

INSTALLATION MANUAL

Thank you for purchasing the most comfortable heating system in the world.

The instructions in this installation manual are presented to help you to easily install IHS's latest heating technology, and avoid costly mistakes.



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



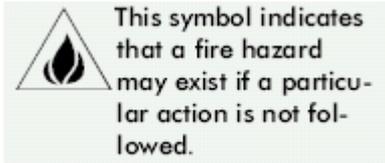
THE INSTALLATION OF THIS HEATING PRODUCT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND THE REGULATIONS OF THE AUTHORITY HAVING JURISDICTION.

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Dear Customer!

Welcome to the wonderful world of IHS radiant floor heating.



Your body, your family and your friends will congratulate you for your good choice of purchasing a heating system that is the **most comfortable and effective** in the field of under floor heating.

The IHS heating system is not complicated to install, nevertheless it is essential to follow the installation instructions in order to guarantee the best possible

results, while working in the most comfortable manner and still following the needed safety precautions.

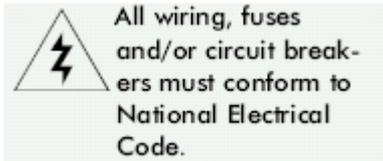
System elements

Electrical connections box

The electrical connections box is used as the connecting junction for the cables of the heating mats. The box should be installed above floor level, according to the prevailing regulations in your country. The electricity source to the box should be led through a thermostat that can be installed separately in every room. Assure that

Control unit - thermostat:

The control unit allows each room to be temperature controlled.



1. Placement of the thermostat:

The thermostat should be installed as far as possible from heat sources such as: fire places, direct sunlight, windows, door openings, etc/ that could possibly affect the proper temperature readings (approximately 1.5mt from floor level).

2. The thermostat has two sensors:

- i. Ambient room temperature sensor.
- ii. Heating mat temperature sensor, which is installed only in floor types of: Wooden floor, parquet flooring, wall-to-wall matting or linoleum, and is not needed in floor types such as: concrete, terrazzo tiles or ceramic tiles.
The heating mat temperature sensor should be installed between two heating elements and about 50 cm away from a wall.

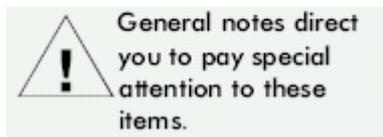
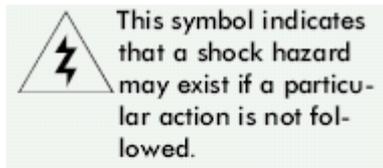
3. The thermostat regulates the desired and the pre set room or floor temperature.

4. Two electric cables lead from the thermostat to the electrical connections box, these cables feed the electricity to the heating system (brown and blue). The thermostat has to be a two pole unit, one pole for the phase (brown color) and the other for the zero (0) (blue color) and has to be equipped with a two pole manual on/off switch.

5. IMPORTANT- All the electrical connection must be screwed very hard in order to avoid POOR electrical contact.

Important – Read the installation instructions for the specific floor covering planned for your installation.

General safety measures:



These safety measures cover the different methods of installation of the IHS under floor heating system (in concrete, under timber/parquet, under wall to wall carpeting and under ceramic tiles or terrazzo flooring) that are used in homes, industrial premises or anywhere else where a warm and comfortable environment is required. This product has been designed with consumer safety always in mind. Yet, since it is electrically operated, there are common sense precautions that must be taken - especially during the installation process.

Please follow these instructions for the safety of all concerned. Please read the measures with care, and act accordingly!

Safety requirements during installation:

1. Never fold or wrinkle the heating mat.
2. The heating mat has to be spread on a smooth and even surface and has to be held flat by adhesive tape or any other reasonable means.
3. Do not install the heating mat at a distance that is less than 30 mm from conductive parts of the building, such as water pipes.
4. Cover the mat with the grounding metal net where instructed. The grounding net shall be protected against corrosion but not electrically insulated. It will fully cover the heating mat and can cover several mats. It will be connected to earth through terminals suitable for the connection of two conductors each having a nominal cross section area of 2.5 mm² and will be checked for continuity.
5. Do not install the heating mat at a distance of less than 15 cm. from a fireplace or hot water pipe.
6. Do not install the heating mat under walls or partitions. Do not install the heating mats under areas that may in a future time be under walls or partitions.
7. Do not install the heating mats in areas where zero clearance furniture is planned to be placed on the floor.
8. Do not damage the electrical insulation of the units, not during the installation nor after.
9. Do not install the heating mat when it is folded.
10. Do not install two heating mats one on another.
11. No other electrical cables or pipes should be installed under floor together with the heating mats.
12. Under floor heating mats should be installed only indoors and it is forbidden to install them for outdoor use. IHS has a separate product line for outdoor use.
13. Do not install when temperatures are below -5 degree C.
14. Do not use cellulose insulation.

