Warmup®

The world's **best-selling** electric floor heating brand™

Specification and Installation Guide for Heating under Wood Floors

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Welcome

Over twenty years ago, Warmup set out to become the world's most trusted provider of underfloor heating. Our strategy focuses on the creation of the best products, best services, best warranties and the best information achieved through the most advanced research and development capability and in-house technical standards. We are now established as the world's best selling floor heating brand, selling in excess of 2 million systems in more than 60 countries.

Why choose underfloor heating under wood floors?

Underfloor heating is an excellent choice for almost all wood floors, allowing design freedom and providing consistent warmth throughout the whole room avoiding damaging hotspots. Floor heating turns your most important rooms into the most comfortable place to be.

Warmup is the leading ISO 9001 UK manufacturer and supplier of the world's best selling floor heating systems. We have developed a complete set of floor heating solutions and knowledge to ensure a perfect system for your floor.

We understand that installing underfloor heating in conjunction with wood flooring requires consideration. We know you will be delighted with the result.

Key floor heating benefits

Design freedom – underfloor heating is a designer's dream, no bulky radiators, baseboards or heat vents to take up valuable wall and floor space

Energy efficiency - underfloor heating gives the user control - it requires significantly less energy as you are not heating the ceiling area and it enables the temperature of each room to be accurately controlled as needed, allowing end users to heat the rooms they want – when they want, with no energy wasted

Cost savings – because underfloor heating produces less convected heat than standard radiators, heating costs are reduced and savings of as much as 10% can be achieved on heating bills

Health benefits – underfloor heating reduces humidity preventing dust mites from surviving and the radiant heat it gives out reduces dust circulation – **these are important features for those who suffer from allergies and asthma**

Little or no maintenance - there is no maintenance required for electrical systems.

Why Choose Warmup Underfloor Heating

- Perfect design
- Premium Warranties
- 24 hour / day service help

Warmup has the only underfloor heating systems that offer you all these benefits. You are engaging with the experts to get it right

Best products

Market leading wire products for lifelong maintenance free performance.

State-of-the-art thermostats - Warmup's unique 4iE Smart WiFi Thermostat and 3iE Energy-Monitoring Thermostat have a special floor setting for wood to ensure your floor surface temperature does not exceed 81°F (27°C).

Warmup products are UL approved, European compliant, CE marked and accredited by all these independent institutions.

Best Warranty

SafetyNet™ installation warranty - should an electric heater become damaged during installation, Warmup will replace it free of charge.

Best R&D information

Cutting edge research and development - as a leader in Research and Development, we make proprietary, market-leading products. We rigorously test our products in our EN442-2 Research Center in Germany as well as Family Monitored Houses throughout the UK in addition to the BRE (Building Research Establishment) Renewable House.

Running cost performance - full knowledge of how a system will operate and function along with the energy usage and running costs is available at design stage – **only Warmup can provide this information.**

The best technical services and support

Warmup is the only company that offers you a 24/7/365 technical helpline before, during and after installation. Our experienced team can provide you with a perfect design and a free quotation so that you know exactly what you need for your project and how much it will cost.

Quotation and layout service - Warmup provides a FREE quotation and layout service to all our customers regardless of project size. Let our experienced team provide you with a free quotation and layout to ensure you have the right products and pricing for your projects. Simply fax us on 1-888-927-4721 (US) or 1-905-366-7324 (Canada), email your plans to us@warmup.com or ca@warmup.com or visit warmup.com or warmup.ca and fill in the details with dimensions and Warmup will do the rest!

SAFETY Net™ Installation-Guarantee

Warmup Research and Development

Research & development leadership

By continually investing in research and development, Warmup is able to foresee and respond to upcoming industry trends and technological developments. This guarantees you fast access to the latest innovations when it comes to underfloor heating design, energy efficiency and reducing CO^2 emissions.

Warmup Research Center, Bremen, Germany

In order to establish and preserve industry thought leadership, Warmup developed its EN442-2 Research Center in Germany. This series of separate test environments together with the dedicated analysis center is integral to the Warmup business. This is the main center for invention, innovation and improvement and co-ordinates world-wide contribution from all Warmup offices. Results, experience and know-how is shared with our offices and business partners around the world. This can range from new wire types and formats, system control configurations through to materials testing for our partners products. Warmup also monitors a number of post occupancy houses throughout Europe.

"Warmup has invested $ m's into its research and development program to invent, innovate and improve products and systems design. It has also created a unique product performance database to offer energy and running cost analysis for its systems."

Laars Krüger, Lead Research Engineer. Warmup Research Center - Bremen, Germany

BRE Renewable House, Watford

- 9 monitored locations in total
- 2 new locations added in 2013
- 644 Sensors reading temperatures, humidity, CO^2 levels and flow rates once per minute
- 927,360 Readings daily
- 338 Million Annually

Post occupancy monitoring house in Berkshire

Warmup Monitored Family Homes Program

The Warmup Monitored Family Homes Program grew out of the need to better predict the future energy running costs of houses using Warmup underfloor heating systems. Warmup monitors 9 occupied houses and offices with 644 sensors, taking 927,360 reading daily equating to 338 million readings per year. This information can also be checked and compared with the information provided by the Warmup Research Center in Germany to create a highly predictive model that allows all manner of key questions to be answered from:

"How much will it cost to run the heating system of my new, yet to be built house?" to "How much will I save using Warmup radiant underfloor heating rather than radiators in this house?"

Information is gathered every few minutes from many tiny sensors. These are strategically placed in each zone to compare floor, air, wire/water and outside temperatures and often other readings like humidity and radiant temperature. This allows a detailed view of the amount of energy actually needed to create ideal living conditions.

This can be compared with test facility results and in particular, what may have been predicted by the SAP (Standard Assessment Procedure used by the Department of Energy and Climate Change), calculations which are central to the perceived energy performance and efficiency of a dwelling.

SAP, whilst being integral to the construction process of domestic dwellings, by necessity has to be a calculation that can be applied across a range of circumstances with different input variables and assumptions.

The information and analysis from the Warmup Research Center and post occupancy monitored housing program is at your disposal to assist in the design phase for your project.

Warmup underfloor heating is showcased in the BRE Renewable House to deliver low CO^2 emissions, including both embodied carbon and low energy usage. It is proving the perfect system for sustainable CSH Level 4 homes. These need very little space heating applied through precise, zoned and accurate controls.

It is also demonstrating how healthier living is achieved by avoiding the creation of cold air currents at floor level and temperature build-up at ceiling level, associated with convection heating air currents.

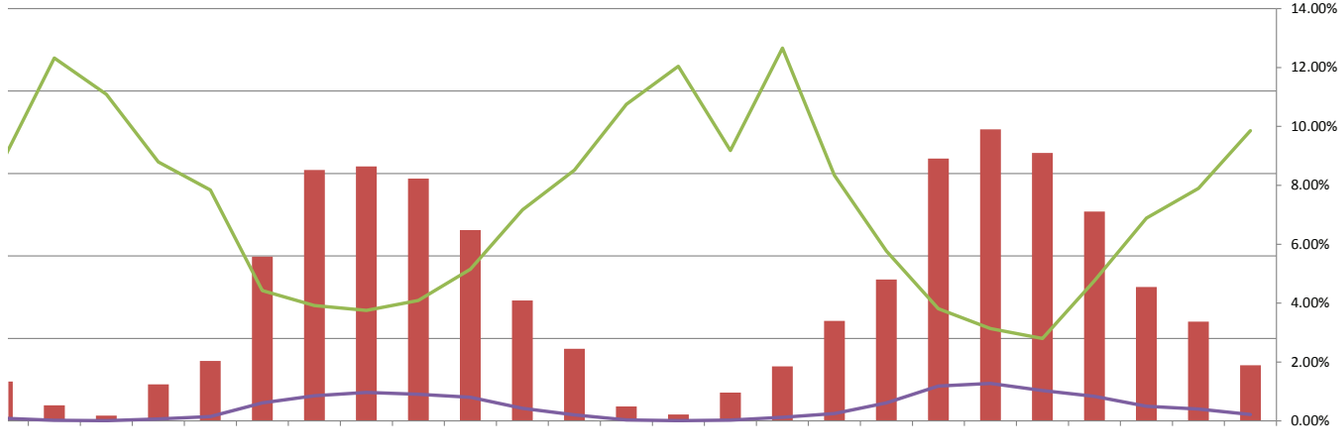
One of Warmup's post occupancy monitored houses is situated in Berkshire. It is a 470 sqm CSH Level 4 house with a 4 person family.

