EZ-HEAT MAT
IN-FLOOR HEATING SYSTEM

ADVANCED AMORPHOUS METAL RIBBON TECHNOLOGY

C UL US LISTED

INSTALLATION MANUAL

CAUTION

THIS EQUIPMENT SHALL BE INSTALLED ONLY BY QUALIFIED PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION & OPERATION OF THE APPARATUS & THE RISKS INVOLVED.

THE INSTALLATION OF THIS HEATING PRODUCT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS & THE REGULATIONS OF THE AUTHORITY HAVING JURISDICTION

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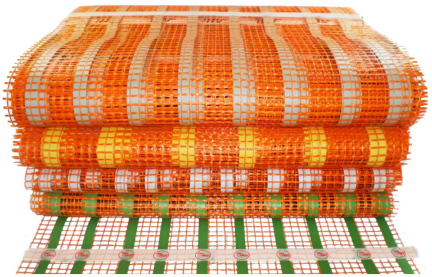


CAUTION:

Read and follow all the installation instructions in this manual before attempting to install the EZ-Heat mat system. Improper installation procedures or techniques can cause potentially unsafe conditions, including overheating and shock hazards. Failure to comply with the instructions in this manual can void the manufacturer's warranty. Electrical connections should only be made by a licensed electrician.

NOTE:

Upon receiving the TruHeat EZ-Heat mat system, it is important to check for any damage on the mat(s), grounding net(s), or the thermostat(s). If any damage is found call our customer support team at 1-833-999-HEAT (4328).

NOTE:

Upon receiving your TruHeat EZ-Heat mat(s), always verify the resistance values are in line with the resistance values listed at the end of the user manual for the heating mat sizes you have purchased.

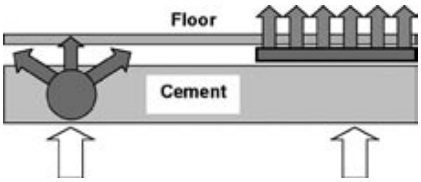
1. INTRODUCTION & PRODUCT OVERVIEW

Thank you for choosing TruHeat's EZ-Heat mat underfloor heating system. This system is designed to be simple to install and cost efficient to operate. This installation manual provides the information you need for a successful installation. Please follow all instructions carefully for the best possible installation results and for the long-term effectiveness of the product. We wish you years of safe, comfortable, cost-efficient heating!

TruHeat's EZ-Heat mats are ultra-thin heating mats constructed of flat amorphous metal ribbons (the active heating element), covered by two layers of polyethylene electric insulation. The ribbons cover approximately 30% of the area of the heating mat. This design enables the heating mat to provide a very high level of even heat at low working temperatures. Attached to the mat are two cold wire leads measuring 13 feet. Longer cold leads can be supplied upon request.

EZ-Heat mats are available in several convenient sizes. Effective room heating as a primary heat requires approximately 70%-80% of the floor area to be covered; the more coverage, the faster the ambient room temperature will rise. TruHeat offers mats in a wide variety of sizes, which enable coverage of virtually any area.

The technology is extremely efficient and poses no risk of any damage to the floor surface, unlike most other underfloor heating systems. EZ-Heat mats are the only mats that can be installed directly under any kind of floor because of the large heat transfer area and low temperature on the ribbon surface. The mats are easily installed directly under all types of floors, eliminating costly sub-floor construction. The ultra-thin construction (+25 microns) means that the mats can be placed beneath any type of floor surface with no need to raise the surface at all. By using TruHeat's EZ-Heat mats you can save up to 20-40% energy by incorporating a thermostat; and the cooling cycle is essentially longer than the heating one. For well insulated houses the heating cycle consumes only 25% of the energy in a 24-hour period.



Standard underfloor heating is achieved with a cable or pipe embedded in the concrete screed. This means that a large percentage of the heat generated is absorbed in the concrete which in turn means higher consumption to achieve the desired heat.

In addition, maintenance is extremely difficult and expensive.

TruHeat's EZ-Heat mats are laid directly under the flooring resulting in quicker and more efficient heat transfer.

