

harmoni

INSTALLATION MANUAL

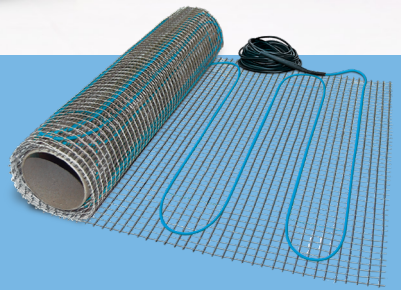
harmoni mat 100W/150W/200W

LIFETIME
WARRANTY

INSTALLER
WARRANTY



Intertek



Before you begin installing, read through these instructions carefully and check that you have all the components required.

www.harmoniheating.co.uk

01473 559088

INTRODUCTION

Important notes, please read carefully before proceeding with installation

The Harmoni brand

Thank you for choosing the Harmoni underfloor heating mat from our range of electric underfloor heating solutions.

The Harmoni range has been manufactured to surpass all current industry standards and comes with a lifetime warranty.

Harmoni underfloor heating mat

The Harmoni underfloor heating mat has a self-adhesive fibre glass backing mesh with an ultra-thin twin conductor 3mm heating cable pre attached, ensuring minimal increase to the existing floor height. The function of the heating mat system is to provide a warm floor.

Superior product design ensures a speedy installation with an even heat across the complete floor surface, whilst allowing unlimited adjustment of the heating element to suit irregular formats.

The Harmoni heating mat is available in three output types:

100 watts per m² (for use with timber floor substrates e.g. plywood etc).	150 watts per m² (for use with concrete floor substrates e.g. sand cement screed, insulated backer boards etc).	200 watts per m² (for use where a higher wattage output is required e.g. conservatory).
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Tools needed for installation

You will require the following items to install and test this heating mat system.

- Tape measure, drawing pad and pencil
- Utility knife, scissors
- Cable strippers, screw driver
- Resistance tester (multimeter), insulation resistance tester

You will also need the appropriate tools and materials to install your finished floor surface; these will probably include products like self-levelling compound, insulated backer board, notched tile trowel and various other tools and materials for your specific project.

- Heating mat
- Sensor tube
- Installation instructions
- Warranty

Dos & Don'ts

Do

Carefully read this instruction manual before starting your installation and **follow the testing procedure on page 7**. Throughout your installation:

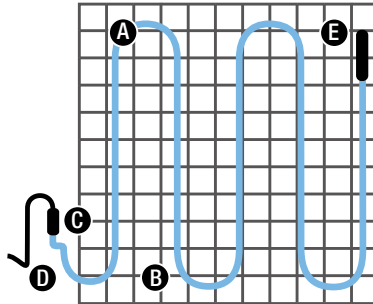
- Take time to plan your mat layout considering all obstacles e.g. kitchen cupboards, bathroom sinks etc. Ensure the mat will fit before laying.
- Use flexible tile adhesives and grouting materials.
- Ensure the floor sensor thermostat is inserted within the flexible tube provided and installed between two heating elements, with the floor end of the flexible tube effectively sealed (to ensure easy removal of floor sensor if required after installation). *See page 4, step 2.*
- Maintain a minimum of 50mm between the heating element runs.
- Take care not to damage the heating element and cold tail whilst tiling.
- Ensure all the blue heating element is covered with a flexible self-levelling compound or flexible tile adhesive.
- Make certain there are no air gaps underneath tiled areas or between heating element runs.
- Ensure the floor surface is prepared correctly before installation. *See note on page 4.*
- When using more than one mat from a single supply, cold tails must be connected in parallel.