When it comes to running costs, our test studies found that during the Winter of 2010 - 2011 the average running costs (Oct-Feb) were $0.003 per sqft per day.

Whereas during the Winter of 2011-2012 the average running costs were 1.47 pence per sqm per day.

This saving of 32% was created by post system commissioning adjustments by Warmup and on going technical assistance for optimising performance and energy costs.

Post occupancy monitoring house in Berkshire running costs June 2013 - June 2015



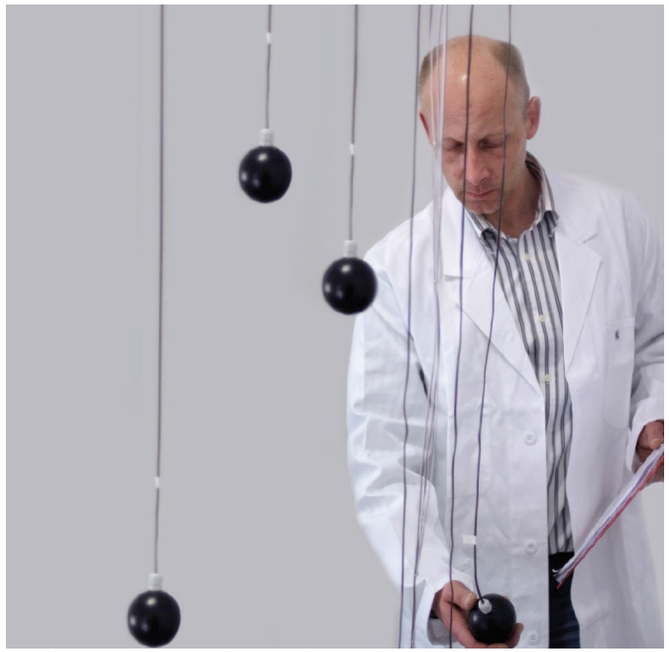
	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
Percentage heaters ON during month	1.34%	0.53%	0.18%	1.24%	2.04%	5.58%	8.52%	8.64%	8.23%	6.48%	4.09%	2.45%	0.49%	0.22%	0.96%	1.85%	3.40%	4.80%	8.91%	9.90%	9.10%	7.11%	4.55%	3.37%	1.89%
Average External Temperature	15.7	22	19.8	15.7	14	7.9	7	6.7	7.3	9.2	12.8	15.2	19.2	21.5	16.4	22.6	14.9	10.3	6.8	5.6	5	8.5	12.3	14.1	17.6
Daily Running Cost per m2 in PENCE (unit cost @ £0.12 kW/h)	0.16	0.04	0.01	0.12	0.27	1.09	1.52	1.73	1.62	1.44	0.76	0.37	0.06	0.02	0.05	0.22	0.45	1.09	2.11	2.27	1.84	1.49	0.89	0.73	0.40

Percentage heaters ON during month Average External Temperature Daily Running Cost per m2 in PENCE (unit cost @ £0.12 kW/h)

The Cost of Running a Warmup Heating System

When planning a heating solution one of the considerations is how much it will cost to purchase, install and run. Another important consideration is how much maintenance is involved and the associated cost.

Many people assume that running a whole-house underfloor heating system will be more expensive than an traditional radiator system, but this is not the case.

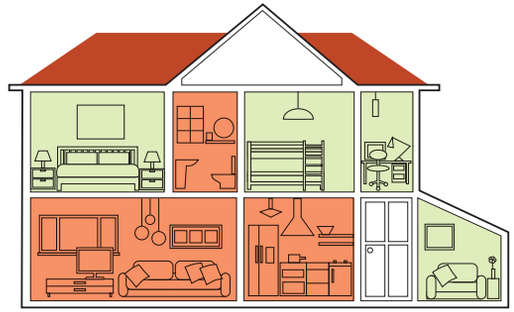


Laars Krüger, Lead Research Engineer. Warmup Research Center - Bremen, Germany

Zoning: Warmup allows you to control heating costs by zoning your home.

Adding a zone to your house is as simple as adding a thermostat. Unlike traditional heating systems, i.e., gas central heating that run all the rooms of your house at once, whether you are using them or not, underfloor heating systems can be set to heat individual rooms where and when you need it (for example, a bathroom for an hour and a half in the morning). By tailoring your system usage according to your lifestyle, you can enjoy more substantial savings with increased comfort.

Evening



Unheated room 59°F (15°C)
Heated room 71°F (21°C)
Heated room 64°F (18°C)

Morning

Unheated room 59°F (15°C)
Heated room 71°F (21°C)
Heated room 64°F (18°C)

Save money by insulating properly and reducing heat-up times:

During the heat-up period, as the floor reaches its set temperature, the heating system is running at full power. After this period, the heating system needs to run at approximately half-power to maintain the set temperature. Simply put, the faster the floor heats-up, the cheaper the system is to run.

By properly insulating your floor with Warmup Insulation Board, you can reduce the heat-up period significantly, thereby reducing running costs by as much as 50%.

Running cost information

Running costs will always depend on the room size and the running time, as well as how well the room is insulated. To get an accurate idea of typical running costs, see the table and notes below:

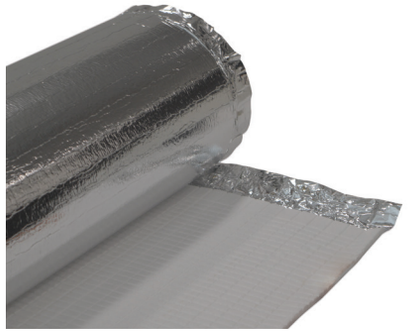
Accuracy of running costs

We test our heating systems, running under normal operating conditions within a test environment, built to EN442-2 standard specifications. The data collected from this extensive testing allows us to state with certainty, exactly what the operating costs are under these conditions.

Please note that these tests are performed using Warmup Systems and that this data is accurate for Warmup Systems only.

Optional Warmup Insulation Boards

Model	Thickness	Width	Length	Weight	R Value
WIB-4x2-1/4	1/4” (6 mm)	2’ (600 mm)	4’ (1250 mm)	4.3 lb (1.95 kg)	0.2 m^2.k/W (1.08 h•pi^2•°F)
WIB-4x2-3/8	3/8” (10 mm)	2’ (600 mm)	4’ (1250 mm)	5 lb (2.2 kg)	0.3 m^2.k/W (1.8 h•pi^2•°F)



Warmup Insulated Underlay

Model	Thickness	Width	Length	R Value (m^2.K/W)
SOFT-WIB-1/4	1/4” (6 mm)	5’ (1,5 m)	54’ (16 m)	0.19

Checklist for your Heated Wood Floors

Suitability of floor for underfloor heating	Before ordering the wood flooring, check that the selected flooring is compatible with underfloor heating.
Underlay	For floating floors we recommend to use a specialized wood floor underlay over underfloor heating. Such underlays typically have a thermal resistance of 0.3 tog. The maximum tog rating of all materials above the floor heating system, including the floor, should not exceed 2.5.
Insulation	Always use suitable insulation under the underfloor heating system. Proper insulation will reduce heat-up times and keep running costs to a minimum. Warmup supplies a number of suitable insulation types. (Please ask in-store or contact Warmup)
Thickness & density of wood flooring	Wood conducts less heat than stone or tiles, so the thinner it is, the higher the output of the system and the faster the heat-up time. The maximum thickness for efficient heat output is about 3/4” (18mm) but thicker boards can be used at a lower output. The density of the wood flooring will also influence the heat transfer of the underfloor heating system. Higher density floors transmit heat better.
Level tolerances	All sub-floors must be flattened to the following tolerances: ✓ Thin plank flooring: +/- 3/32” (3mm) per 2 linear metres in all directions. ✓ Wide plank flooring: +/- 3/32” (3mm) per 2 linear metres in all directions. ✓ Patterned floor (e.g. Parquet): +/- 1/16” (2mm) per 10 linear ft (3 linear metres) in all directions.
Cement slab subfloors	Cement slab subfloors must have a moisture content of less than 3% and a relative humidity (ErH) of less than 75%. Anhydrite slab must have a moisture content less than 0.3%. Measurements can be taken 48 hours after any heating systems and dehumidifiers have been switched off, using a BS 8203 hygrometer. Hygrometer testing involves the drilling of a 5/8” (16mm) (width) x 2” (50mm) (depth) hole into the slab by the subfloor contractor. The contractor should then insert a protimeter humidity sleeve into it; one test must be conducted for every 5 square metres. The subfloor contractor must take special care to avoid damage to the underfloor heating, plumbing or electrical components beneath the surface of the slab. Fast dry and rapid set slab and self-leveling compounds can accelerate the time taken to achieve the correct moisture levels.
Joist & plywood subfloors	If fixing plywood to joists, the plywood must have a minimum thickness of 3/4” (18mm) and mounted to the joist base, as recommended by your local building codes (typically 12”-16” on center). Sheets must have a moisture content of less than 10%. All sheet joints must be laid in a staggered, “brickwork” pattern. Sheets must not be joined at door thresholds; a single sheet must traverse the threshold.

