



By



INSTALLATION QUICK START GUIDE

ELECTRIC FLOOR HEATING MATS



This document provides basic guidelines for installing

Electric Floor Heating Mats

Any questions? Please contact

ProLux Materials LLC

Email: support@proluxmaterials.com

www.proluxmaterials.com



TEST LOG – VERY IMPORTANT!

Important: First test is required prior to installation - Refer to Page 9 for complete Test guide.

Homeowner Name and email											
Installation address											
Installer Name and email											
Electrician Name and email											
Date of Installation											
Factory Value		Before Installation		After Cable Installation		After Tile Installation		Before Thermostat hookup			
Conductor Resistance Test:											
See label attached to heater											
Continuity Test											
Conductor and Ground Screen:											
Infinity (I) or Overload (OL)											
Insulation resistance:											
2 Mega Ohms or more at 1,000V											
Floor sensor resistance Test:											
<i>Temperature</i>		<i>Resistance</i>		Temp		k-Ohms		Temp		k-Ohms	
<i>degC</i>	<i>degF</i>	<i>k- Ohms</i>									
10	50	18.1									
15	59	14.8									
20	68	12.1									
25	77	10.0									
30	86	8.3									
Tested by: Name											
Signature											
Date											

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1. SYSTEM DESCRIPTION

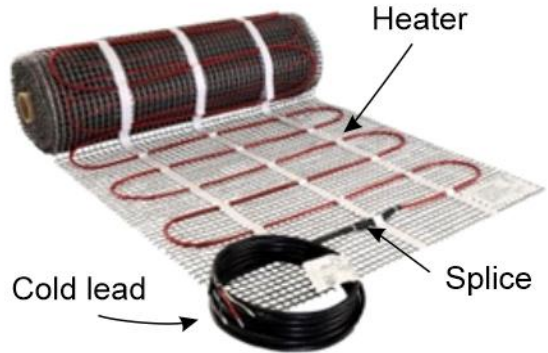
Floor heating mats are used to warm interior floors.

They are NOT to be used for exterior applications such as snow melting or roof and gutter applications.

Floor heating mats must NOT be fitted in walls or ceilings.

1.1. Heating mat:

- *Cold lead* – the wire that runs through the wall from the thermostat to the heated section.
- *Cold lead splice* – the joint between the cold lead and the heated section.
- *Heater wire* – the wire that runs in the floor and generates heat when the system is energized.
- *End splice* – a joint at the end of the heating section. (not shown)



1.2. Thermostats

- A thermostat with dual sensors (air and floor) and a built-in GFCI is recommended. Installation of a secondary, backup floor sensor is advisable.
- Various models are available; from WiFi-enabled intuitive programmable units with color touchscreen interfaces to basic, simple control.



Programmable, Touchscreen



Programmable, Non-touch



Non-programmable

1.4. Floor sensor

- A floor sensor is supplied with the thermostat.
- Installation of a secondary (backup) floor sensor is advisable. Additional sensors are available separately.



Floor sensor

1.5. Installation monitor

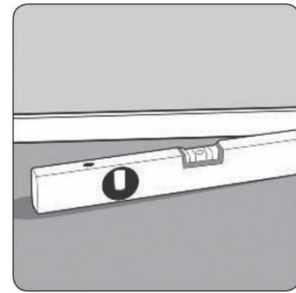
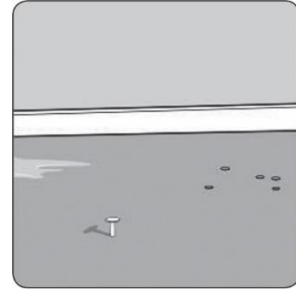
- Continuously monitors the heating mat and sounds an alarm if any damage occurs during tiling.



Installation monitor

2. CHECK AND PREPARE THE SUB-FLOOR

- Floor heating mats may be installed over any sub-floor that is approved for tile, stone, and laminate applications.
- Where floors have previously been covered with vinyl, stick down carpeting, or parquet wood blocks, all traces of these coverings need to be removed as well as all traces of adhesive or bitumen.
- Carefully inspect the sub-floor and make sure it is clean, free of sharp edges, nails, and any other materials that may damage the heating mat.
- The sub-floor must also be dry, level, smooth, and structurally sound.
- Concrete or insulated concrete floors must be completely dry, level, and smooth. (Concrete can take up to 6 weeks to cure).
- Any leveling of the floor must be completed prior to the installation of the heating mat.
- If self-leveling underlayment is to be used to cover the heating mat (see section 8 of this Guide) then any cracks or holes in the sub-floor must be filled and sealed before installation of the heating system.