2. IMPORTANT THINGS TO CONSIDER

Please read carefully before installing your EZ-Heat heating mats:

- DO NOT cut parts (Ribbon) of the EZ-Heat mats to change the mat size. Especially, DO NOT cut the width of the mats in two pieces.
- DO NOT overlap heating mats.
- DO NOT fold or wrinkle the heating mats.
- DO NOT place heavy/sharp tools (or any other potentially damaging object) on top of the heating mats.
- DO NOT walk unnecessarily on the heating mats.
- DO NOT install electrical cables or pipes under the floor together with the heating mats.
- DO NOT use cellulose insulation.
- DO NOT install mats when the room temperature is below -5ºC (23ºF).
- DO NOT install underfloor heating mats anywhere except inside buildings.
- DO NOT install mats under walls or partitions, or in areas under heavy cabinets, closets, or fixtures (toilets, sinks, tubs, etc.).
- DO NOT install mats within 3 cm (1 inch) of any heat conductive building part, such as cold-water pipes.
- DO NOT install mats within 5 cm (2 inches) of one another (ribbon to ribbon), 10 cm (4 inches) of any wall, or 15 cm (6 inches) of a fireplace or hot water pipe.
- DO NOT connect any other electrical appliance on the same electrical circuit as the heating system.
- DO NOT install heating mats under wooden floor, if the wooden floor is thicker than 18 mm (3/4 inch).
- DO NOT put acoustic material between the heating mats and the wooden floor, when installing wooden type floor, with R-value of the acoustic material greater than 0.014 m**2 C/W (0.08ft**2 h F/Btu).
- DO NOT use carpet underlay with thermal resistance greater than 0.8 Tog.
- DO NOT install under carpet with thermal resistance greater than 2.0 Tog.

ALWAYS MAKE SURE:

- Always cover mats with grounding net in wet areas. Wet areas include areas which are constantly submerged under water such as: saunas, inside the shower.
- Always ensure that the electric circuit that supplies electricity to the EZ-Heat mat system is equipped with a GFCI protection if a GFCI thermostat is not being used with the heating mats.
- Always connect all cold wire leads from the EZ-Heat mats in parallel inside an electrical junction box or boxes.
- Always ensure that the total current needed for all mats connected in parallel is not more than 80% of the listed amperage capacity of the electrical junction box and its power supply line and breaker (For advice consult your recommended installer / supplier).
- Always provide each room with an EZ-Heat mat system with its own electrical junction box and control thermostat. Each TruHeat thermostat has a maximum capacity of 15 amps. If the number of amps in the room is greater than 15 amps, divide the amperage over several thermostats, or add a power module between the mats and the thermostats.
- Always use insulation under the mats to reduce running costs and warm-up time. Check with your installer to determine the R value of the subfloor insulation layer.
- Always wait for thinset/grout to dry properly before operating the system. The drying period is generally 2-14 days depending on manufacturer's instructions.

3. HEATED FLOORS - BEST PRACTICES

When it comes to installing and using heated floors, there are several important considerations and potential pitfalls to avoid. Here are some key “don’ts” for heated floors:

INSTALLATION PHASE

1. **Don’t Skimp on Insulation:**
   Inadequate insulation beneath the heating elements can lead to significant heat loss, reducing the efficiency and effectiveness of the system. Always ensure proper insulation is installed.

2. **Don’t Forget to Check Electrical Load:**
   Heated floors can draw a significant amount of power. Ensure your electrical system can handle the additional load. It’s often advisable to consult an electrician before installation.

3. **Don’t Ignore Manufacturer Instructions:**
   Follow the manufacturer’s guidelines meticulously for installation and operation. Incorrect installation can void warranties and cause safety issues.

4. **Don’t Install Under Fixed Fixtures:**
   Avoid installing heating elements under permanent fixtures like cabinets or appliances. This can lead to uneven heating and potential overheating of the flooring materials.

5. **Don’t Rush the Installation:**
   Allow adequate time for the materials to acclimate to the room temperature and for the adhesive to cure properly. Rushing the process can lead to installation issues and system failures.

USAGE PHASE

1. **Don’t Use Incompatible Flooring Materials:**
   Not all flooring materials are suitable for use with heated floors. Ensure the flooring type (e.g., wood, tile, vinyl plank) is compatible with the heating system you’ve chosen.

   TIP: Always check with the flooring manufacturer to see what the heat threshold for a particular type of floor is. This will ensure the flooring does not get damaged due to the heating system.

2. **Don’t Overload the Circuit:**
   Ensure the heating system is on a dedicated circuit or one that can handle the additional load. Overloading a circuit can be dangerous and lead to electrical issues.

3. **Don’t Ignore Maintenance:**
   While heated floors are generally low maintenance, it’s important to monitor the system for any signs of damage or malfunction and address issues promptly. This includes not leaving the system on while being away from the heated floor premise.

4. **Don’t Set the Temperature Too High:**
   Excessive temperatures can damage the flooring material and cause discomfort. Stick to the recommended temperature settings.

5. **Don't Place Thick Rugs or Mats Over Heated Areas:**
   Thick rugs or mats can trap heat, causing the system to overheat and potentially damage the flooring or the heating elements.

6. **Don't Overlook Professional Help:**
   If you experience issues or need repairs, don't hesitate to call in a professional. Attempting DIY fixes on an electrical system can be hazardous.