Letting your flooring acclimate	The wood flooring should be stored in the building to acclimate during the heating systems pre-floor installation heating cycle also follow the flooring manufacturer's guidelines. During installation it is recommended that the floor surface temperature should be maintained at 59°F (15°C). The air temperature should be maintained between 15 - 22°C and the atmospheric relative humidity between 40 - 60%. After installation, allow the floor to acclimate for at least 48 hours before turning the system back on. Typically limit the initial floor temperature to 59°F (15°C) and increase by 34°F (1°C) a day until the desired floor temperature is achieved. Check this procedure with your flooring supplier as the ambient temperatures will vary depending on the time of year the installation takes place.
Moisture content of the wood flooring	Engineered wood is more stable than solid wood but it is important for both types that the moisture content is typically between 10 - 11% when laid, which will reduce to 8 - 9% when heated. Check with your supplier or manufacturer when ordering and ensure that the flooring is transported and stored in a dry environment.
Pre-installation heating cycle	The heating system should be activated and the temperature increased in daily increments of 41°F (5°C), i.e. day one 41°F (5°C), day two 50°F (10°C), day three 59°F (15°C) until the maximum floor temperature of 81°F (27°C) is reached. The maximum temperature should be maintained for at least 48 hours or in the case of cement slab, until the correct slab moisture levels are achieved (See cement slab). The heating system should then be cooled observing the same 5°C adjustments per day. When the heating system has returned to the lowest level, switch the heating system off for 48 hours. Re-activate the heating system and once again increase the temperature by 41°F (5°C) per day until the installation surface temperature of the sub-floor of 59°F (15°C) is reached. 59°F (15°C) should be maintained throughout the installation period. Ambient temperatures depending on the time of year of installation may not permit the 59°F (15°C) to be maintained. Consult with the flooring manufacturer on how best to proceed. **NOTE: The heating system should not be operated until any floor protection has been removed.**
Relative humidity of the room	The moisture content of the air indoors will be affected by the outdoor climate and humidity gradients will affect how much moisture wood will absorb. Wood is a hygroscopic material and these variations can lead to shrinkage and expansion accordingly. Air humidity is expressed as a percentage of maximum humidity of air at saturation point and should be maintained typically between 40% and 60%. During installation, the atmospheric relative humidity (RH) should not fall below 40% or exceed 60%. Room temperatures must not fall below 50°F (10°C). The floor post installation should maintain the same relative humidity levels. When radiant underfloor heating systems are used, the system must be properly regulated to ensure that the floor surface temperature does not exceed 81°F (27°C).
Heating controls	Heated wood floors need systems that can be controlled accurately. Warmup offers a comprehensive range of unique controls. This includes the patented 3iE® Energy- Monitoring Thermostat and 4iE® Programmable Thermostat. **The 3iE® Energy-Monitoring Thermostat** is designed to be easy to use, with no manuals needed. It is the first thermostat with a 2.4" full color screen and a clear graphic interface. The Proportional Adaptive Function precisely activates the system only when needed. Its clear graphic interface shows energy usage and prompts users to save up to 10% on utility bills. The unrivalled accurate floor temperature control means no wasted energy - reducing the costs associated with over-heating. Learn more page 28 of this brochure or online. **The 4iE® Smart WiFi Thermostat** is the smartest line voltage thermostat on the market. We designed it so you wouldn't have to use it. Learn more page 27 of this brochure or online.
Wattage density	The type of heating system best suited for a wood floor application often involves the complex analysis of space limitations, variety of wood and flooring type and thickness, as well as insulation levels of the building for heat loss considerations - Warmup will advise you on the best solution.
Maximum floor temperature	Wood floors should not be heated above 81°F (27°C). The room thermostat should have a floor probe(s) which automatically controls the underfloor heating, so that the temperature does not exceed 81°F (27°C). The Warmup 3iE® Energy-Monitoring Thermostat and 4iE® Smart WiFi Thermostat offers this capability.

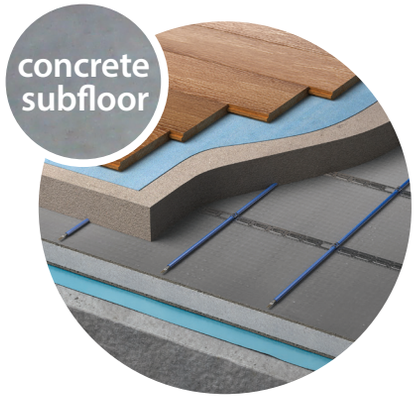
Choose Your System in 5 Easy Steps

With Warmup's wide range of products and installation methods, finding the ideal heating solution for your wood flooring is simple and straightforward. Refer to the easy-step-guide below or if you require additional guidance, call Warmup on (US) 888-927-6333 or (CAN) 905-990-2075, where our team of experienced staff are ready to help.

1 Subfloor Type

(i.e. the bottom-most structural floor underneath the decorative floor)

There are two basic types of subfloor; wood and concrete. Your installation method will be influenced by the type of existing subfloor, or the type you are planning for your project.



2 Project Type

Whether you are planning a new construction or renovation, Warmup offers the best types of electric systems. The choice is typically a matter of owner preference, house construction and floor height restrictions.

3

Wood Floor Type

(i.e. the finished decorative floor)

Many of today's wood floor varieties are compatible with underfloor heating, but remember to ask when selecting your chosen flooring.

Always ensure your wood flooring has acclimated in the room before installing.

Solid wood floors	Engineered wood floors	Multi layered floors	Parquet floors	Laminate floors
Is available in both soft and hardwood, made from a single piece of timber. It is very susceptible to humidity and temperature change and can be prone to gapping, cupping and crowning. Some types of solid wood are available which are compatible with underfloor heating. Always check with the flooring supplier before ordering.	Is constructed from several layers (typically three) of wood, bonded together in the form of a plank. The layers are bonded together with the grain of each layer at 90° to the adjacent layer to give dimensional stability. The top wear layer is hardwood, typically 1/8" - 3/16" (4-5mm) thick. The core and bottom layers are often soft woods such as pine. Engineered wood is less susceptible to the affects of moisture and temperature change and most types are very suitable for use with underfloor heating. Always check with the flooring supplier before ordering.	Are similar to engineered wood in construction but the top layer is a thin veneer bonded to a composite core with a plywood bottom layer, such as birch. Ply-backed multi layer floors are very stable and many high quality types are suitable for use with underfloor heating. Where engineered wood typically uses ply in its construction, high-quality multi-layer flooring typically uses same-type solid wood throughout. Always check with the flooring supplier before ordering.	Refers to the design of the floor and is a series of small wood blocks normally laid in a herringbone pattern. Parquet flooring is available in various types of either solid wood or engineered wood and many are suitable for underfloor heating. Always check with the flooring supplier before ordering.	Are a multi-layer synthetic floor in plank form made to simulate wood. It normally has an HDF (High Density Fibre) core. The top floor design layer is a high resolution photo of real wood, finished with melamine resin to produce a very real and natural look. This is covered with a wear resistant layer pressed onto the HDF board, making it resistant to stains, wear, impact and scratches. Laminate flooring is easy to lay, cost effective and most types are suitable for use with underfloor heating. Always check with the flooring supplier before ordering.

Warmup Heating Systems

Warmup underfloor heating offers the most complete, flexible and safe heating solution for wood floors.

All Warmup products are designed and manufactured in our world-class facilities with a reputation for innovation, quality and excellence.

SAFETY Net™
Installation-Guarantee

Electric underfloor heating

Warmup electric underfloor heating, the world's best-selling electric floor heating brand™, provides warmth throughout the whole room, giving a whole new meaning to heating and comfort. Warmup's electric underfloor systems use BEAB-approved ultra-thin heating elements, with tough fluoropolymer coatings, is the thinnest wire you can buy (less than 1/8" or 1.8mm thick) and will not raise floor levels. This also makes it much easier to install particularly in upper floor rooms (e.g., bathrooms).

The Warmup Foil Heating System is a super thin fully earthed flat aluminum foil designed for use under wood and laminate floors. It can be used under vinyl and carpet floors when combined with Warmup Insulated Underlay.