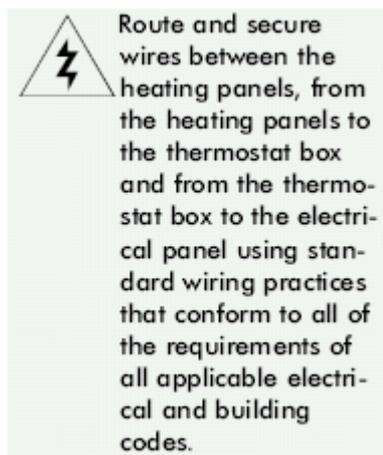
Safety requirements during electrical system installation:

1. All electrical connections of the IHS under floor heating system must be carried out according to the local safety regulations and codes.
2. The electrical circuit that supplies electricity to the under floor heating system shall not be connected to any other apparatus.

3. The circuit that supplies electricity to the heating system must be equipped with a 30 ma **GFCI**. Failure to do so can result in electric shock and fire hazard.
4. Electrical hookup of the non-heated leads should be made inside the electrical connections box. Connect all units in parallel; make sure not to exceed the current handling capacity of the supply line. Each mat has a label defining the voltage and power input rating listed on the product. Ensure that the total current used is no more than 80% of the line capacity to the box.
5. The heating mat is an electrically operated system, so the use of a fully qualified electrician for all connections and hookups is recommended. If you choose to do the installation yourself, please be sure you fully understand and comply with all codes and standards. If you are in any way hesitant or unsure of any portion of the instructions or task, contact a licensed electrician to help with the installation.

Handling instructions during storage:

1. The heating mats are packed in cartons.
2. Do not put heavy objects on the cartons as they may damage the heating mats.
3. Take care not to damage the cartons during transportation.
4. The heating mats must be stored in a dry and dust free area.



Installation under concrete floor:

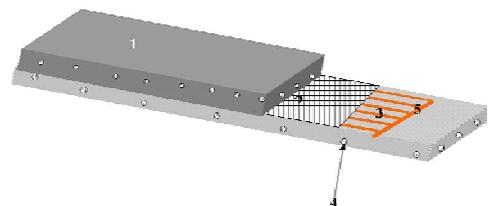
Warning: Do not overlap one heating mat with another.

During installation of the heating system do not place heavy or sharp tools, or any other items that can damage the heating elements, on top of the heating mats. Do not walk unnecessarily on the heating mats.

1. Properly clean the concrete floor from all debris.
2. Make sure that the surface of the concrete is smooth and free from any objects that could possibly pierce the ribbon heating element and thus damage it or the isolating layer.
3. Unpack the heating mats from their respective packages.
4. Spread the heating mats on the floor of the room in the manner that:
 - i. Each heating mat is completely spread out.
 - ii. The ribbon is faced down and the net is faced up.
 - iii. There are no folds in the heating mats, after spreading them on the floor.
 - iv. There is a gap from the wall to the heating mats of about 10 cm, and a gap of about 5 cm between each and every mat.
 - v. The connecting cables of all heating mats do not cross on top of the heating mats.
5. Mark on the electrical plans a sketch of how you placed the mats on the floor.
 - i. Measure and note the resistance of the heating system.
 - ii. Measure and note the insulation values.
6. Connect in **parallel** all cables of the heating system together to the electrical connections box. Feeding the system with electricity must be carried out according to the electrical connections drawing.
7. Switch on the heating system for half an hour in order to ensure that the system is functioning properly.
8. Cover the entire heating system with 2 to 5 cm concrete. Leave no air gap between the concrete and the heating elements.

Concrete/ in the top layer.

1. Top layer, 2 to 5cm.
2. Heating mat.
3. Bottom layer of concrete



Installation under parquet flooring and/or timber:

Warning: Do not overlap one heating mat with another.

During installation of the heating system do not place on top of the heating mats heavy or sharp tools, or any other items that can damage the heating elements. Do not walk unnecessarily on the heating mats.