2.1. For Timber Sub-floors

When installing heating mats on a timber sub-floor it is essential that standard precautions to stabilize the sub-floor are taken to prevent sub-floor movement (for example, overboard with a suitable surface for tiling, e.g. with 3/4" plywood (R-value 0.93) or 1/4" cement backer board (R-value 0.13)).

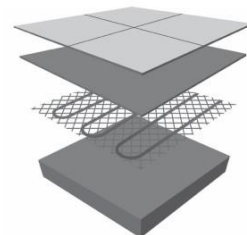
2.2. For Concrete Subfloors

For optimum performance, it is recommended that concrete sub-floors be covered by an insulating underlayment (available separately). Please contact us for information and pricing.

This will minimize heat loss and ensure quicker heat up time. The heating mat can be laid directly onto an uninsulated concrete floor if it is insulated from below. If not insulated from below, the heat loss and operating costs will increase.

2.3. Typical Floor Section

- a) Floor finish (tile or stone)
- b) Thinset or self-leveling underlayment
- c) Heating system
- d) Sub-floor



3. PLAN THE LAYOUT OF THE SYSTEM

Heating Mats are made to operate at 12 watts per square foot.

Review the area where the tile heating mat is to be installed and plan the layout.

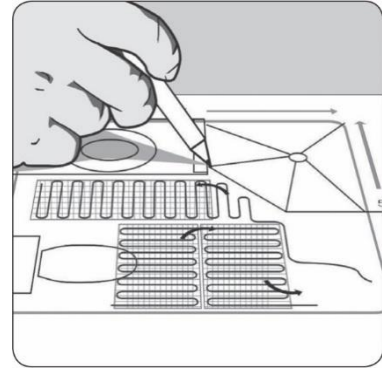
We recommend that you **draw a plan of the area to scale**, indicating the obstacles and the power point.

In bathrooms, remember to include the **area under the basin and around the toilet**.

Remember to keep a **spacing of 4"** from **the edge** of heating area.

During your installation it may be necessary to remove some of the cable from the mesh and **free form** jig it around small areas not accessible using the mat. Ensure to maintain the wire spacing of 2-1/2" to 4" to maintain the correct power density.

Note: Do not install one heating mat across a number of rooms.



4. TEST THE SYSTEM PRIOR TO INSTALLATION

IMPORTANT: Do NOT test system by connecting to power. Heating Mats MUST be embedded in thinset or self-leveling underlayment when energized.

- Check that the rated voltage of the heating mat is the same as the supply voltage for the installation (120V or 240V).
- Measure the total available heated area on the floor and check that the coverage of the heating mat (per the table supplied) is the same or slightly *less* than the area you intend to heat (see table on page 7 of this Guide).
- This is critical as the heating mat CANNOT be CUT or SHORTENED.

4.5. Tests to be conducted on the heating mat:

These tests MUST be performed at each of these stages:

- a. Before the heater is installed,
- b. After the heater has been installed, BEFORE tiling,
- c. After the Tiles (or other floor covering) has been installed, and
- d. Before the Thermostat is hooked up.

Record all results on the Test Log at the front of this guide and retain, together with proof of purchase, as these documents will be required in the event of a claim.

a. Conductor Resistance Test:

(This test is to check the integrity of the heating element itself.)

- Set your multimeter to resistance (Ohms) measurement and take an Ohms reading between the two power leads (L and N). If the reading is not within +/- 10% of the value on the label attached to the heater then check that the multimeter is set correctly or test with another multimeter. If the readings are consistently outside the +/- 10% range then the heater has been damaged and must NOT be installed.



b. Conductor and Ground Screen Continuity Test:

(This test checks whether there is continuity between heating conductors and the ground screen.)

- The heating wire is protected by a ground screen, and the insulation of the heating wires prevents any contact between the heating conductors and the ground screen. To check the integrity of the insulation, test for continuity between the ground screen and the power leads. Any continuity means a FAILURE of the insulation.
- Set your multimeter to 'continuity' and test between the ground screen and one of the two power leads (L or N).
- If there is NO continuity the test is *successful*, and the multimeter will show 'OL' (overload) or '1' (infinity) depending on the instrument used. Otherwise, if the test fails, neither 'OL' nor '1' will be displayed and the buzzer warning tone will sound.



c. Insulation resistance:

(This test is to detect any small breaks in the insulation of the heating wires, which may have gone undetected by the Conductor and Ground Screen Continuity Test.)