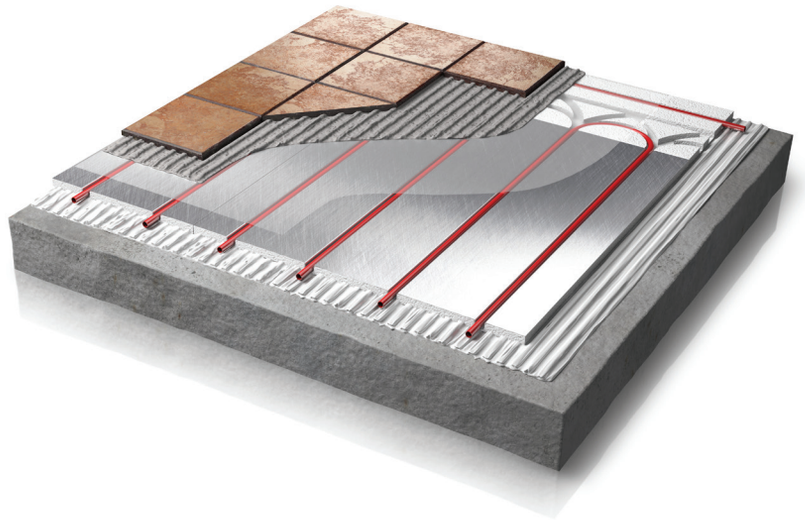
The Warmup Inslab Cable System is designed for installation in 2" to 4" (50 to 100mm) of concrete slab. Once installed the heated slab can be covered with any flooring.

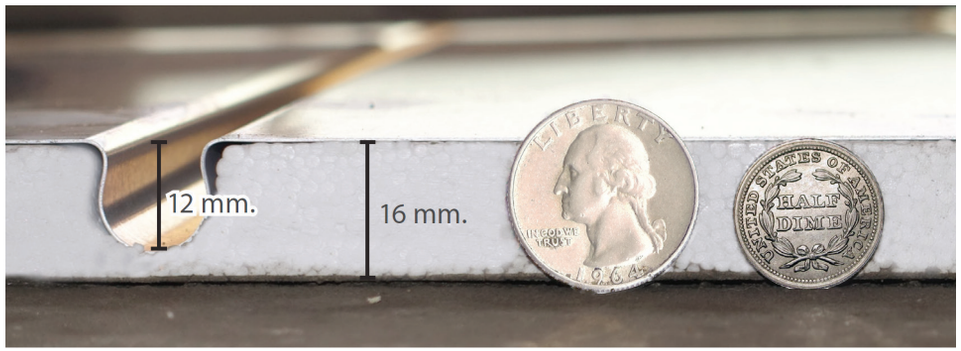
When it comes to installation, Warmup electric underfloor heating is easy to install. A qualified electrician is required to fit the thermostat and final connection to the power supply.

To provide additional security and peace of mind, Warmup was the first manufacturer to guarantee its products for life and goes one step further through its SafetyNet™ Installation Warranty, this means if the wire is accidentally damaged during installation, Warmup will replace it free of charge – this is unique to Warmup.

Warmup's 3iE Energy-Monitoring and 4iE Smart WiFi Thermostats have settings for different floor coverings, including wood. The wood setting prevents the floor temperature from exceeding 81°F (27°C), so there is no danger of warping or damage to the floor through overheating.

Coming soon! Total-16 Hydronic system.





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Flooring Installation Method

Now that you have defined your subfloor, floor finish and heating system, your flooring installer can select an installation method.

See the chart below to select a Warmup heating system for your project. Please see overleaf for details on the fixing methods.

	Stapled/nailed floors	Page	Glued floors	Page	Floating floors	Page
Existing Concrete subfloor	Warmup Loose Wire System with WIBs	16	Warmup Loose Wire or Mat System with WIBs	17	Warmup Loose Wire or Mat System with WIBs	18
					Warmup Foil System with insulation	20
New slab pour	Floating/glued floors					
	Warmup Inslab Cable System with WIBs	19				
Wood subfloor	Stapled/nailed floors	Page	Glued floors	Page	Floating floors	Page
	Warmup Loose Wire System	21	Warmup Loose Wire or Mat System	22	Warmup Loose Wire or Mat System with WIBs	23
					Warmup Foil System with insulation	23

Electric System Wood Subfloor Concrete Subfloor

CHOOSE YOUR SYSTEM IN 5 EASY STEPS

Warmup Loose Wire System

The Loose Wire solution is recommended for secret nailed floors where floor height is an issue.

Battens, with a minimum height of 1-3/16” (30mm) and a width of 2” (50mm), should be fitted to the existing concrete subfloor, above a damp proof membrane. The battens should be fitted at either 12”-15” (300mm or 400mm) centers when the cable is installed at 4’”(100mm) centers. If the cable is installed at a different spacing, change the batten spacing accordingly. Next, fix Warmup Insulation Board between the battens, finishing 3/8” (10mm) below their tops, before laying the Loose Wire heater on the insulation board.

The heater must be routed through notches in the battens, before being covered with a 3/8” (10mm) layer of self-leveling compound which must finish flush with the top of the battens. This creates a level surface on which to install the wood flooring. Check the heater before laying the self-leveling compound.

An optional thin wood floor underlay, suitable for electric underfloor heating, can now be laid over the self-leveling compound. Lay the wood floor on the self-leveled surface and nail or staple into the battens below, keeping the boards perpendicular to the battens. Allow an expansion gap around the edge of the floor. This is typically between 3/8” to 1-3/16” (10 - 30mm); ask your flooring supplier for more details particular to your floor.

Some manufacturers recommend a maximum board width of 6” (150mm) for nailed floors. Check with your flooring supplier before installation.

Disclaimer - These installation instructions are only a guide.
Please refer to the installation manual for detailed instructions.

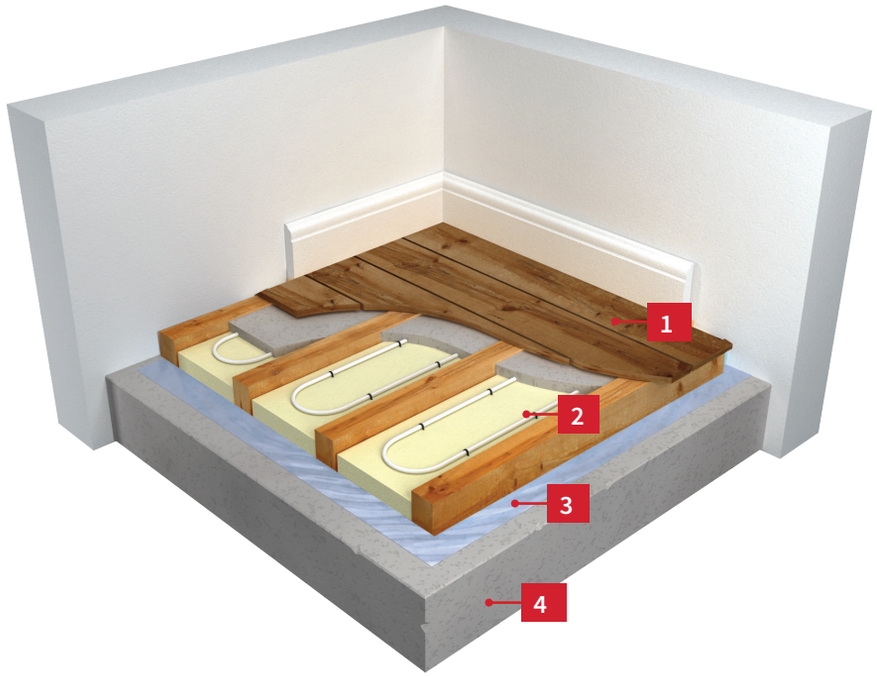
FLOOR CONSTRUCTION

1 Wood Flooring

2 Loose Wire

3 Optional insulation

4 Subfloor



Warmup Loose Wire, Mat or StickyMat System

These systems are easy to install and ideal where a low floor build up is required.

Fix Warmup Insulation Board to the concrete subfloor with flexible adhesive, sealing the board edges to create a damp proof layer. Lay the Loose Wire, Mat or StickyMat heater on top of the insulation board and finish with a 5/16" - 3/8" (8-10mm) layer of self-leveling compound. Check the heater before laying the compound. Allow to dry, check with the manufacturer of the leveling compound for drying times before switching on the heating. When the compound has completely dried, the system needs commissioning.