SAFETY CONSIDERATIONS

1. **Don't Ignore Safety Codes:**
   Ensure the installation complies with local building and electrical codes to prevent safety hazards and ensure insurance coverage.

2. **Don't Leave the System On Unnecessarily:**
   Turn off the system when it's not needed to save energy and reduce wear and tear on the heating elements.

3. **Don't Use Damaged Heating Mats:**
   Inspect the heating elements before installation. Using damaged products can lead to electrical faults and safety hazards.

4. GETTING STARTED

Before installing your new EZ-Heat underfloor heating mats, be sure you have the following additional parts:

- **Electrical Junction Box:** Used as the connecting junction for the cold leads of the heating mats to the thermostat. We recommend using a plastic junction box to avoid any moisture related issues in the future.
- **Grounding Net:** This is an additional protection item needed only when installing heating mats in wet areas which are constantly submerged under water such as saunas, inside showers, etc.
- **Control Thermostat:** Allows you to control the temperature of the room. The control thermostat must also have a two-terminal manual on/off switch. Control thermostats have one or two of the following sensors:
  - o Ambient air temperature safety sensor
  - o Floor temperature safety sensor

NOTE:
In areas where the system is not being used as a primary heat source, use the thermostat on the floor temperature sensor setting. For areas where the system is used a primary heat source, either setting of the thermostat can be used.

- **Ground Fault Circuit Interrupter:** Usually the GFCI protection is built into the thermostat but if using a thermostat without a GFCI protection then a GFCI circuit breaker must be used.
- **Hard Insulation Materials:** Used as heat insulator under the heating mats in stone type floors for efficient heating. The material comes in rigid boards, usually made from polyurethane or polystyrene, and should have a compressive strength of more than 2 Kg/cm^2 (28 PSI). The R value of the material should be in the range of 0.1 - 0.3 $m^2*°C/W$ or 1 - 3 Tog (0.57 - 1.7 $ft^2*h*°F/Btu$). (See below for recommended hard insulation material).

RECOMMENDED HARD INSULATION MATERIAL:

For best results, we recommend using ***WEDI building panels*** or ***Prova Board Plus*** under the heating mats since it replaces the need for insulation and cement board layer. These panels are tile backer boards constructed of rigid insulation boards with a cementitious top and bottom side allowing the thinset/grout to bond directly to the panels. These panels are also waterproof.

- **Soft Insulation Materials:** used as heat insulator under the heating mats in all non-stone type floors for efficient heating. The material comes in rolls and should have compressive strength of more than 0.02 Kg/cm (0.28 PSI). The R value of the material should be in the range of 0.1 - 0.3 $m^2*°C/W$ or 1 - 3 Tog (0.57 - 1.7 $ft^2*h*°F/Btu$). (See below for recommended soft insulation material).

RECOMMENDED SOFT INSULATION MATERIAL:

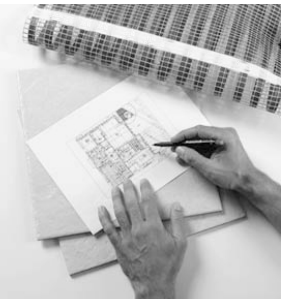
For best results, we recommend using TruHeat's ThermaSoft Premium 5 mm Acoustic Underlayment for all floating floor installations (laminate or click engineered wood floors only - no vinyl plank). Make sure to consult with the flooring manufacturer whether this underlayment is right for your non-stone flooring. TruHeat's ThermaSoft premium underlayment allows the heating ribbons to be embedded into the underlayment allowing the flooring to sit flush on top.

Other underlayments can be used but ensure it is at least 4 mm in thickness to allow ease of installation.

For vinyl plank, only use soft insulation which specifically mentions it is ok to be used with vinyl plank. Vinyl plank flooring to be installed over the EZ-Heat system without a concrete layer must be at least 6 mm in thickness and should be rigidcore.

5. PLANNING THE INSTALLATION - STEP 1

Before installing, draw an installation plan showing the placement of the mats, floor sensor, and junction box or boxes. The EZ-Heat mats should cover at least 70%-80% of the floor area of your room to be used as a primary heat source, the more coverage, the less time needed to heat the area. The heating mats are available in several convenient sizes. Choose the combination of heating mats that best enables you to cover the recommended 70% - 80% of your room. Plan to use the larger heating mats as much as possible and to use smaller mats only as gap fillers.



The mats are supplied with 4 meters (13 feet) of electrical cold leads. In some cases, this length is not sufficient, and an extension must be made by a qualified electrician. Always use TruHeat's EZ-Heat mat cold lead wires for extending the leads. EZ-Heat mats' cold leads are double insulated wires, which may be hard to source in your local market. Additional cable for the cold leads can be purchased directly from TruHeat. As per North American code, all lead splices should be done in an accessible junction box.