- A megohmmeter (sometimes referred to as a 'megger tester') is used for this test – a regular multimeter used for the other tests is not usually capable of performing the Insulation Resistance Test.
- We recommend you buy or rent a megohmmeter tester or hire a qualified electrician to conduct these tests for you.
- Set the megger tester to 1,000 Volts and test between the ground screen and one of the power leads. The resistance measurement must be 2 MegaOhms (i.e. 2,000,000 Ohms) or greater. Then test between the ground screen and the other power lead – the resistance must also be 2 MegaOhms or greater. To avoid an electric shock from the megger tester do NOT touch the test probes when conducting the test or for 5 minutes afterward.



d. Floor Sensor Resistance Test:

(This test is to verify the accuracy of the floor sensor/s.)

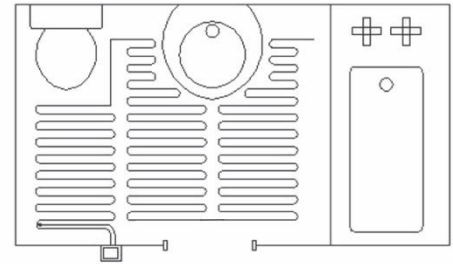
- The resistance of the floor sensor(s) changes with a change in temperature, which enables the thermostat to 'read' the temperature of the floor.
- Set the multimeter to measure resistance and test between the two leads of the floor sensor wire. Compare values with the table of expected values based on the temperature of the sensor at the time the test is conducted. (see the Test Log in this guide)



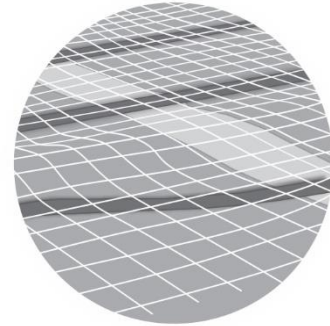
If any tests FAIL or you are not sure of the results please DO NOT continue with the installation but contact your supplier for instructions before proceeding.

5. INSTALL THE TILE HEATING MAT

It is good practice to plan the installation using a sketch, marking your layout pattern, as well as your planned cuts and turns. It is also recommended to plan according to the position of your connection box.



Note: The heating mat should be placed with the heating cable down on the subfloor and the mesh on top.



Start by rolling out the mat a minimum of 2" from the wall. When you reach the end of a run, stop a minimum of 2" from the opposite wall. Simply cut the backing (not the heating cable) and turn 180 degrees or refer to examples on page XX. Keep a minimum spacing of 3" between the loops. When satisfied with the layout, apply pressure to the adhesive mesh and where the mat has been flipped, remove double-sided tape and apply pressure.

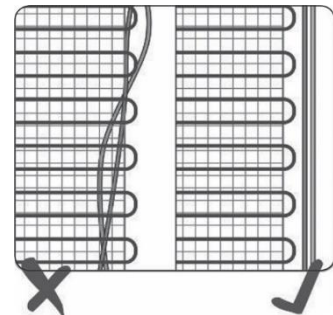
Position it in such a way that the **power cord** will be able to **reach the thermostat to which it will be connected.**



Ensure the power leads do not cross over or under the heating mat or themselves

If you are installing multiple mats in a single room you will want to position each so that the heating cables or power leads do not cross over one another

You can shorten the power lead if necessary, but never shorten the heating wire



6. CUT & TURN EXAMPLES

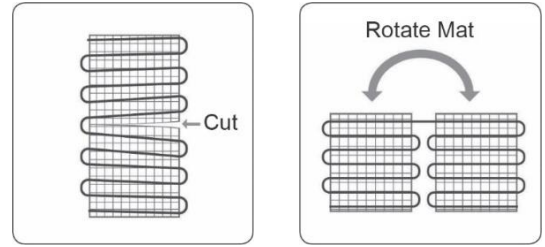
To assist you in your planning, the following are **suggested turns** that can be used for the installation of heating mats.

U Turn:

Cut the backing mesh all the way across without cutting the heating wire.

Rotate the mat 180 and continue row.