Glue the wood floor directly onto the leveled surface. Check the condition of the surface to ensure it is stable and that it is completely dry before gluing the wood floor down. Allow an expansion gap around the edge of the floor. This is typically between 3/8" to 1-3/16" (10 - 30mm); ask your flooring supplier for more details particular to your floor.

Wood floors can be glued directly onto concrete and self-leveled slabed subfloors. It is important to check the condition of the subfloor to ensure it is stable prior to gluing.

Some wood floor manufacturers recommend gluing a plywood substrate to the subfloor first and then glue the wood floor to the substrate. This helps prevent rotational movement and facilitates replacing a board if damage occurs in the future.

Use an adhesive recommended by the wood floor manufacturer ensuring the adhesive is suitable for use with underfloor heating.

Disclaimer - These installation instructions are only a guide.
Please refer to the installation manual for detailed instructions.

FLOOR CONSTRUCTION

1 Wood Flooring

2 Wood Floor Adhesive

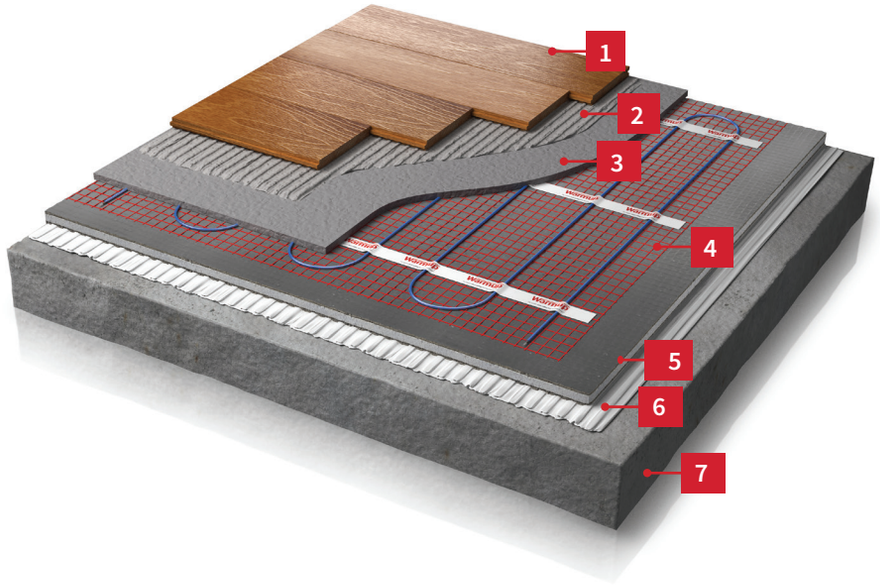
3 Self-leveling Compound

4 Warmup StickyMat

5 Optional Insulation Boards

6 Warmup Flexible Adhesive

7 Concrete



Fixing Method: Floating Floors

Warmup Loose Wire, Mat or StickyMat System

Install Warmup Insulation Board over a DPM layer on the concrete subfloor. Glue the joints together or tape over the joints to create a continuous layer ready for the leveling compound. Lay the Loose Wire, Mat or StickyMat heater on the top of the insulation board and encase in 5/16" - 3/8" (8-10mm) of self-leveling compound. Check the heater before laying the compound.

The floating wood floor can now be laid over an optional thin wood floor underlay. Allow for an expansion gap around the edge of the floor. This is typically between 3/8" to 1-3/16" (10 - 30mm); ask your flooring supplier for more details particular to your floor.

These heating systems can be used under all floating wood floors.

A floating floor can be held together either using boards which have a dry fix click system or by gluing the tongues and grooves. Some manufacturers prefer to glue solid wood floors to a thin plywood substrate and then lay as a floating floor. This helps to prevent rotational movement and also facilitates replacing a board if damage occurs in the future.

Disclaimer - These installation instructions are only a guide.
Please refer to the installation manual for detailed instructions.

FLOOR CONSTRUCTION

1 Wood Flooring

2 Wood Floor Adhesive

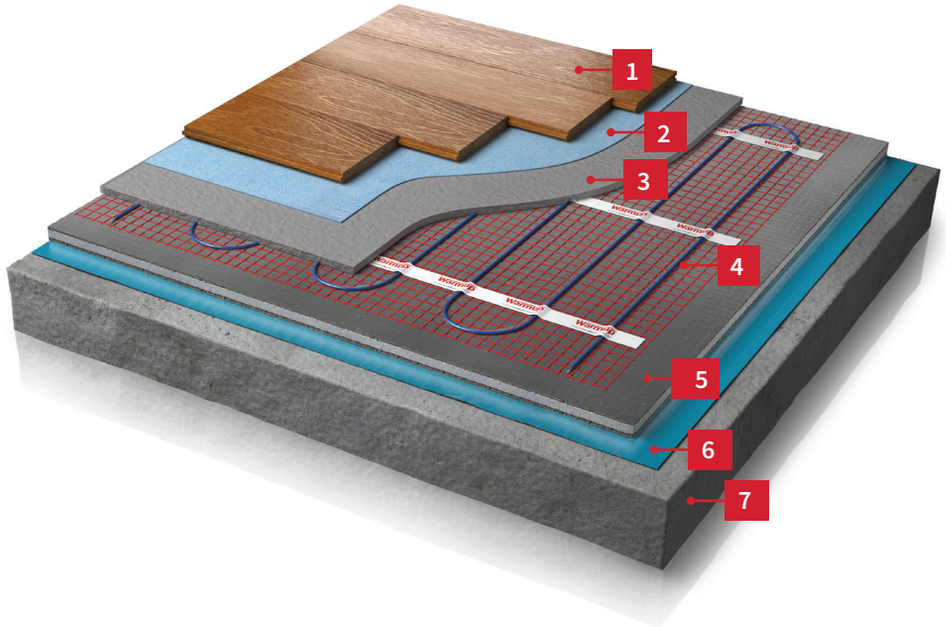
3 Self-leveling Compound

4 Warmup StickyMat

5 Optional Insulation Boards

6 Warmup Flexible Adhesive

7 Concrete



Fixing Method: Floating or Glued Floors

Warmup Inslab Cable System

Edge insulate the floor to reduce heat loss and install Warmup Insulation Board on the concrete subfloor. Tape over or glue the joints if a self leveling slab is to be used to prevent slab ingress. Lay the Inslab Heating Cable on top of the insulation and cover with at least 2" (50mm) of concrete slab. Check the heater before laying the slab. Allow the slab to completely dry out.

The floating wood floor can now be laid over an optional thin wood floor underlay, suitable for electric underfloor heating. Allow for an expansion gap around the edge of the floor. This is typically between 3/8" to 1-3/16" (10 - 30mm); ask your flooring supplier for more details particular to your floor.

A floating floor can be held together either using boards which have a dry fix click system or by gluing the tongues and grooves. Some manufacturers prefer to glue solid wood floors to a thin plywood substrate and then lay as a floating floor. This helps to prevent rotational movement and also facilitates replacing a board if damage occurs in the future.

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FLOOR CONSTRUCTION

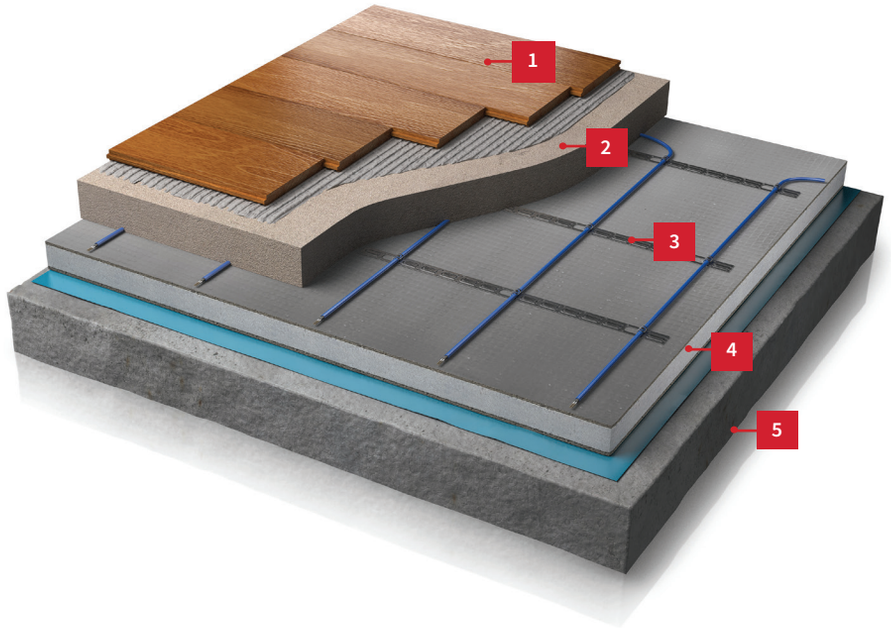
1 Wood Flooring

2 Slab

3 Inslab cable

4 Optional Insulation

5 Subfloor



Fixing Method: Floating Floors

Warmup Foil System

Lay Warmup Insulated Underlay onto the concrete subfloor and ensure the self adhesive overlap flaps are stuck down to create a moisture barrier. Alternatively, lay Warmup Uncoated Insulation Board onto the concrete subfloor and tape over the joints to create a moisture barrier. Roll out the Foil Heater on top of the Insulated Underlay to fill the heated area. Check the heater is working.