TIP: When designing an installation plan, always make sure to have the mats be facing in the direction of the thermostat location and ensure the furthest heating mat is not more than 13 feet away from the thermostat location. This method will reduce any reason to extend the cold leads.

6. LAYING OUT THE HEATING MATS - STEP 2

1. Clean all debris from the floor base.
2. If installing the heating mats under:

- ***Stone/Ceramic tiles & Glued Down Floors*** - Under stone type and glue down floors (Carpet, wood, vinyl, or linoleum - with adhesive) use a flexible construction adhesive to secure a hard insulation material on top of the floor base. We recommend using WEDI building panels or Prova Board Plus as an ideal base layer under the heating mats when working with stone or glued type floors.
- ***Floating Floors*** - Use a soft insulating material of 4 mm or thicker which can simply be placed on the floor or secured with tape or carpet adhesive. For dry installations under laminate and click engineered floors, we recommend using TruHeat's ThermaSoft Premium 5 mm Acoustic Underlayment.

NOTE:

- The R value of the soft insulation material should be in the range of 0.1 - 0.3m^{2}*°C/W or 1 - 3 Tog (0.57 - 1.7 ft^{2}*h*°F/Btu).
- Refer to your laminate or click engineer flooring manufacturer to see if a soft acoustic underlayment is right for you.
- Vinyl plank flooring should be treated as stone type/glued type of flooring since these types of flooring require a hard surface below them otherwise the click joints can have issues down the road. However, vinyl plank flooring with a thickness of 6 mm or higher can be installed using the soft insulation method used for laminate or click engineered wood flooring. Always check with your vinyl plank manufacturer if a soft insulation layer can be placed under your vinyl plank flooring should you want to conduct a dry installation.

3. Clean all debris from the surface of the grout or insulating material.
4. Measure the resistance of each heating mat and verify that the values you measure are in line with the resistance value that is listed on the chart located in part 10 of this user manual.
5. Roll out the heating mats on top of the insulating material with the heating ribbon facing down and the fiberglass net facing up. It is recommended to leave a gap of about 10 cm (4 inches) from the wall to the heating mats, and a gap of about 5 cm (2 inches) between each mat (ribbon to ribbon).

NOTE:
Ensure that each heating mat is completely flat and stretched out during installation. Make sure that the cold leads of the mats are on the side of the mat that is closest to the location of the electrical junction box (See step 3 – Making the Electrical Connection). See below on how to fix the heating mats in place.

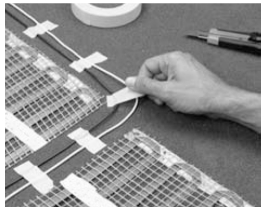
NOTE:
Wrinkles in the heating mats are to be eliminated during installation. See below for installation guidelines.

On insulation backer board or cement board surface:
- Use a fiberglass cement tape to keep the heating mats and grounding net in place.
- Use beads of construction adhesive. Apply the adhesive between the heating ribbons, on the fiberglass mesh only.

On soft insulation under wooden subfloor:
- Using tuck tape or strong duct tape.
- Staple the edge of the mats down using a staple gun. Ensure the staples are only on the fiberglass mesh part of the mat. Piercing the heating ribbon with staples will damage the heating mat.
- Use hot glue gun or construction adhesive. Adhesive should only be applied on the fiberglass mesh, not on heating ribbons.

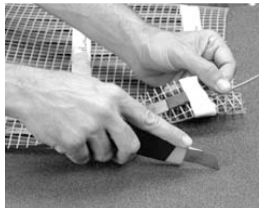
TIP: Energizing the rolled out wrinkled mats will also help them flatten out. Simply heat up the mats for a few minutes and they will become soft.

6. Place the cold leads of the mats between the mats toward the junction box. Try to place all the cold leads flat on the floor so that they do not cross each other ensuring minimal height gain to not disrupt flooring installation.

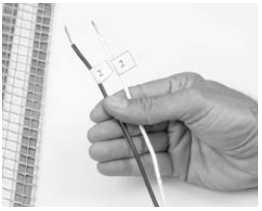


IMPORTANT:
Ensure that the cold leads of the mats do not cross over the mats.

7. Since the cold lead connectors are slightly thicker than the rest of the mat, create a slight groove in the hard or soft insulation under the connector to ensure that the heating mat lays flat. If any cold leads cross, create a groove for the cold leads at the point at which they cross.