Don't

- Don't cut or shorten the blue heating cable.
- Don't cross or touch the blue heating cables together.
- Don't switch on your under floor heating system for a minimum of 7 days after tiling to allow correct curing of tile adhesives and grouts.
- Don't install in temperatures lower than -10°C .
- Don't install near other heat sources such as luminaires and chimneys.
- Don't connect the heating element to the power supply whilst still rolled up.
- Don't leave rolled up surplus sections of mat under kitchen units or bath spaces.
- Don't start installation of the floor surface before testing your mat. *See page 7 for details of electrical testing.*
- Don't tile over damaged or twisted cables.
- Don't install under kitchen units or permanent fixtures such as baths.
- Don't over tape cold joint & end seal.

This manual contains all the information you will need about the Harmoni underfloor heating mat.

Please take time to study the information thoroughly before you attempt to install this product.



- A** Heating element
- B** Fibreglass backing mesh
- C** Factory made cold tail joint
- D** Cold tail power lead
- E** End termination joint

ELECTRICAL REQUIREMENTS

Always consult an electrician regarding your requirements

Please follow these instructions carefully. If you require assistance prior to or during your installation, please call our helpline on 01473 559088

Important Note

When designing your electrical installation, you should always consult an electrician regarding your requirements. Before installing the Harmoni you should make allowance for the electrical connections.

The Harmoni heating mat system requires a mains voltage 230/240V and must be connected and installation is to be in accordance with the national wiring rules.

For areas up to 30m² (100w mat), areas up to 20m² (150w mat) or areas up to 15m² (200w mat) power connection can be provided through a 13A switched spur outlet/combined RCD spur outlet.

For areas larger than the above, a dedicated circuit should be installed from the local consumer unit.

List of accessories required in addition to the heating mat:

- Floor sensing programmable thermostat (*see below*)
- Main switch
- Residual current device (RCD)

Note:

Details of the thermostat installation will be available in the installation manual provided with the thermostat.

It is a requirement that all Harmoni heating mat systems are protected by a 30ma RCD earth trip either at the consumer unit or by a combined RCD spur outlet.

Important Note

When installing in a bathroom or other wet areas the thermostat must be located outside Zone 2 (0.6m from any wet appliance, e.g. shower, sink etc) or outside the wet area, ideally on the opposite face of the wall. The heating mat must be earth bonded in accordance with the national wiring rules.

Controls

- Thermostat: OJ Electronics OCC2



This symbol means **Direct Floor Heating**

PRE-INSTALLATION INSTRUCTIONS

Ensure the sub floor is structurally sound, clean and dry



**Ensure your heating mat is correctly sized before you unpack the product.
Call 01473 559088 if you have any questions.**

Notes

The floor should now be prepared ready for the heating mat installation.

All loose particles should be removed and the floor thoroughly cleaned and treated with any proprietary sealants as normally required for your finished floor.

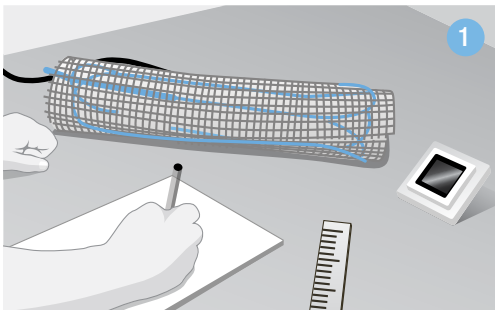
If your existing floor has a bitumen or asphalt surface, it must either be removed or covered with a thin flexible self-levelling compound, tile backer board or water resistant timber.

If installing insulated tile backing boards, you must comply with the manufacturer's instructions.

Minimum bend radius of the heat cable while laying must not be less than 10x its diameter, i.e. 40mm.

Step 1

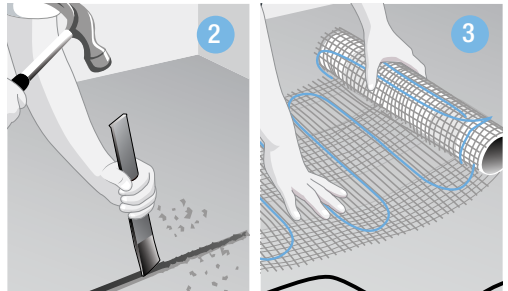
Draw a layout of your room including all obstacles e.g. toilet, sink etc, (*use the floor plan grid on pages 10–11*) then determine the required floor area to be heated. Decide a suitable position for the thermostat (start point) then sketch the proposed layout of the heating mat to ensure the heated area is completely covered whilst using all of your mat (*see mat planner notes on page 6*).