The mesh must lie side by side so as to prevent cold spots.
Maintain a distance of 3" between the ends of the heating wires to prevent overheating.



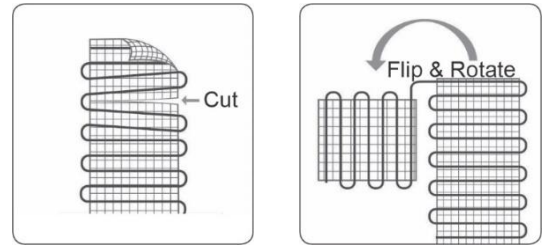
Full Corner:

This is used to make sharp turns.

Cut the mesh all the way across without cutting the heating wire

Rotate the mat 90 degrees

Maintain a distance of 3" between the ends of the heating wires to prevent overheating



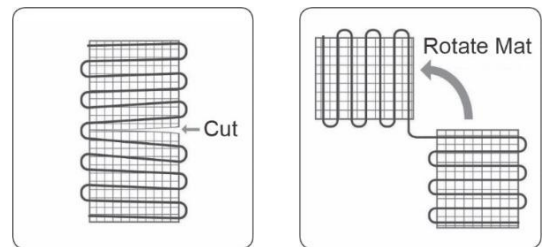
Open Corner:

This is used to make sharp turns.

Cut the backing mesh all the way across without cutting the heating wire.

Rotate the mat 90 degrees.

Maintain a distance of 3" between the ends of the heating wires to prevent overheating.



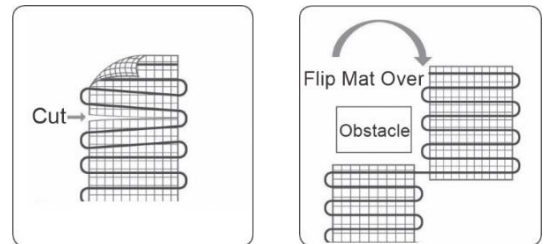
Obstacle Cut #1:

This is used to make a turn where heating in a corner is unnecessary.

Cut the backing mesh all the way across without cutting the heating wire.

Rotate the mat 90 degrees.

Flip rotated part of mat over.



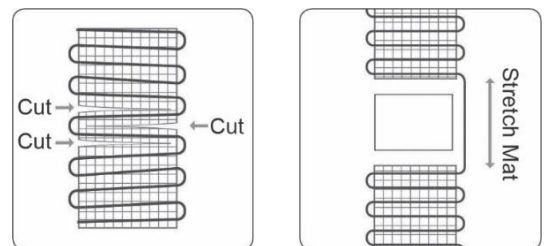
Obstacle Cut #2:

This is used to manoeuvre mat around obstacles.

Cut the mesh three times or more on alternating sides

Gently stretch the mat (not the wire) so the heating wire runs alongside the obstacle

Continue the row



Note: Heating mats must never overlap, as this will cause overheating and the cable will burn out.

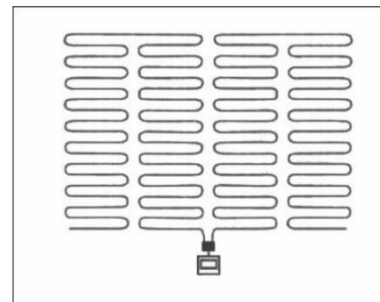
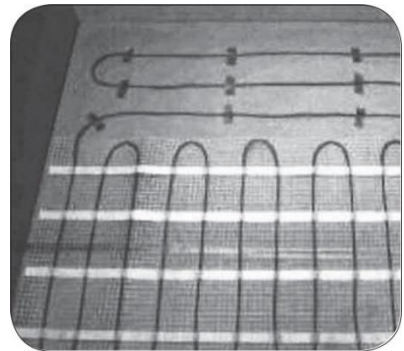
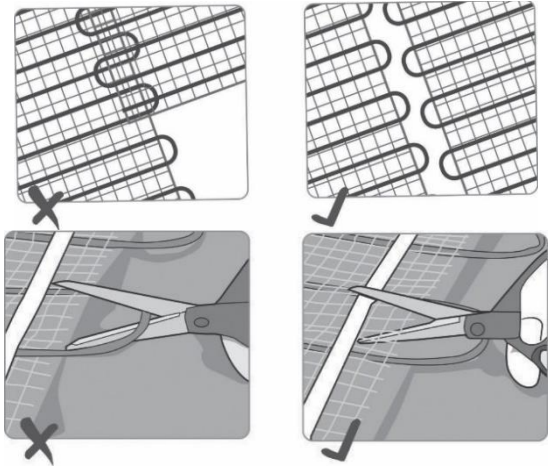
Note: When cutting the heating mats, only cut the backing mesh, not the heating wire.