The floating wood floor can now be laid directly on top of the Foil Heater.

The Foil Heater is suitable for solid wood, engineered wood or laminate floors. The fully earthed flat aluminum foil will help where floor height is an issue. Allow for an expansion gap around the edge of the floor. This is typically between 3/8” to 1-3/16” (10 - 30mm); ask your flooring supplier for more details particular to your floor.

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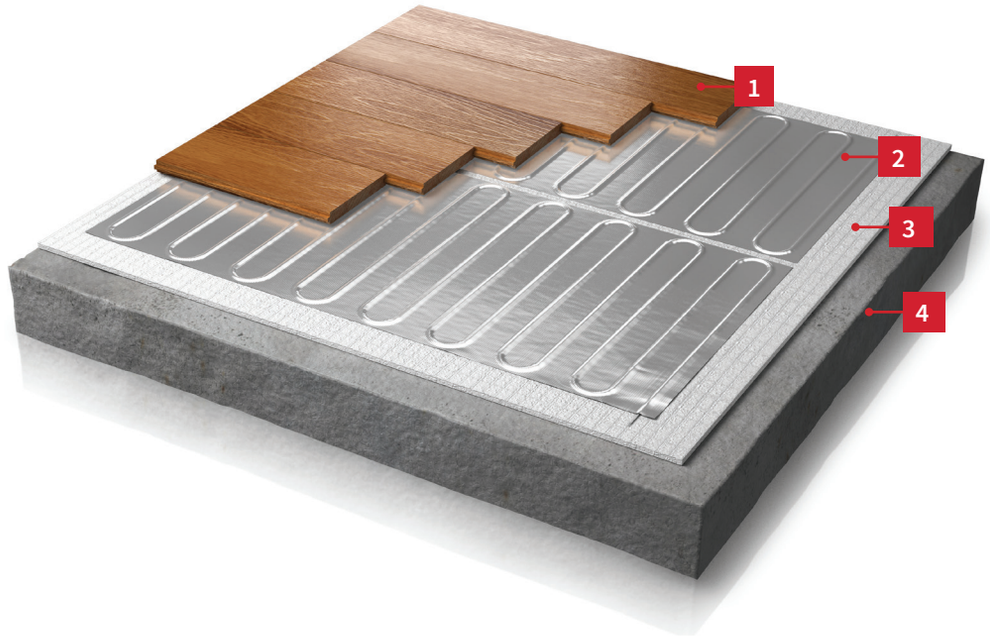
FLOOR CONSTRUCTION

1 Wood Flooring

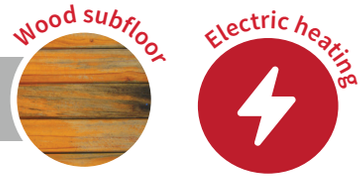
2 Warmup FOIL

3.Warmup Soft Insulation

4 Concrete slab



Fixing Method: Stapled/Nailed Floors



Warmup Loose Wire System

This fixing system for Loose Wire heaters is used where it is desired to nail the wood floor down. The new wood floor can be laid over an existing floor where floor height is not a problem. Ensure the existing floor is stable, covering with a vapour barrier (DPM) if required before fixing the battens, which should have a minimum height of 1-3/16" (30mm) and a width of 2" (50mm). The battens should be fitted at either 12" or 15" (300mm or 400mm) centers when the cable is installed at 4" (100mm) centers. If the cable is installed at a different spacing, change the batten spacing accordingly.

Next, install 13/16" (20mm) Warmup Insulation Board between the battens and install the Loose Wire Heater on top of the insulation. Cover the wire with a self-leveling latex compound to finish flush with the top of the battens (minimum 5/16"-3/8" or 8 - 10mm).

If floor height is a problem, the new floor can be laid between the existing joists. Supporting battens and a plywood sheet are fitted between the joists to support the Optional Warmup Insulation Boards, cable and leveling compound instead of it being built up from the existing floor deck between battens. The wire must be routed through notches in the battens, before being covered with a 3/8" (10mm) layer of self-leveling compound which must finish flush with the top of the battens.

This creates a level surface on which to install the wood flooring. Check the heater is working before laying the latex compound. Lay the wood floor on the self-leveled surface and nail or staple into the battens below, keeping the boards perpendicular to the battens. An optional thin wood floor underlay, suitable for electric underfloor heating, can be laid over the slabed surface. Allow for an expansion gap around the edge of the floor. This is typically between 3/8" to 1-3/16" (10 - 30mm); ask your flooring supplier for more details particular to your floor.

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FLOOR CONSTRUCTION

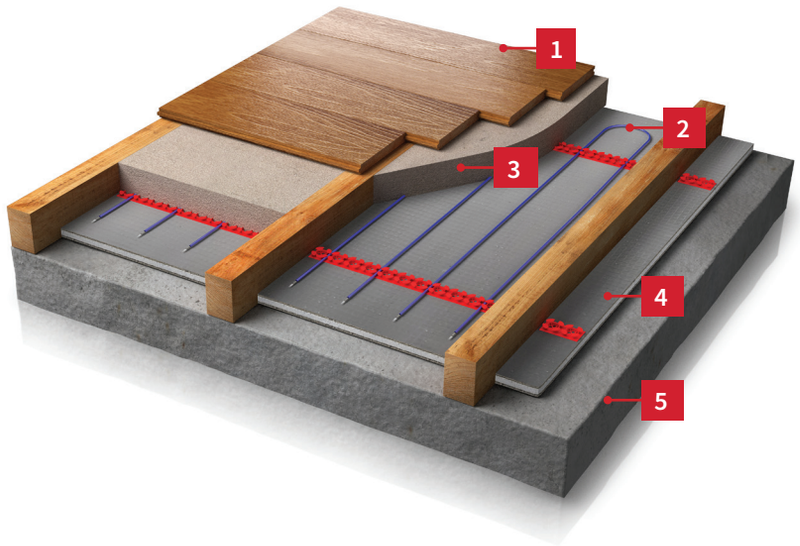
1 Wood Flooring

2 Loose Wire

3 Thinset or Drypack

4 Optional insulation

5 Floor Deck



Fixing Method: Glued Floors

Warmup Loose Wire, Mat or StickyMat System

Secure existing floorboards. If laying onto joists, install an 3/4" (18mm) plywood subfloor. Fix Warmup Insulation Board to the floorboards or plywood using a flexible adhesive and secure with 5 screws and washers per board.

Lay the Loose Wire, Mat or StickyMat heater onto the insulation board. Check the heater is working and then encase in 5/16" -3/8" (8-10mm) thick self-leveling latex.

The wood floor can now be glued directly to the latex surface. Allow an expansion gap around the edge of the floor. This is typically between 3/8" to 1-3/16" (10 - 30mm); ask your flooring supplier for more details particular to your floor.

It is important to check the condition of the subfloor to ensure it is stable prior to gluing.

Some wood floor manufacturers recommend gluing a thin plywood substrate to the latex floor first and then gluing the wood floor to the substrate. This helps prevent rotational movement and facilitates replacing a board if damage occurs later on. Check with the flooring supplier.

Glued floors are preferred by some solid wood floor manufacturers and most manufacturers recommend a polymer modified adhesive.