Step 2

Directly below the electrical connection point install a 10mm flexible tube (provided with each heating mat) – you may have to channel a groove to allow the flexible tube to remain flush with the existing floor. The floor sensing probe is to be installed into the flexible tube to monitor the floor temperature. Ensure the tube is installed to allow easy replacement of the sensor probe (in case the sensor fails) and positioned between two heating elements.

The flexible tube in the floor should be sealed to prevent adhesive or self-levelling compound entering the tube.



**⚡ Now check the resistance of the mat
(see page 7 for details)**

Step 3

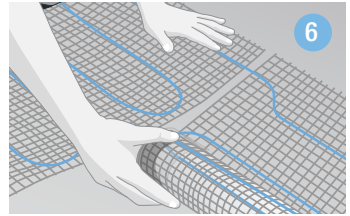
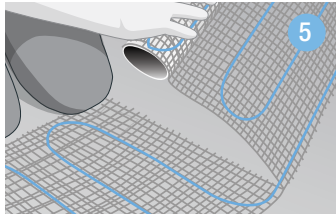
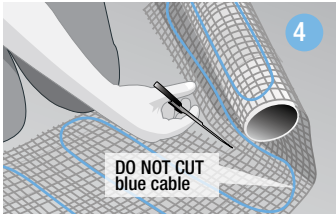
Remove the plastic outer cover from the heating mat. Position at the start of your matting plan with the cold tail (power cable) at the electrical connection and positioned in to a low level electrical back box.

Ensure the separate thermostat floor sensor cable is inserted into the pre-installed 10mm flexible tube and returned to the low-level electrical back box.

The factory made cold tail joint must be positioned in the floor area. **Do not over tape cold joint & end seal.**

INSTALLATION INSTRUCTIONS

Read through these instructions carefully before laying your mat



Notes

In some instances it may be necessary to remove the blue cable from the grey backing mat.

Ensure the cables are not laid in areas where fixed appliances could be positioned e.g. underneath sink basins or toilet pans.

Care should be taken to avoid damage during installation, such as dropping sharp objects, stepping too heavily on the heating unit or careless pouring of the adhesive.

Step 3 (continued)

Once the mat cold tail (power cable) and thermostat floor sensor probe have been positioned (ensure the sensor probe is situated between two heating elements) you can start to lay your mat.

Following your previously drawn mat layout, ensure the mat is placed on the floor with the adhesive side down. Unroll your mat until you reach the end of your first run.

Steps 4, 5 & 6

When you have reached the end of the mat run, carefully cut the grey backing mat in-between the two blue cables (**do not cut the blue cable**) and turn the mat to its new position. Ensure the cable remains a minimum of 50mm apart.

Once the mat is turned and secured, continue this process until all of the mat is used. Then check the complete matting area is securely fixed to the floor.

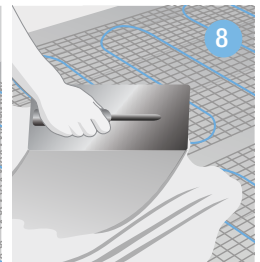
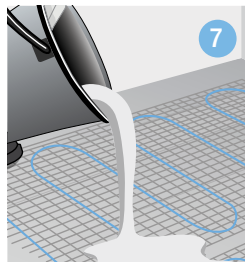
⚡ Check the resistance of the mat again (see page 7 for details) to make sure damage hasn't occurred during the installation process.

Steps 7 & 8

The mat must now be covered with a minimum of 5mm of either a flexible tile adhesive or flexible self-levelling compound.