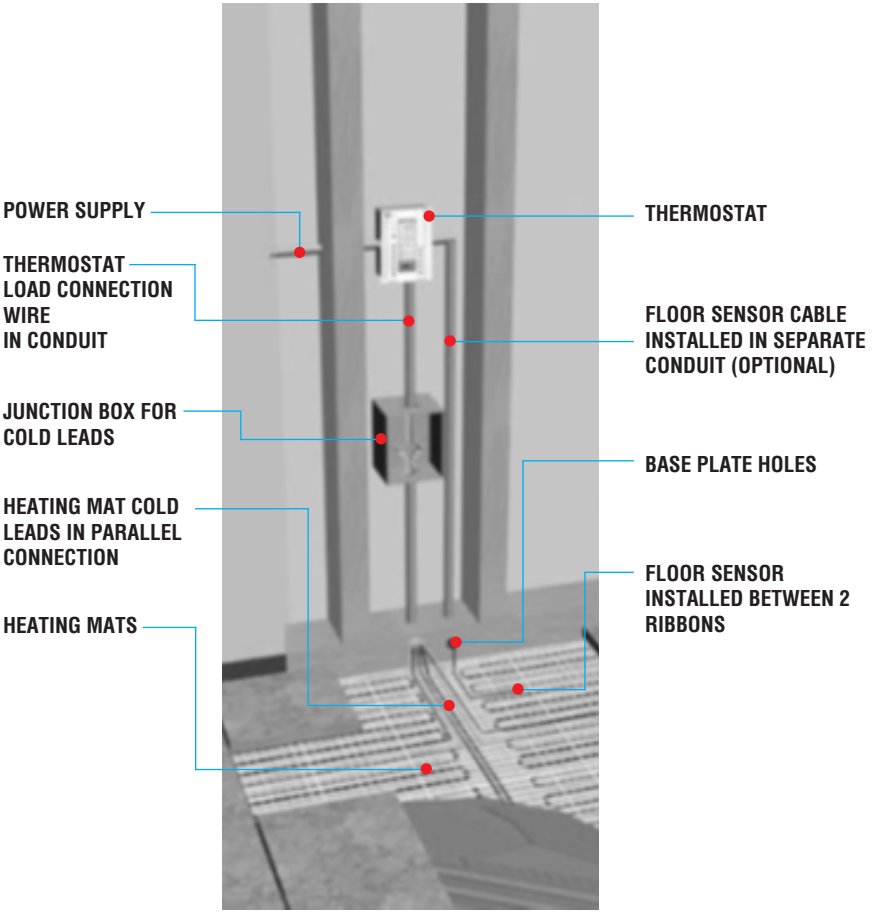
8. Mark each pair of cold leads coming from the same mat with a number. Place a small sticker with the number of each pair of leads close to the end of the lead. This will come in handy if heating mats need troubleshooting down the line.



7. MAKING THE ELECTRICAL CONNECTIONS - STEP 3

IMPORTANT:
All electrical connections must be made by a licensed electrician.

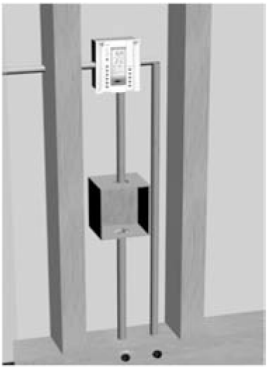
TYPICAL INSTALLATION DIAGRAM



1. Install the electrical junction box or boxes above floor level according to local safety and building regulations and codes. Place the following label on the electrical junction box or boxes indicating that an underfloor heating system is installed in the room.
2. Install the control thermostat as far as possible from any heat sources or heat sinks such as fireplaces, direct sunlight, windows, doors, or anything that could possibly affect proper temperature readings. The suggested placement is 1.5 m (5 feet) above floor level.

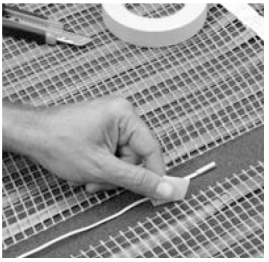
NOTE:
In areas where the system is not being used as a primary heat source, use the thermostat on the floor temperature sensor setting. For areas where the system is used a primary heat source, either setting of the thermostat can be used.

3. Install an electric conduit between the thermostat and cold lead junction box. Refer to the image on the right. Always refer to local electrical codes when it comes to conduit use.

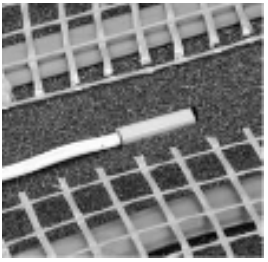


NOTE:
While it is not a must but it is recommended to use a plastic junction box for the thermostat and cold lead to avoid any moisture related issues as the thermostat can sense moisture on the thermostat junction box at times which is possibly trigger the GFCI protection of the thermostat.