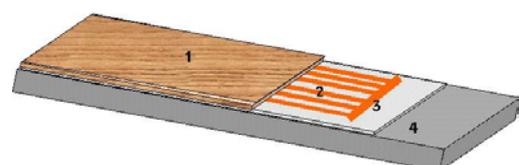
1. Properly clean the floor from all debris and dust.
2. Make sure that the floor surface is smooth and free from any objects that could possibly pierce the ribbon heating element and thus damage it or the isolating layer.
3. Place a thermal insulation material underneath the heating mat in order to receive the ultimate result. The insulation material should preferably be 4 mm thick closed cell polyethylene foam or corresponding.
4. Spread the heating mats on the insulation material in a manner that there are no folds in the heating mats, the ribbon is faced down and the net is faced up.
5. Fix the heating mats to the insulating material using adhesive tape in a manner that the heating mats will not move. Remember to leave a distance of about 10 cm from the walls and about 5 cm between the heating mats.
6. Ensure that the connecting cables of all heating mats do not cross on top of the heating mats.
7. Place the sensor probe in the floor between two ribbon heating elements and at a distance of about 50 cm from the wall.
8. Mark on the electrical plans a sketch of how you placed the mats on the floor.
 - i. Measure and note the resistance of the heating system.
 - ii. Measure and note the insulation values.
9. Connect all cables of the heating system together to the electrical connections box in **parallel**.
10. Feeding the system with electricity must be carried out according to the electrical connections drawing.
11. Switch on the heating system for half an hour in order to ensure that the system is functioning properly.

Having done the above (once all the measured values had been noted in writing), allow the floor covering to be assembled. The parquet flooring should be installed over the heating mat, in a manner that the heating mat will be gently squeezed into the insulation material leaving no air gaps between the insulation material, the heating mat and the parquet floor.

While installing the timber/parquet flooring, one should use a piece of plastic or carton that should be inserted underneath the parquet piece that is currently installed so that when you hammer in the next piece, you should slide the hammer on this piece of plastic and not on the heating mat.

Under parquet/timber flooring.

1. Parquet flooring Material.
2. Heating mat.
3. Insulation material.
4. Floor slab.



Installing under wall to wall carpeting:

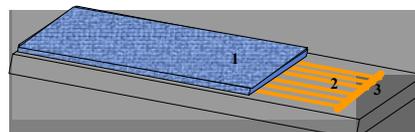
Warning: Do not overlap one heating mat with another.

During installation of the heating system do not place on top of the heating mats heavy or sharp tools, or any other items that can damage the heating elements. Do not walk unnecessarily on the heating mats.

1. Properly clean the floor from all debris and dust.
2. Make sure that the floor surface is smooth and free from any objects that could possibly pierce the ribbon heating element and thus damage it or the isolating layer.
3. Place a thermal insulation material underneath the heating mat in order to receive the ultimate result. The insulation material should preferably be 4 mm thick closed cell polyethylene foam or corresponding.
4. Spread the heating mats on the insulation material in a manner that there are no folds in the heating mats, the ribbon is faced down and the net is faced up.
5. Fix the heating mats to the insulating material using adhesive tape in a manner that the heating mats will not move. Remember to leave a distance of about 10 cm from the walls and about 5 cm between the heating mats.
6. Place the sensor probe on the floor between two ribbon heating elements and at a distance of about 50 cm from the wall.
7. Ensure that the connecting cables of all heating mats do not cross on top of the heating mats.
8. Mark on the floor plans a sketch of how you placed the mats on the floor.
 - i. Measure and note the resistance of the heating system.
 - ii. Measure and note the insulation values.
9. Connect in **parallel** all cables of the heating system together to the electrical connections box.
10. Feeding the system with electricity must be carried out according to the electrical connections drawing.
11. Switch on the heating system for half an hour in order to ensure that the system is functioning properly.
12. Lay the wall-to-wall mating, Be careful not to damage the heating system with any sharp object. The carpet should be straightened tightly over the heating mat to eliminate air gap between the heating element and the carpet.

Under wall to wall carpeting

1. Wall to wall carpeting.
2. Heating mat.
3. Insulation material.



Installation under ceramic tiles in wet areas:

Warning: Do not overlap one heating mat with another.