Check there are no air pockets then carefully spread the flexible tile adhesive or self-levelling compound until all mat areas and heating cables are covered.

You can tile directly over the mat. Carefully apply the flexible tile adhesive with a notched trowel ensuring each tile is securely fixed, and all mat and cable areas are completely covered with the adhesive.



⚡ Important Notes

The maximum thermal resistance recommended between heater and the room is 0.15m² K/W (1.5 tog).

After the finished floor covering has been laid, perform the following tests (see page 7 for details):

- Insulation resistance test
- Heating cable resistance test
- Thermostat floor sensor resistance test

The findings **must be recorded on the Commissioning Record** enclosed in the mat box or your lifetime warranty will be invalidated.

MAT PLANNING EXAMPLES

Using one & two mats

Planning your mat

Please follow these instructions carefully. If you require assistance prior to or during your installation please call our helpline on 01473 559088.

When planning your system, ensure you cover as much of your free floor area as possible:

- never install your heating cables any less than 50mm apart.
- never cut your heating cable.
- never remove any pre-manufactured cable joints or end seal joints.

When installing two or more mats within the same area always ensure the cold tails (power cables) are returned to the thermostat power connection and are wired in parallel. Never wire your system in series, and always check your heating mat is thoroughly adhered to the floor before tiling.

Timber substrates should be prepared as required by tiling guide lines, for example bracing of a timber floor with WBP or tile backer board.

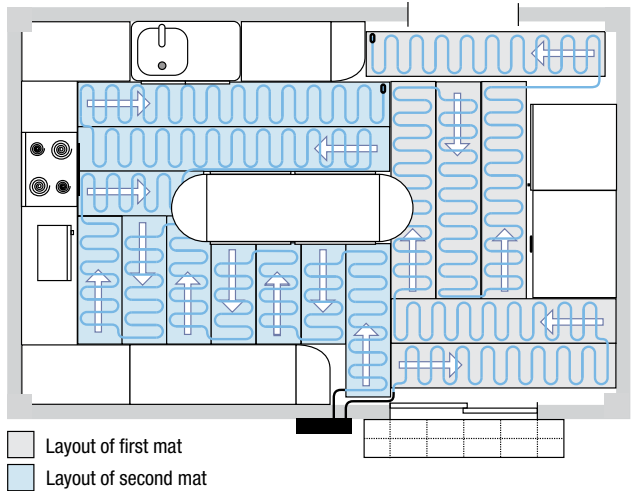


Don't switch on your heating mat system for a minimum of 7 days after tiling to allow tile adhesives and grouts to cure completely.

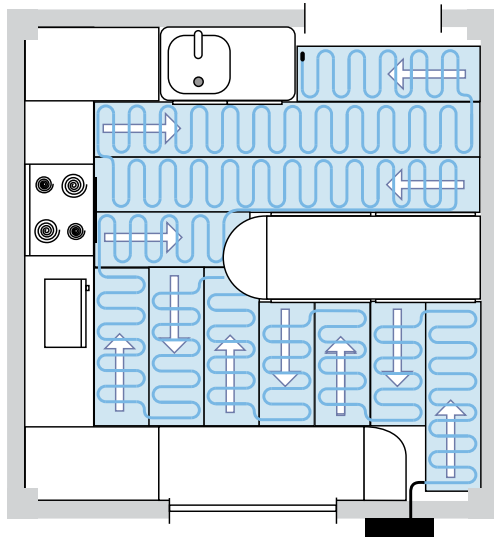


Don't place flush fitting furniture, including bean bags, rugs or mats on the floor where the heating mat is situated.

Plan using two mats



Plan using one mat



Sketch your **Floor Plan** using the grid on pages 10 & 11
Calculate your **Total Load** on page 9



TESTING & COMMISSIONING

The warranty validation procedure must be carried out to validate the warranty



Warranty Validation

To validate your lifetime warranty registration you must perform the insulation resistance test, the heating cable resistance test and the sensor resistance test three times during the installation process.