4. Connect the floor temperature safety sensor to the thermostat through a conduit, and install between two heating ribbons, at least 50 cm (20 inches) from the wall. Since the safety sensor might be lightly thicker than the heating mats, cut out a slight piece of the subfloor to ensure the safety sensor is placed flat.



NOTE:
Make sure that the sensor does not touch any of the heating ribbons.



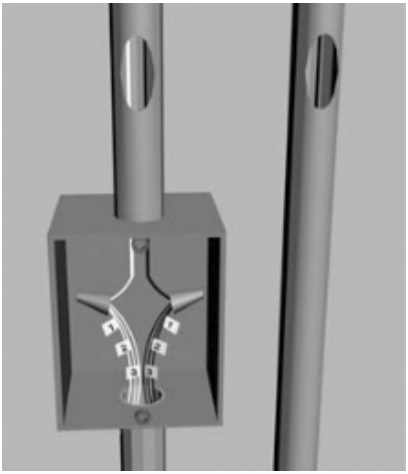
5. Measure the resistance of the heating system and record the value. Verify that the values you measure are in line with the resistance value that is listed on the chart located in part 9 of this user manual.

6. Measure the insulation values with a megger tester and record the values. Ensure there is no insulation problem which can create earth leakage issues down the line.

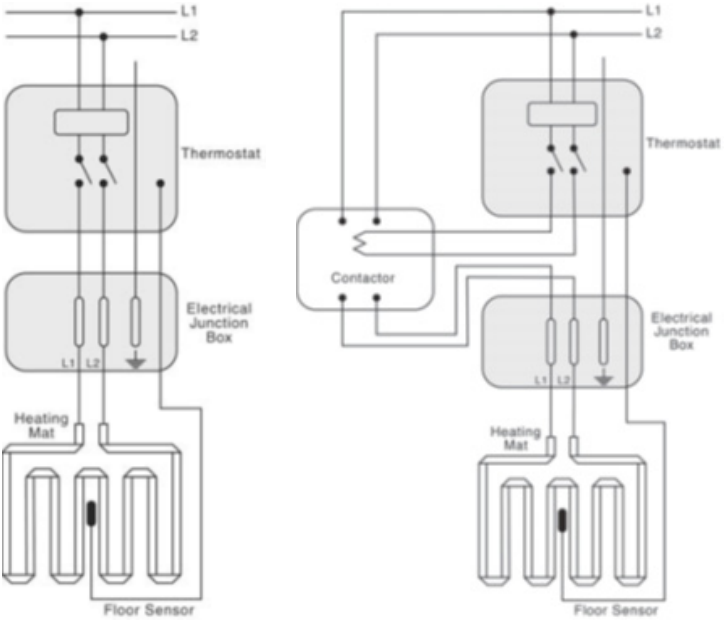
7. If you are installing the heating mats in wet areas (Wet areas include saunas, inside the shower):

- Spread the grounding net on top of the heating mat. The electrical wire of the grounding net should coincide with the heating mat cold lead. If necessary, tape the grounding net to the heating mats to ensure that the net does not move.
- Route the electrical wire of the grounding net to the same electrical junction box as the cold leads of the heating mats.
- In the electrical junction box, connect the electrical wires of the grounding to the ground lead (green/yellow) of the power supply of the house.

8. In parallel, feed the cold leads of each mat to the electrical junction box. Make sure that you can see the sticker with the numbers of the leads. If necessary, shorten the leads, but make sure the sticker with the leads' numbers is affixed to the shortened lead.
9. Expose the conductor of each cold lead.
10. Connect all leads of the same colour.
11. Insert each coloured lead to one connector in the junction box.
12. Connect the same coloured cold lead between the thermostat and the connector in the junction box. (See diagram below for a complete look of how the wires will look inside the junction box).



13. Connect the wires to the control thermostat according to the typical wiring diagram below:

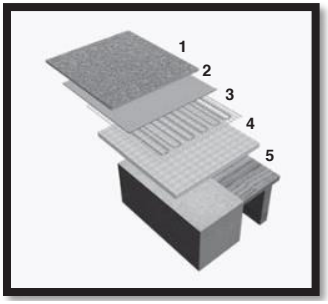


14. Switch on the heating system (see the directions in your thermostat manual) for half an hour to ensure that the system is working properly. It is important to check each mat to ensure optimal installation.
15. Switch off the heating system (see the directions in your thermostat manual).
16. When the mats are cool, lay down your floor covering. If you are installing a glued type of floor covering (carpet, wood, vinyl, or linoleum), first cover the mats with at least 1/4-inch (6 mm) polymer modified self-leveling flooring cement. Consult your local construction material dealer regarding the right material for your type of floor.