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FLOOR CONSTRUCTION

1 Wood Flooring

2 Wood Floor Adhesive

3 Self-leveling Compound

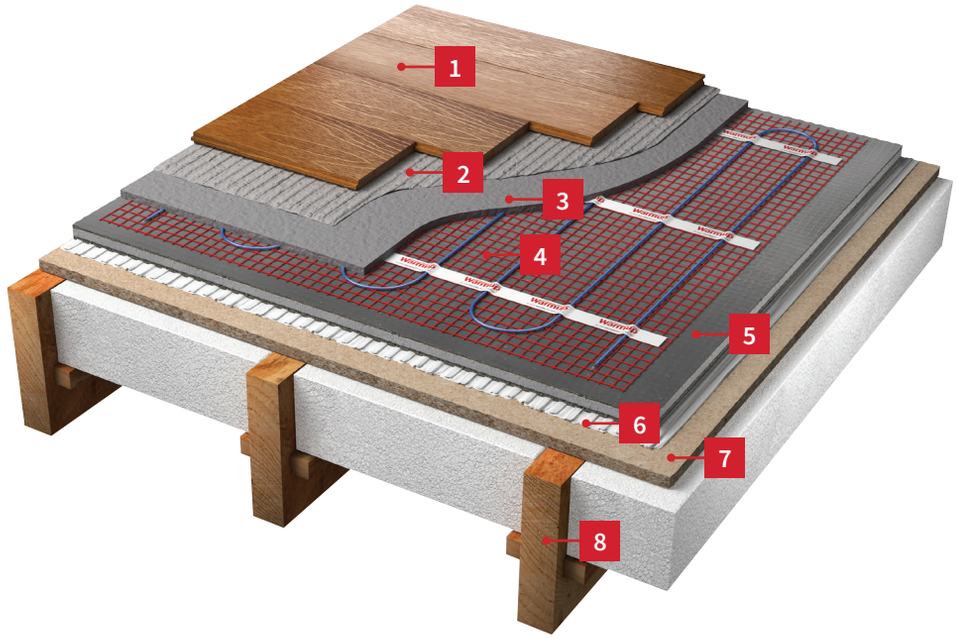
4 Warmup StickyMat

5 Optional Insulation Boards

6 Warmup Flexible Adhesive

7 Plywood subfloor

8 Joisted Floor



Fixing Method: Floating Floors

Warmup Loose Wire, Mat or StickyMat System

Ensure existing floorboards are secured. If laying directly onto joists, install an 3/4" (18mm) plywood substrate. Lay a suitable vapour barrier. Install Warmup Insulation Board over the existing floor/plywood and secure with flexible adhesive and 5 screws / washers per board. Warmup Loose Wire, Mat or StickyMat heaters can now be laid on the insulation board and covered with an 5/16"-3/8" (8-10mm) self-leveling latex compound. Check the heater before laying the latex.

Lay an optional thin wood floor underlay, suitable for use with electric underfloor heating, over the latex and then install the floating wood floor. Allow for an expansion gap around the edge of the floor. This is typically between 3/8" to 1-3/16" (10 - 30mm); ask your flooring supplier for more details particular to your floor.

These heaters are suitable under all floating wood floors.

A floating floor can be held together either using boards which have a dry fix click system or by gluing the tongues and grooves. Some manufacturers prefer to glue solid wood floors to a thin plywood substrate and then lay as a floating floor. Check with your flooring supplier.

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FLOOR CONSTRUCTION

1 Wood Flooring

2 UFH Compatible Underlay

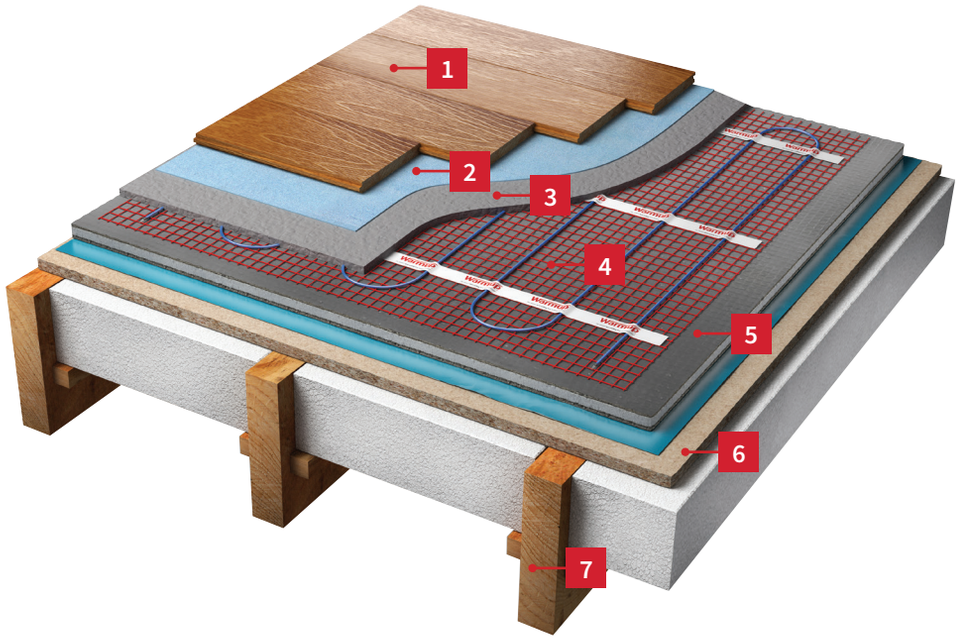
3 Leveling Compound

4 Warmup StickyMat

5 Optional Insulation Boards

6 Chipboard Deck

7 Joisted Floor



Fixing Method: Floating Floors

Warmup Foil System

Ensure existing floorboards are secured. Lay Warmup Insulated Underlay foil side down onto the subfloor. Ensure the self adhesive overlap flaps are stuck down to create a moisture barrier. Roll out the Foil Heater over the Insulated Underlay to cover the heated area and then check the heater is working.

The floating wood flooring can now be laid directly over the foil heater. Allow for an expansion gap around the edge of the floor. This is typically between 3/8” to 1-3/16” (10 - 30mm); but ask your flooring supplier for more details particular to your floor.

A floating floor can be held together either using boards which have a dry fix click system or by gluing the tongues and grooves. Some manufacturers prefer to glue solid wood floors to a plywood substrate and then lay as a floating floor. Check with your flooring supplier.

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FLOOR CONSTRUCTION

1 Wood Flooring

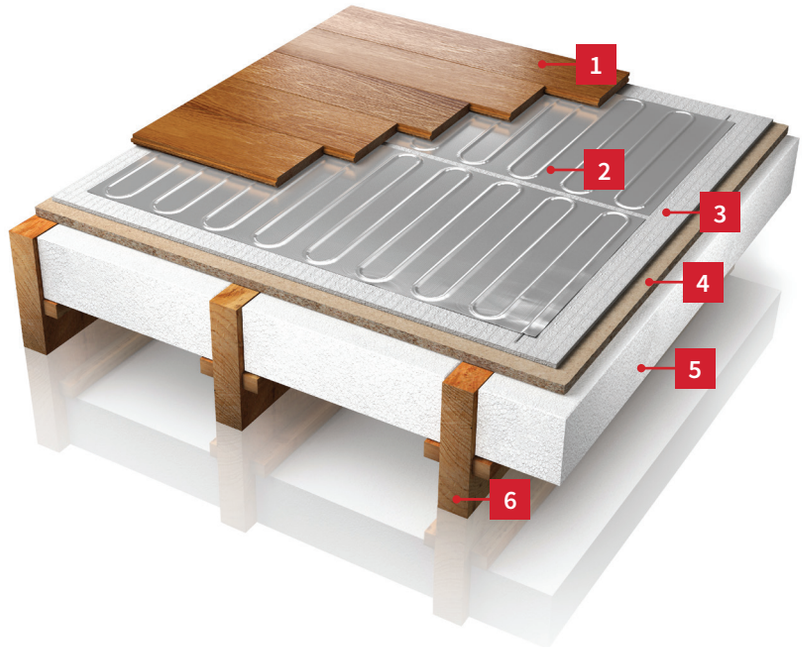
2 Warmup FOIL

3 Warmup Soft-WIB insulation

4 Floor Deck

5 Insulation

6 Joists



Controls

Warmup offers a wide range of thermostats developed in our research facilities, which have unparalleled accuracy. This is critical in ensuring wood flooring is not only warm but does not overheat, keeping it looking great for many years.

The pre-programmed Wood Settings ensure your floor never exceeds 81°F. Your system will never overheat, ensuring a long life to your wood floors

4iE®SMART WiFi THERMOSTAT

For floor heating, baseboards, wall heaters

and fan forced air

The 4iE® is designed to look great in contemporary and traditionally styled homes.

Connected to the internet by WiFi, it can be controlled from a smartphone, tablet or computer as well as its own touchscreen interface.

It learns how homeowners use their heating and the unique way each zone reacts. It uses this knowledge to suggest ways to save energy, such as what temperature should be set when the area is not in use, and when the heating can be turned off earlier with no noticeable impact on comfort levels.

The 4iE offers many features and benefits that make it stand out from other smart thermostats, offering important advantages to the homeowner and trade professional.