1. Before you lay the mat.
2. After you have laid your mat and before you cover your mat.
3. After your finished floor has been laid.

This information must then be recorded on your *Commissioning Record* (enclosed in the box), otherwise the warranty will be invalidated.

Heating Cable Resistance Test

This test is carried out to prove continuity of the heating element. A low resistance ohm meter should be used (i.e. Multimeter on ohm setting), connect your meter on to the brown and blue mains lead and confirm resistance value matches that quoted on your specification label on the cable cold lead joint.

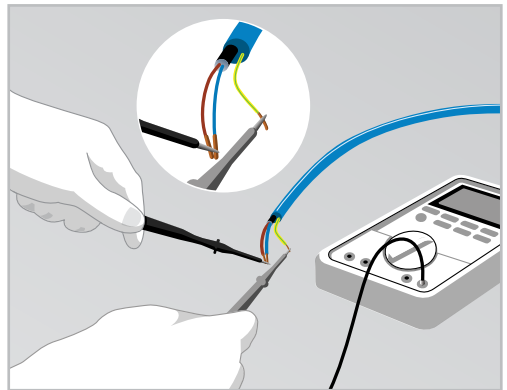
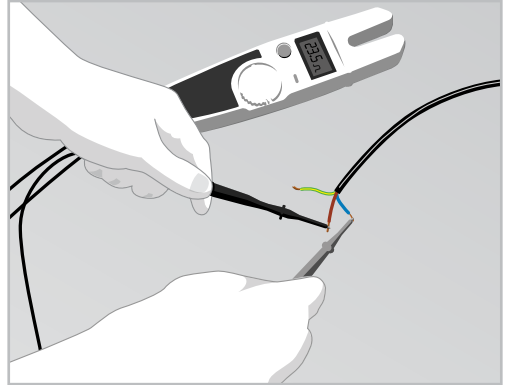
Floor Cable Resistance Test

See *Heating Cable Resistance Test* above and repeat with floor sensor cable.

Insulation Resistance Test

This test is performed to measure the insulation resistance between conductors and ensures the cable insulation is not damaged. A low resistance reading indicates a damaged cable and must be repaired or replaced.

The insulation resistance tester should be connected between the conductors (blue and brown cables) and the earth (yellow/green cable). The meter should record a high resistance value e.g. above 100 Meg ohms.



Important Note

The Commissioning Record must be placed adjacent to the distribution board and must contain the location of the installed underfloor heating.



PRODUCT SPECIFICATIONS

100 watt/150 watt/200 watt

100W

Quick Find	Part Code	Coverage	Length	Width	Wattage	Resistance +9/-4%
16232	HMMAT100-0.5	0.5m ²	1.0m	0.5m	50w	1058.00 Ω
16233	HMMAT100-1.0	1.00m ²	2.0m	0.5m	100w	529.00 Ω
16234	HMMAT100-1.5	1.50m ²	3.0m	0.5m	150w	352.67 Ω
16235	HMMAT100-2.0	2.00m ²	4.0m	0.5m	200w	264.50 Ω
16236	HMMAT100-2.5	2.50m ²	5.0m	0.5m	250w	211.60 Ω
16237	HMMAT100-3.0	3.00m ²	6.0m	0.5m	300w	176.33 Ω
16238	HMMAT100-3.5	3.50m ²	7.0m	0.5m	350w	151.14 Ω
16239	HMMAT100-4.0	4.00m ²	8.0m	0.5m	400w	132.25 Ω
16240	HMMAT100-5.0	5.00m ²	10.0m	0.5m	500w	105.80 Ω
16241	HMMAT100-6.0	6.00m ²	12.0m	0.5m	600w	88.17 Ω
16242	HMMAT100-7.0	7.00m ²	14.0m	0.5m	700w	75.57 Ω
16243	HMMAT100-8.0	8.00m ²	16.0m	0.5m	800w	66.13 Ω
16244	HMMAT100-9.0	9.00m ²	18.0m	0.5m	900w	58.78 Ω
16245	HMMAT100-10.0	10.00m ²	20.0m	0.5m	1000w	52.90 Ω
16246	HMMAT100-12.0	12.00m ²	24.0m	0.5m	1200w	44.08 Ω