If the Wire is cut DO NOT install the heating Mat.

For areas that will not accommodate the full mat width of 1.64 ft the cable can be removed from the matting and attached to the floor uniformly with duct tape. The matting can be further secured to the floor by hot glue gun or duct tape. This is recommended on the outer edges of the matting when using self-leveling compound to prevent the mat lifting. These additional fixing methods should only be used on the matting and **NOT** on the cable.

The looped cables must be spaced about 3" from each other (Minimum 2.6") using 1" Duct tape.

Connections of multiple mats must be done in **PARALLEL** at the power source / thermostat. **NEVER** cut off the end of the heating cable to connect another one in series.

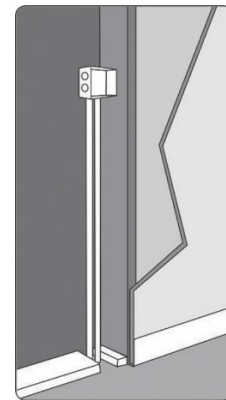
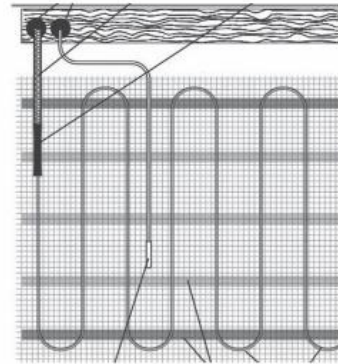


MAT 1

MAT 2

7. INSTALL THE FLOOR SENSOR(S)

- The floor sensor must be positioned halfway between two heating wires to accurately read the floor temperature.
- Place the end of the sensor at least 12", but preferably 24" or more, into the heated area.
- Cut or chisel a small channel into the floor to recess the tip of the sensor.
- Secure the tip in position with glue or duct tape.
- Installation of a second, backup sensor is recommended. The second sensor should be placed so that the tip of the sensor is at least 12" away from the tip of the primary sensor, and keep the sensor wires at least 6" apart wherever possible on the floor.
- If local codes require conduits to be used in the wall between the floor and the thermostat wall box, then the floor sensor wires must be in a separate conduit to the cold lead(s).
- Use a fish tape or lead wire to pull the sensor wires and the cold leads from the heating cable into the wall box where the thermostat will be situated.
- The floor sensor cable must not touch or cross the heating mats.



8. ATTACH AN INSTALLATION ALARM

- Attach an Installation Alarm to alert the installer in case of damage to the heating wire. Contact the supplier immediately if you suspect that damage has occurred. DO NOT proceed with the installation.
- Installation alarms may be purchased separately if required.
- To connect the Installation Alarm, connect the yellow or red wire from the heater to L1, and connect the black wire from the heater to L2. Connect the bare (ground/earth) wire to E. Switch on the Installation Alarm. The alarm will sound and the red light will illuminate if a problem is detected.
- The installation alarm is not a fixture but is removed when the thermostat is hooked up.



9. COVER THE HEATING SYSTEM WITH THINSET OR SELF-LEVELING UNDERLAYMENT

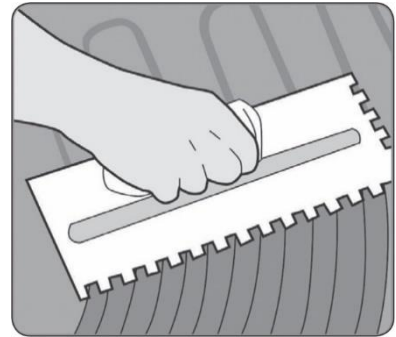
Before applying thinset or self-leveling underlayment over the heating system perform the tests referred to in Section 4 on page 9 of this Guide.

If any tests FAIL or you are not sure of the results please DO NOT continue with the installation but contact your supplier for further instructions.