IMPORTANT:

If installing a glue down type of floor covering or using thinset/grout or tile adhesive, do not switch on the heating system again until the glue, thin-set, or grout or tile adhesive is dry. Consult the manufacturer of the material used to determine the amount of drying time needed.

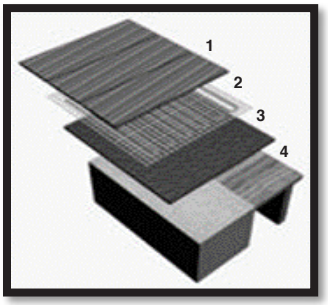
8. INSTALLATION DIAGRAMS



UNDER GLUED TYPE CARPET, HARDWOOD, VINYL PLANK OR LINOLEUM FLOORS

1. Carpet, wood, vinyl plank or linoleum (with adhesive).
2. Polymer modified self-levelling cement of at least ¼" (6mm) thickness.
3. EZ-Heat mats
4. WEDI or Prova Board Plus building panels minimum ¼" in thickness or combination of rigid insulation + cement board.
5. Floor slab (wood or concrete).

IMPORTANT:
In wet surroundings where the floor is constantly submerged under water, ensure the heating mats have a grounding net installed directly on top of them.



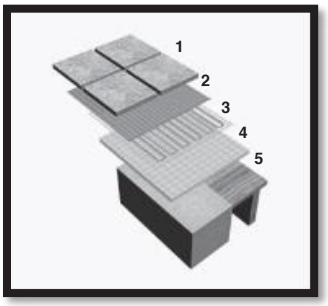
UNDER LAMINATE, CLICK ENGINEERED, OR ANY FLOATING WOOD FLOORS (DRY INSTALLATION)

1. Laminate, click engineered or any other floating wood flooring.
2. EZ-Heat mats
3. TruHeat's ThermaSoft Acoustic Insulating Underlayment or any 4mm insulating underlayment.
4. Floor slab (wood or concrete).

IMPORTANT:
Check with your laminate or click engineer flooring manufacturer to see if a soft acoustic underlayment is suitable under your floor type.

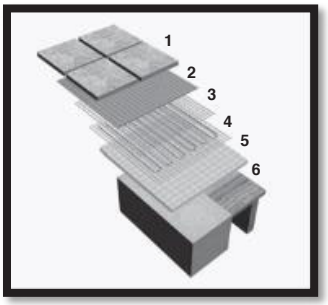
NOTE:
Vinyl plank flooring of 6 mm or thicker can also be installed using the dry installation method. Use a soft insulation specifically made for vinyl plank such as Eco Cork or similar.

IMPORTANT:
Always check with your flooring manufacturer for the heat threshold rating of the floating floor and set the temperature protection limit in the thermostat. Refer to the thermostat user manual to see how a protetion limit is set.



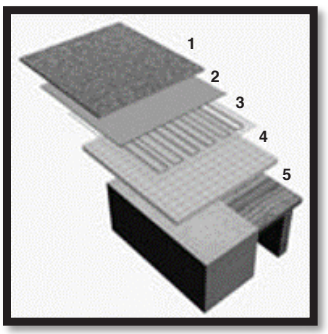
UNDER CERAMIC / STONE TILES (DRY SURROUNDINGS)

1. Tiles.
2. Polymer modified thinset / grout / tile adhesive.
3. EZ-Heat mats.
4. WEDI or Prova Board Plus building panels minimum ¼" in thickness or combination of rigid insulation + cement board.
5. Floor slab (wood or concrete).



UNDER CERAMIC / STONE TILES (WET SURROUNDINGS)

1. Tiles.
2. Polymer modified thinset / grout / tile adhesive.
3. Grounding net.
4. EZ-Heat mats.
5. WEDI or Prova Board Plus building panels minimum ¼" in thickness or combination of rigid insulation + cement board.
6. Floor slab (wood or concrete).



UNDER NON-GLUED TYPE CARPET (NO ADHESIVE)

1. Carpet.
2. Carpet underpad.
3. EZ-Heat mats.
4. TruHeat's ThermaSoft Acoustic Insulating Underlayment or any 4mm insulating underlayment.
5. Floor slab (wood or concrete).

wet surroundings include showers, saunas, or any other areas constantly submerged under water

IMPORTANT:
Do not use carpet underlay with more then 0.8 Tog.

Use a Hessian backed carpet with a lower than 2.0 Tog. Always ensure that the Tog value of the insulation is at least the same as the carpet.

9. TROUBLESHOOTING

EZ-Heat mats are designed to be maintenance free. Failures may occur because of damage to the heating elements during installation. The following table provides a list of possible problems you may encounter. For each problem, possible causes and solutions are provided.