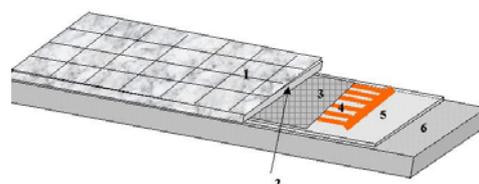
During installation of the heating system do not place on top of the heating mats heavy or sharp tools, or any other items that can damage the heating elements. Do not walk unnecessarily on the heating mats.

1. Properly clean the floor from all debris and dust.
2. Make sure that the floor surface is smooth and free from any objects that could possibly pierce the ribbon heating element and thus damage it or the isolating layer.
3. Spread the heating mats on the floor in a manner that there are no folds in the heating mats, the ribbon is faced down and the net is faced up.
4. By using glue, rivets or adhesive tape, fasten the heating mats to the floor. Make sure that the mats are entirely stretched out and straight.
5. Cover the mat with the grounding metal net.
6. Ensure that the connecting cables of all heating mats do not cross on top of the heating mats.
6. Mark on the electrical plans a sketch of how you placed the mats on the floor.
 - i. Measure and note the resistance of the heating system.
 - ii. Measure and note the insulation values.
7. Connect in **parallel** all cables of the heating system together to the electrical connections box. Connect the grounding net to the electrical ground connection.
8. Feeding the system with electricity must be carried out according to the electrical connections drawing.
9. Switch on the heating system for half an hour in order to ensure that the system is functioning properly.
10. Now you are ready to start laying the ceramic tiles on the floor.
11. Start the work by spreading the glue or grout with a comb like plastic spreader, but being **very careful** not to damage the heating elements of the mats or, spread the glue or grout directly on to the tile. The grout or glue should cover the entire heating mat so that no air gap will be created.

Note: In installations where the floor slab has thermal resistance greater than $2 \text{ m}^2 \text{ K/W}$ the grout thickness should be above 1.5 cm.

Under ceramics tiles/ in wet surroundings.

1. Ceramic tile.
2. Grout.
3. Grounding net.
4. Heating mat.
5. Grout.
6. Floor slab.



Installation under ceramic tiles in dry areas:

Warning: Do not overlap one heating mat with another.

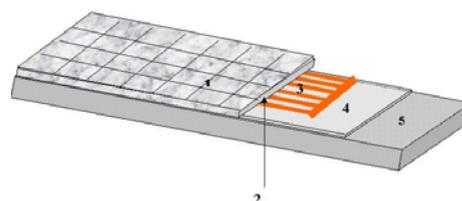
During installation of the heating system do not place heavy or sharp tools, or any other items that can damage the heating elements, on top of the heating mats. Do not walk unnecessarily on the heating mats.

1. Properly clean the floor from all debris and dust.
2. Make sure that the floor surface is smooth and free from any objects that could possibly pierce the ribbon heating element and thus damage it or the isolating layer.
3. Spread the heating mats on the floor in a manner that there are no folds in the heating mats, the ribbon is faced down and the net is faced up.
4. By using glue, rivets or adhesive tape, fasten the heating mats to the floor. Make sure that the mats are entirely stretched out and straight.
5. Ensure that the connecting cables of all heating mats do not cross on top of the heating mats.
6. Mark on the electrical plans a sketch of how you placed the mats on the floor.
 - i. Measure and note the resistance of the heating system.
 - ii. Measure and note the insulation values.
7. Connect in **parallel** all cables of the heating system together to the electrical connections box.
8. Feeding the system with electricity must be carried out according to the electrical connection drawing.
9. Switch on the heating system for half an hour in order to ensure that the system is functioning properly.
10. Now you are ready to start laying the ceramic tiles on the floor.
11. Start the work by spreading the glue or grout with a comb like plastic spreader, but being **very careful** not to damage the heating elements of the mats or, spread the glue or grout directly on to the tile. The grout or glue should cover the entire heating mat so that no air gap will be created.