There are two recommended methods of covering the heating mat, described below:

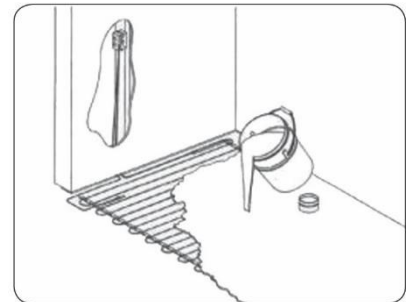
8.1 Using Thinset

- Working with a width of approx. 12 to 18” at a time, apply polymer-modified thinset on top of the heating system so that the heating wire and strapping are both completely covered.
- Spread well and evenly to ensure that there are no air pockets. Use a plastic notched trowel or similar.
- Take care not to damage the heating mat.
- Once the covering layer of thinset has cured, use a notched trowel to comb a second layer of thinset to set the tiles.



8.2. Using Self-leveling Underlayment

- Cover the entire heating system with suitable self-leveling underlayment. This underlayment will find its own level, and once cured will provide a suitable flat surface, which is ready to receive a layer of thinset mortar before laying the tiles.
- This method is recommended when installing laminate and vinyl flooring.



Take Care When Tiling!

- Do not dislodge or damage the heating element while laying the tiles.
- Do not cut tiles on top of the heater.
- Ensure that each tile is solidly embedded in the thinset, avoiding air gaps and voids.
- The heating system should not be used to aid in the curing of the thinset.



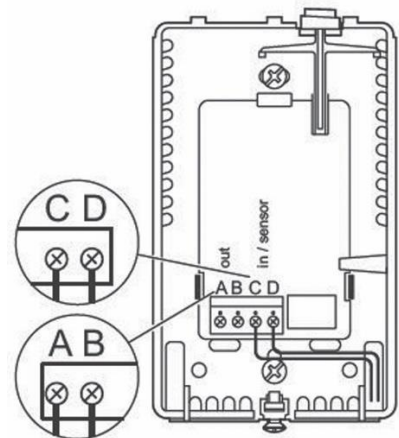
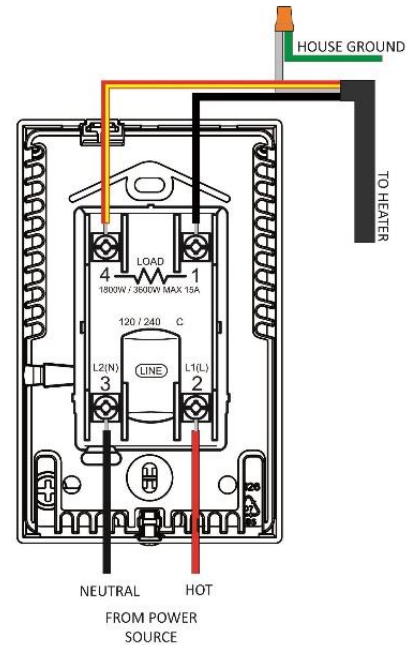
Do NOT switch on the heating system until the Thinset or Self-leveling underlayment has cured. Check the manufacturer’s specifications for time required.

10. INSTALL THE THERMOSTAT

- Perform the tests referred to in Section 4 on page 9 of this Guide and note the results on the Test Log as previously.
- Verify that the power supply is turned **OFF**.

All electrical connections must be made by a qualified electrician, according to the electrical and building codes applicable where the heater is installed.

- Check that the total load (amps) of the heating system does not exceed the rated load of the thermostat.
- Follow the thermostat manufacturer's instructions.
- Connect the power supply wires to the LINE terminals on the thermostat.
- Connect the heater load wires (yellow and black for 120V heaters, red and black for 240V heaters) to the LOAD side of the thermostat.
- Connect the ground (or earth)(bare) wire from the heater to ground on the supply side.
- Connect the floor sensor wires to the terminals on the thermostat marked C and D. (Terminals A and B are only used when a separate Power Module is fitted in the system.)
- If a secondary (backup) floor sensor has been installed in the floor DO NOT connect it to the thermostat, but tape the ends of the wires together and secure the wire in the wall box so they can be connected to the thermostat if ever required.



TROUBLESHOOTING GUIDE

Should you experience any problems with your installation not warming your floor surface, please carry out the following tests before contacting our technical support team.

MY FLOOR DOES NOT HEAT UP

1. Basic Checks

1.1 Ensure the thermostat connections are correct and the circuit breaker is in the “ON” position.

1.2 Check the thermostat settings and ensure that the sensor application is set correctly.

Note: Thermostats often have their sensor application set to 'Dual' as a default, meaning it will try to measure the air and floor temperature. If this is the case, an external floor sensor must be connected, or the default setting changed to read the air temperature only.