PROBLEM	POSSIBLE CAUSE	SOLUTION
NO HEAT IN THE ENTIRE ROOM/FLOOR	Main circuit breaker is off	• Reset the main circuit breaker. If the breaker cannot be reset, verify that it can handle the heating system load.
	GFCI tripped	• Reset the GFCI on the thermostat or at the circuit breaker. • If the GFCI cannot be reset disconnect the wires from the thermostat and try to reset the thermostat. • If it doesn't reset replace the thermostat. • If it does reset, it means that there is a fault with one of the mats. Use a Megger to identify the faulty mat; disconnect it and consult your TruHeat representative. • If no fault is found in the mats then there could be excessive moisture in the room or on the thermostat junction box. Running a dehumidifier can solve this issue.
	Faulty thermostat	• Check that the thermostat settings (on/off position, temperature setting, and clock setting) are correct. If all the settings are correct, replace the thermostat.
NO HEAT IN PART OF THE ROOM/FLOOR	A heating mat is disconnected	• Check the heating mat connections in the electrical connection box. Tighten any loose connections.
	A heating mat has short-circuited	• Check the electrical resistance between the cold leads. If there is a short-circuit, request a repair guide from your TruHeat representative.
OVERHEATING IN THE ENTIRE ROOM/FLOOR	Thermostat setting is too high	• Set the thermostat to a comfortable level.

	Faulty thermostat	• Replace the thermostat.
	Wrong power line supply (240 V instead of 120 V)	• Make sure you are using the correct line voltage. Rewire if necessary.
OVERHEATING IN A PART OF THE ROOM/ FLOOR	Thermal blocking	• Avoid placing floor level furniture (futons and mattresses, for example) on the floor.
ROOM NOT WARM ENOUGH	Thermostat setting is too low	• Set thermostat to a higher temperature.
	Floor sensor is under thermal blocking	• Avoid placing floor level furniture (futons and mattresses, for example) above the floor sensor.
	Floor sensor setting is incorrect	• Raise the floor sensor setting. See thermostat user manual.
	Improper insulation under the heating mat	• Requires system upgrade.
	Initial heat loss calculations were incorrect	• The heat loss of the house is high and the heat is escaping faster than it can be generated. Requires system upgrade.
DIFFERENT LEVEL OF HEAT IN THE ROOM	Wrong connection – possible that some mats connected in series instead of parallel	• Open the connection box and reconnect the mats correctly.
BURN MARKS ON THE FLOOR	Incorrect type of flooring used	• Choose a different type of flooring rated for radiant heating system. • Set the temperature limit of the thermostat to match heat threshold stated by flooring manufacturer. Refer to the thermostat user manual.

10. RESISTANCE VALUES

RESISTANCE VALUES CAN HAVE A VARIANCE OF ± 15%

7W/SQFT - 120V		
WIDTH (IN.)	LENGTH (FT.)	RESISTANCE
20	3	413
20	4	310
20	5	248
20	6	207
20	7	177
20	8	155
20	9	138
20	10	124
20	11	113
20	12	103
20	13	95
20	14	89
20	15	83
20	16	77
36	3	230
36	4	172
36	5	138
36	6	115
36	7	98
36	8	86

7W/SQFT - 240V		
WIDTH (IN.)	LENGTH (FT.)	RESISTANCE
20	6	826
20	7	708
20	8	620
20	9	551
20	10	496
20	11	451
20	12	413
20	13	381
20	14	354
20	15	331
20	16	310
20	17	292
20	18	275
20	19	261
20	20	248
20	21	236
20	22	225
20	23	216
36	3	918
36	4	689
36	5	551
36	6	459
36	7	394
36	8	344
36	9	306
36	10	275
36	11	250
36	12	230
36	13	212
36	14	197
36	15	184
36	16	172

RESISTANCE VALUES CAN HAVE A VARIANCE OF ± 15%

14W/SQFT - 120V		
WIDTH (IN.)	LENGTH (FT.)	RESISTANCE
20	3	207
20	4	155
20	5	124
20	6	103
20	7	89
20	8	77
20	9	69
20	10	62
20	11	56
20	12	52
36	3.3	104
36	4	86
36	5	69
36	6	57
36	7	49

14W/SQFT - 240V		
WIDTH (IN.)	LENGTH (FT.)	RESISTANCE
20	3.3	751
20	4	620
20	5	496
20	6	413
20	7	354
20	8	310
20	9	275
20	10	248
20	11	225
20	12	207
20	13	191
20	14	177
20	15	165
20	16	155
20	17	146
20	18	138
20	19	130
20	20	124
20	21	118
20	22	113
20	23	108
36	3	459
36	4	344
36	5	275
36	6	230
36	7	197
36	8	172
36	9	153
36	10	138
36	11	125
36	12	115
36	13	106

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