tiles and laminates as they provide less heat resistance than carpets.

Tiles can be laid directly onto the panels (which should be neat-primed first) using a flexible tile adhesive (ensuring structural integrity is not compromised).

## Floor Preparation

It is essential that the sub-floor is prepared and made sound and level and free of dust before the RetroTherm® LITE panels are installed.

If required, use a self-levelling compound to fill in any holes or areas to ensure a flat surface before laying any panels. Laying panels on uneven surfaces could result in the floor finish cracking or failing over time.

We have made assumptions that current building regulations have been followed and a suitable layer of floor insulation has been included within the floor construction.



## COMPONENTS USED:

UFH Manifold & Control Pack: Size dependant on UFH design

Pipe: 16x2mm PE-RT (Coil Sizes: 100m/240m/500m)

RetroTherm® LITE Panel: L1200 x W600 x D20mm, Pipe spacings: 150mm

## TOOLS REQUIRED:

Pipe De-Coiler, Pipe Shears, Pipe Reamer, Adjustable Spanner, Multi-tool for additional routing, circular saw for cutting boards.

## UFH DESIGN

Prior to installation please ensure you have received your detailed UFH CAD proposal from your account manager and you are happy that the system design meets your requirements.

## INSULATION

Provided by others - In accordance with Part 'L' of the current Building Regulations, a suitable layer of insulation material should be included within the floor construction. It is the responsibility of the Architect or Builder to ensure compliance. However, in all instances insulation must be installed beneath the underfloor heating system in order to ensure that any downward heat loss does not exceed 10W/m<sup>2</sup>, in accordance with BS EN 1264.

## TECHNICAL INFORMATION:

Dimensions: 1200 x 600 x 20mm

Dimensional Tolerance: (+/1mm)

Compressive Strength: 500kPa

Thermal Conductivity: 0.033 W/mK

Moisture Absorption: 0.6%

Foil Thickness: 100µ

## HEAT OUTPUTS

Flow/Return Temp	Heat Output W/m <sup>2</sup>	
	Engineered Wood Floor	Carpet 1.5 TOG/ 6mm ply
50/45	70	70
45/40	69	60
40/35	58	50
35/30	51	41

**Not allowed as per BS EN 1264** 70

\*PLEASE NOTE: The above are typical heat outputs based upon BS EN 1264, 20°C room temperature, and a delta T of 5°C.

This is not necessarily representative of the system you are installing. A number of variables including screed depth, flow temperature, pipe spacings, floor covering and insulation levels will dictate heat output levels.

Details of heat outputs specific to your project are displayed on the UFH CAD design provided.

If you are unsure about any aspect of your design or installation please contact TUS on 01283 850040 or email [info@tradeunderfloor.co.uk](mailto:info@tradeunderfloor.co.uk)

## 1 - INSTALLING THE MANIFOLD

The manifold location will be shown on your UFH CAD design. When you have located the correct positioning fix the manifold firmly to a wall ensuring there is adequate space available for access to either side of the manifold for future servicing and maintenance.

Manifolds are usually fitted at least 600mm from the floor to allow pipes to be connected up to the manifold easily.

Refer to the manufacturers instructions provided for detailed installation instructions regarding the manifold, ball valves and pipe connectors.

## 2 - INSTALLING THE RETROTHERM® LITE PANELS

**2.1 - We recommend starting by dry-laying the panels before applying any adhesive to ensure layout of the panels is correct before they are fixed permanently to the floor.**

Start by laying the first board in the corner of the room replicating the CAD design to ensure the pipe runs have a clear path back to the manifold.

2.2 - Working across from the corner, lay full panels until which point as you need to make a cut to the final board in the row. Ensure panels are cut as straight as possible by using a circular saw or similar tool. Save offcuts for filling in transit areas later on.

2.3 - Continue laying panels in subsequent rows until you have completed the whole area.

Tip! Use a short length of pipe to push into the grooves between two boards to help keep the boards aligned during the install.



2.4 - Once the main floor areas have been covered with panels, you will likely have some small areas where there are gaps between panels. Usually these are in the transit areas - through doorways or in areas where there are a number of pipes bunched together.

It is not always possible to lay pipes into a panel in this instance so these areas can be left and filled in with self-levelling compound to the same height as the panels post-installation.

2.5 - Once you are happy with the layout of the panels you are ready to begin fixing them to the floor using the spray adhesive provided.

Apply the RetroTherm® LITE spray adhesive to the sub straight and then the underside of the RetroTherm® LITE panel. Allow a short time (max 30 seconds, depending on conditions) before laying the board on the sub floor. Press all over the panels to ensure it is fixed consistently to the sub floor.

2.6 - Repeat this process across all panels until you have covered the whole floor area.

### **3 - INSTALLING THE PIPE INTO THE RETROTHERM® LITE PANELS**

3.1 - When all panels are laid it is time to start installing the pipe. Lay the pipe in accordance with the UFH CAD design and return to the manifold at the appropriate distance. Our pipes are labelled every linear metre so you can easily see how much pipe you have laid and check this against the CAD design if necessary.