1.3 Heaters are rated at either 120V or 240V. Ensure that your heater rating matches that of the supply circuit.

Note: A heater rated for 240V will not work effectively on a 120V supply circuit.

2. Testing the system

Using a multi-meter, carry out the following tests. This is best done by a professional.

2.1 Test the house supply circuit – Set the multi-meter to voltage AC and test for voltage. The supply should be 120V or 240V, depending on the circuit. Again ensure that the heater rating matches the supply.

2.2 Test the heater mat – Set the multimeter to Ohms. We suggest using the 200 Ohm setting. When testing between live and neutral, the mat should measure within +5 /-10% of the resistance noted on the mat rating plate. If the mat measures 'open circuit', or the Ohm reading continues to run, it is most likely a damaged mat and will require a professional to locate and repair the damage.

2.3 Test external floor sensor – Set the multimeter to Ohms. We suggest using the 200 kOhm setting.

Test the resistance across the sensor wires, and compare to the manufacturer’s sensor ratings.

Note: 10 kOhm sensors measure between 8-12 kOhms at temperatures between 68-86 °F.

2.4 Test the thermostat – Set the multi-meter to voltage AC and measure the voltage at the thermostat points. First, check the voltage at the supply points, and secondly test the voltage at the load points.

Note: The voltage across both sets of points should measure the same, or within a few volts.

Before completing this test, make sure that the thermostat settings and sensor applications are correct, and that the thermostat is in 'Heating Mode'.

Note: Air / Floor temperatures can affect the resistance readings of the heating mat and floor sensor.

GFCI SWITCH IS TRIPPED

Reset the GFCI control on the thermostat or circuit breaker. If the GFCI continues to trip, check the circuit breaker and thermostat wiring. If the system continues to trip, it is possible that the insulation surrounding the heater wire has been damaged. Call a professional to locate and repair the damage.

Note: floor heating must be on a dedicated circuit. Verify that there is only one GFCI on the circuit.

*Note: **DO NOT** connect the heaters in series. Multiple heaters must only be connected in parallel. The combined amperage must not exceed the rating on the thermostat – refer to the thermostat for maximum amp rating.*

25 YEAR LIMITED WARRANTY

ProLux Materials LLC offers a **25-year** limited warranty on all LuxHeat floor heating cables and mats, for any fault arising from manufacturing defects only. There is no other warranty, express or implied. The warranty period starts at the date of purchase of the LuxHeat product.

The 25-year limited warranty applies to LuxHeat floor heating cables and mats only - thermostats and any other components or accessories supplied with the LuxHeat floor heating cable or mat are covered by the manufacturer's warranty of the component or accessory, not by ProLux Materials LLC.

ProLux Materials LLC will either repair or replace (at its sole discretion) a product with a factory fault free of charge. ProLux Materials LLC does not accept any liability for any other costs related to the repair or replacement of the heating cable or mat, including, but not limited to, repair or replacement of the floor covering, labor, travel, and shipping.

This warranty is further subject to the following conditions:

- Documentary proof of date of purchase is submitted with any claim;
- The heating cable or mat is installed in accordance with all guidelines and instructions as published by ProLux Materials LLC;
- The installation complies with all local and national wiring regulations and codes as well as any other applicable statutory requirements;
- The heating cable or mat is electrically grounded and protected by a Ground Fault Circuit Interrupter (GFCI);
- The heating cable or mat is connected to an electrical supply of its rated voltage only.

The warranty does NOT cover:

- Faults arising from incorrect installation;
- Faults arising from incorrect specification and/or application of the heating system.
- Faults arising from damage to the cable from outside causes, such as other suppliers, third-party contractors, including (but not limited to):
 - Cracking of floors or sub-floors through expansion and contraction or any other reason
 - Drilling or driving screws or nails and the like into the floor
 - Damage caused from accidental cutting or any other work on the premises
 - Electrical surges caused by lightning or any other cause.
 - Repair or attempted repairs or any modification to the heating cable or mat that have not been expressly authorized beforehand by ProLux Materials LLC.

Submitting a claim:

All claims must be in writing and submitted either by email to support@proluxmaterials.com or mailed to the registered business address of ProLux Materials LLC at the time of submitting the claim.

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620 Comanche Trail
Frankfort, KY 40601
United States

support@proluxmaterials.com
www.proluxmaterials.com

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