Onyx Black

Bright Porcelain

Technical Data	
Mounting	4”x4”x2-3/4” box (deep double gang). Compatible with 3iE® mounting.
Supply voltage	110V - 240V
Max Load	15A
GFCI	Class A (5 mA trip level)
Floor Probe	Length 10ft (3m)
Sensor	Type Floor/ Air/ External
Battery	Back-up 60min
Dimensions (H/W/D)	90 x 120 x 21.7 mm
Screen Dimensions	70 x 53 mm
IP rating	IP30
Approvals	UL approved

By working with families across Europe and our research facilities in Germany and the UK during the last 20 years, we have found the most efficient ways to control heating in real homes.

Always at the right temperature, home or away

The 4iE does not require programming, it works with your smartphone to ensure your home is always at the temperature you want, just as you arrive and using more efficient temperatures when you're away.

If you want to use a conventional program or just want to make a quick change, the **MyHeating app** is simple and easy to use.

The most efficient settings for your home

The 4iE learns how you use your heating and the unique way your home responds to changes in temperature to calculate more efficient settings.

You will get tips with advice on comfortable temperatures that use less energy and the optimal times to turn the heating off early and still stay warm, saving up to 25% on your heating use.

3iE® Energy-Monitoring Thermostat exclusively from Warmup

It is Warmup's view that well insulated houses are ill-served by powerful, expensive or slow acting heating systems that are not precise. This is why we believe our heating systems used in conjunction with our thermostats are the best solution on the market today.

The 3iE in each zone provides the following:

- Precise heat control by having the most sensitive adaptive software to ensure that energy is used only when required
- An easy-to-program wood setting, specifically designed for wood flooring, so that the floor surface never exceeds 81ºF (27ºC) and you never have to worry about overheating
- Local heat-up and cool-down completely separate from other zones
- Ten different set periods per day to get accurate control for all rooms
- Both floor temperature and air temperature control
- Self-learning capability so that the thermostat knows when to turn the power on to achieve the desired temperature at the chosen time depending on prior experience
- Energy-monitor enables rapid understanding of what energy provides each level of comfort and how to adapt to suit your requirements
- Suitable with all Warmup electric and hydronic underfloor heating systems

Following installation and/or occupation of the dwelling or building, it will ensure that the heating systems are adequately controlled and managed by allowing end users to act positively in managing their energy usage and costs.

The 3iE® is:

- Innovative - First thermostat with a 2.4" full color screen and integrated touch technology - patents pending
- Interactive - Clear graphical display makes any adjustment quick and easy
- Intelligent - Proportional Adaptive Function ensures the room does not over-heat, reducing wasted energy whilst also protecting the components inside. The Early Start algorithm learns how long it takes to warm the room and activates the heating so it's up to temperature at the right time.
- Energy-efficient - Unrivalled accurate floor temperature control means no wasted energy - reducing costs associated with over-heating
- First thermostat to come with Active Energy Management™ (AEM™) - saving up to 10% on energy bills

Technical Data	
Supply voltage	120V and 240V, 60Hz
Max Load	15A
GFCI	Class A (5 mA trip level)
Floor Probe Lenght	10ft (3m)
Sensor Type	Floor/ Air/ External
Battery back-up	60min
Dimensions (H/W/D)	3.5 x 4.3 x 1.2" (90 x 110 x 30 mm)
Screen Dimensions	1.4 x 2"
IP rating	IP20/IP32* (*with optional gasket)
Approvals	UL approved

The pre-programmed Wood Settings ensure your floor never exceeds 81°F. Your system will never overheat, ensuring a long life to your wood floors.

3 Simple Hassle-Free Ways to Shop, Receive Advice or a Quotation

We hope you'll never need them, but if you ever have a problem with your system, such as someone drilling through a wire, our team of service engineers can come to the rescue. For more information, please contact us on:

T: 888-927-6333 (US) or 905-990-2075 (CAN)

E: us@warmup.com or ca@warmup.com

Visit: warmup.com or warmup.ca

In-store

Pop into one of our specialist resellers, where you will see the full Warmup product range, receive personal service and expert technical advice.

To find your nearest reseller, please visit our website and click on "Store Locator". Enter your postal code. The system will indicate you the 3 closest resellers in your area.

Online

Warmup also offers a quotation service, which means if you visit our website you have the option to obtain a quotation for your project.

Our website offers full technical and video back-up support, including 'live' online chat to discuss your project and help you choose the best system to meet your exact needs.

Visit: **www.warmup.com or www.warmup.ca**

By Phone

For expert one-to-one advice and personal service, Warmup offers a 24 hour technical helpline.

T: 888-927-6333 or 905-990-2075

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warmup.be

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warmupbrasil.com.br

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warmup.ca

Chile
warmup.cl

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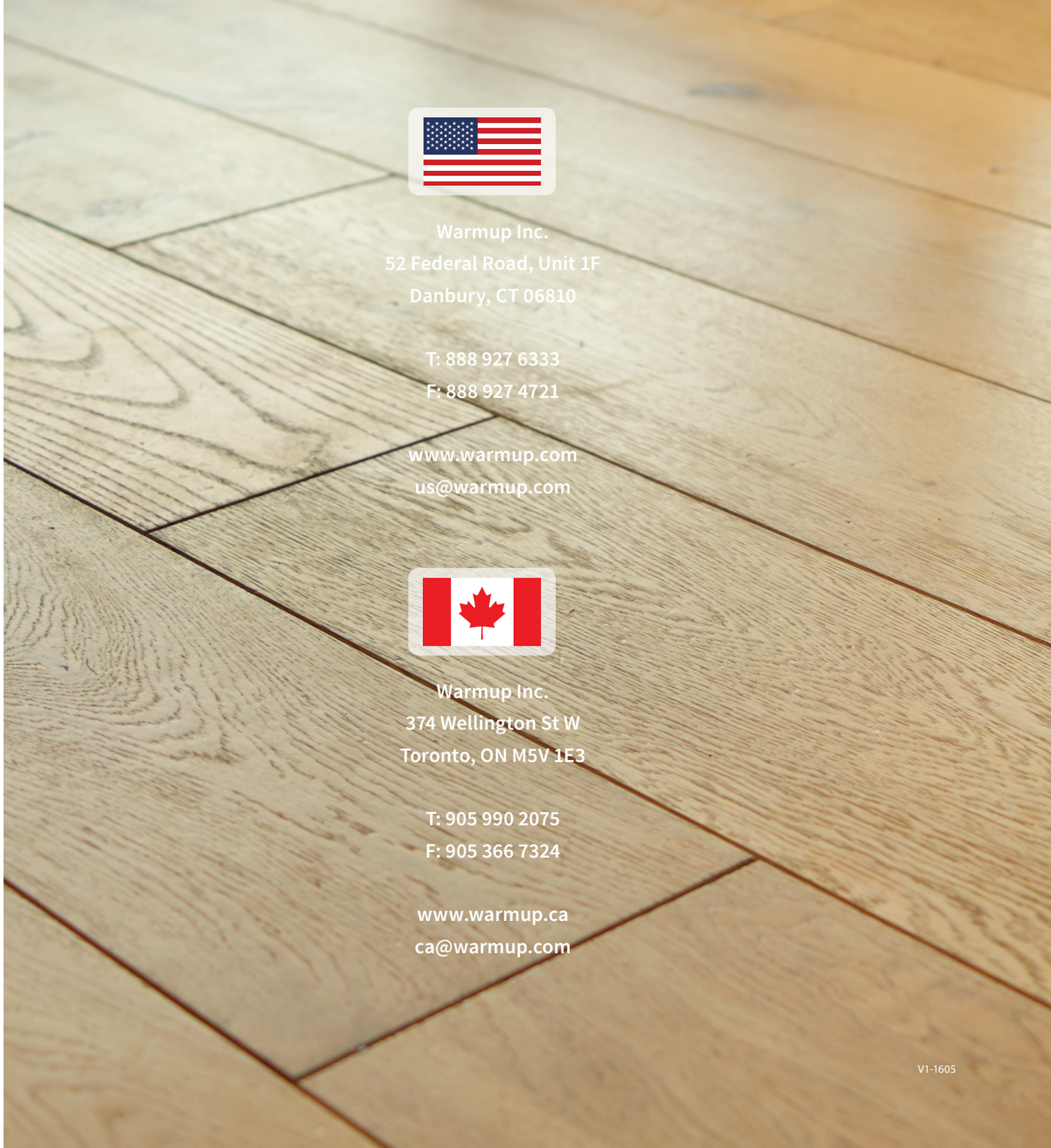

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