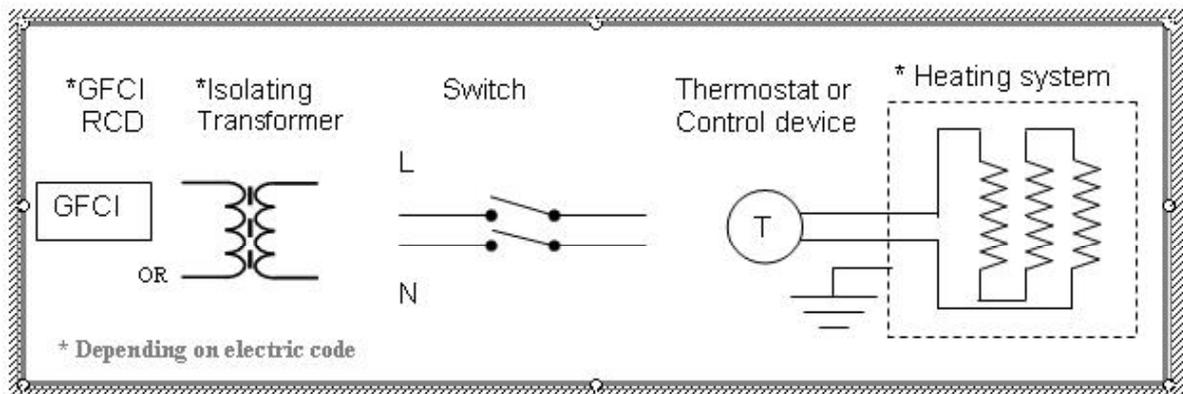
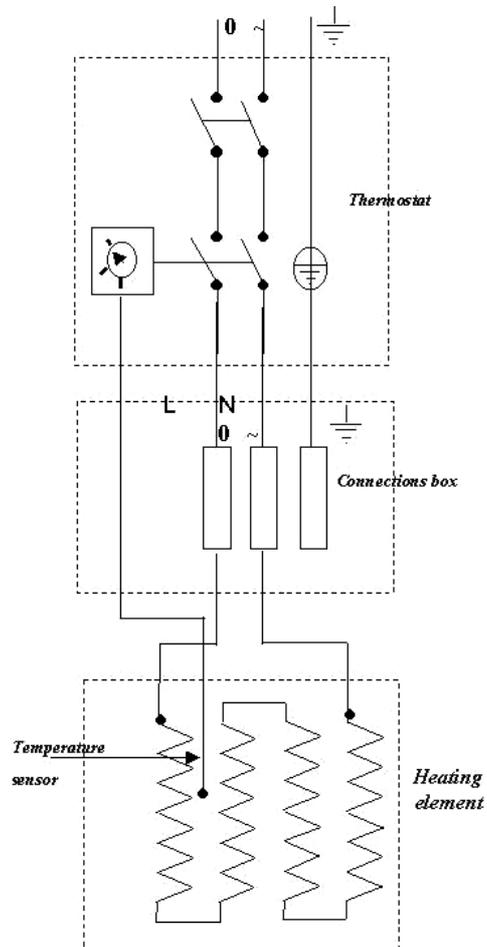
Note: In installations where the floor slab has thermal resistance greater than $2 \text{ m}^2 \text{ K/W}$ the grout thickness should be above 1.5 cm.

Under ceramics tiles/ in dry surroundings.

1. Ceramic tile.
2. Grout.
3. Heating mat.
4. Grout.
5. Floor slab.

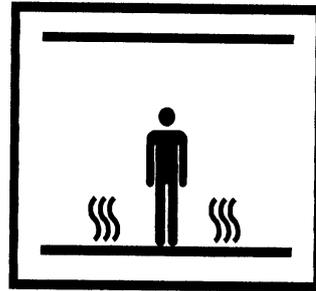
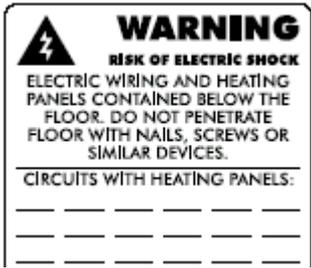


Typical electric installation:



Marking and documentation:

1. Place a label on the electrical junction box mentioning that under floor heating system is installed in the room:



2. Note and keep record of the installation details: measured heating mat resistance and the physical location on the unit on the floor plan:

Model Number	Date of purchasing.
Serial Number	
Resistance value:	Insulation value:
Floor scheme with the heating mat location:	

CONTROLS & ACCESSORIES recommended by IHS:

Floor-Sensing Thermostat with G.F.C.I.

OJ MTDF – 1999 MH

Grounding net.

Use 0.2 mm 5 by 5 galvanized net.

Ground Fault Circuit Interrupter.

Consult your local dealer regarding applicable variety of GFCI's.

NOTE: Please call an IHS representative for further details regarding installing the appropriate controls.