3.2 - Score the foil grooves in the panels with a Stanley knife and push the pipe by into the grooves within each panel. The specifically design pinch points will guarantee the pipe is held in place however it is important to ensure the pipes are pushed in firmly and sit flush with the top of the panels.

Tip! To help speed the installation up we recommend using a rubber mallet to tap the pipes into the grooves. Tap gently to avoid denting the panels.

3.3 - Once you have completed the first loop, connect the pipe to the return rail (bottom rail on the manifold) and begin laying the next loops.

3.4 - Once all loops are complete and connected to the manifold ensure the system is filled, vented and pressure tested as outlined in the next steps.

1. Once all of the circuits have been completed, and all connections are tight, connect a suitable hose to the upper drain valve and a second hose to the lower drain valve on the right hand side of the flow and return manifold.
2. Connect the Upper drain valve to the cold water fill. Ensure both the red and blue isolating ball valves are closed and all flow meters are closed on the flow rail. On the return rail, all actuator valves should be open. Working from the left open up the flow meter on the first manifold port. With all of the remaining circuits closed, open up both drain valves. You are now ready to flush out the first loop. Visually check the water coming out of the hose from the lower drain valve is flowing freely without any bubbles into a suitable drain/bucket.
3. Repeat the process on the remaining circuits. **IMPORTANT!** When each loop has been flushed correctly, ensure that the flow meter is closed before moving on to the next port. When flushing the underfloor heating system, only 1 loop at a time should be open. When all loops are flushed, open all flow meters and close the lower drain valve first and then the upper to maintain pressure within the manifold.

You can now vent any remaining air in the system through the manual or auto air vents.

## PRESSURISING THE SYSTEM

Once all of the loops are flushed and air has been removed, the system should be pressurised to 6 bar, using a suitable pressure testing pump.

Open all of the circuit flow meters and close off the upper drain valve on the right hand side of the manifold. Connect the pressure tester to the lower drain valve, and raise the pressure to 6 bar.

## TESTING PERIOD

We recommend holding the system at 6 bar pressure for 1 hour. The pressure gauge may drop even though there are no leaks. This is due to the temperature change of the water. Generally in 1 hour you will recognise a leak.

**IMPORTANT!** make sure a suitably responsible person witnesses the pressure test, and signs to say the test was successful. Make sure you carry out a thorough visual inspection of all the pipework before you leave site.



The table below shows the suggested installation methods to be followed to ensure the best outputs are achieved without risk to the floor finish.

Before self-levelling compound is poured a multi-surface primer should be applied to the panels as per the manufacturers guidelines.

Floor Finish	Levelling Compound Minimum Thickness
Tile* / Slate / Stone	6mm
Vinyl / LVT	10mm
Engineered Wood / Laminate	10mm
Carpet	10mm

\*Tile - If height build up is a consideration you can directly onto the RetroTherm® LITE panels. A neat coat of multi-surface primer should be applied to the panels before using the S2 flexible tile adhesive.

### **Ceramic tiles. Slate, Stone etc**

The RetroTherm® LITE panels can be covered with a 6mm bed of self-levelling compound before applying tile adhesive and tiles, OR you can apply tile adhesive directly on top of the panels using a high quality S2 tile adhesive. The boards must be primed with Ultra Primer MSP.

### **Vinyl / Luxury Vinyl**

When applying vinyl floor finish to the RetroTherm® LITE panels, a completely flat surface is required. On top of the panels a layer of 10mm of self levelling compound must be installed (priming the panels with Ultra Primer MSP first) or an equivalent 10mm cement board can be laid on top such as 'No more Ply' or 'Hardie Backer' these boards must be screwed down at every 150mm centres or glued with a suitable adhesive. We do not recommend Plywood as there is a greater risk of movement due to expansion and the heat output will be restricted.



## **Engineered Wood & Laminate**

There are a several options for preparation of the panels prior to laying a laminate or engineered wooden floor. If installing as a floating floor an underlay should be laid on top of the panels prior to laying the floor covering on top, this underlay **MUST** be below 0.5TOG in order to maintain efficiency.

If you wish to glue the engineered/laminate down with a wood floor adhesive (this will provide a better output) you must install 10mm self-levelling compound or a 6/10mm cement board over the top of the panels first prior to gluing the flooring down to ensure an even heat distribution. We recommend a floor finish with a maximum thickness of 18mm. If using levelling compound an MSP primer must be used on the boards first.

## **Carpet and Underlay**

Prior to a carpet and underlay you can install a 10mm layer of self levelling compound on top of the panels (applying primer MSP first) or you can install a 6/10mm cement board or equivalent plywood on top. These boards can be screwed down into the panels carefully at every 150mm centres. A cement board or levelling compound will be more efficient than using a plywood, as they have a much lower thermal resistance allowing the heat to flow through more efficiently.

### **IMPORTANT!**

Please confirm with the floor covering manufacturer that it is suitable for use with underfloor heating.

BS EN 1264 advises that, in occupied areas, the floor temperature **MUST NOT** exceed 29°C. It also states that, when using timber floor coverings, the surface temperature must not exceed 27°C.



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