150W

Quick Find	Part Code	Coverage	Length	Width	Wattage	Resistance +9/-4%
16252	HMMAT150-0.5	0.5m ²	1.0m	0.5m	75w	705.30 Ω
16253	HMMAT150-1.0	1.00m ²	2.0m	0.5m	150w	352.67 Ω
16254	HMMAT150-1.5	1.50m ²	3.0m	0.5m	225w	235.11 Ω
16255	HMMAT150-2.0	2.00m ²	4.0m	0.5m	300w	176.33 Ω
16256	HMMAT150-2.5	2.50m ²	5.0m	0.5m	375w	141.07 Ω
16257	HMMAT150-3.0	3.00m ²	6.0m	0.5m	450w	117.56 Ω
16258	HMMAT150-3.5	3.50m ²	7.0m	0.5m	525w	100.76 Ω
16259	HMMAT150-4.0	4.00m ²	8.0m	0.5m	600w	88.17 Ω
16260	HMMAT150-5.0	5.00m ²	10.0m	0.5m	750w	70.53 Ω
16261	HMMAT150-6.0	6.00m ²	12.0m	0.5m	900w	58.78 Ω
16262	HMMAT150-7.0	7.00m ²	14.0m	0.5m	1050w	50.38 Ω
16263	HMMAT150-8.0	8.00m ²	16.0m	0.5m	1200w	44.08 Ω
16264	HMMAT150-9.0	9.00m ²	18.0m	0.5m	1350w	39.19 Ω
16265	HMMAT150-10.0	10.00m ²	20.0m	0.5m	1500w	35.27 Ω
16266	HMMAT150-12.0	12.00m ²	24.0m	0.5m	1800w	29.39 Ω

PRODUCT SPECIFICATIONS

100 watt/150 watt/200 watt

200W

Quick Find	Part Code	Coverage	Length	Width	Wattage	Resistance +9/-4%
16267	HMMAT200-0.5	0.5m ²	1.0m	0.5m	100w	529.00 Ω
16268	HMMAT200-1.0	1.00m ²	2.0m	0.5m	200w	264.50 Ω
16269	HMMAT200-1.5	1.50m ²	3.0m	0.5m	300w	176.33 Ω
16270	HMMAT200-2.0	2.00m ²	4.0m	0.5m	400w	132.25 Ω
16271	HMMAT200-2.5	2.50m ²	5.0m	0.5m	500w	105.80 Ω
16272	HMMAT200-3.0	3.00m ²	6.0m	0.5m	600w	88.17 Ω
16273	HMMAT200-3.5	3.50m ²	7.0m	0.5m	700w	75.57 Ω
16274	HMMAT200-4.0	4.00m ²	8.0m	0.5m	800w	66.13 Ω
16275	HMMAT200-5.0	5.00m ²	10.0m	0.5m	1000w	52.90 Ω
16276	HMMAT200-6.0	6.00m ²	12.0m	0.5m	1200w	44.08 Ω
16277	HMMAT200-7.0	7.00m ²	14.0m	0.5m	1400w	37.79 Ω
16278	HMMAT200-8.0	8.00m ²	16.0m	0.5m	1600w	33.06 Ω
16279	HMMAT200-9.0	9.00m ²	18.0m	0.5m	1800w	29.39 Ω
16280	HMMAT200-10.0	10.00m ²	20.0m	0.5m	2000w	26.45 Ω
16281	HMMAT200-12.0	12.00m ²	24.0m	0.5m	2400w	22.04 Ω

CALCULATOR

Calculate your total load

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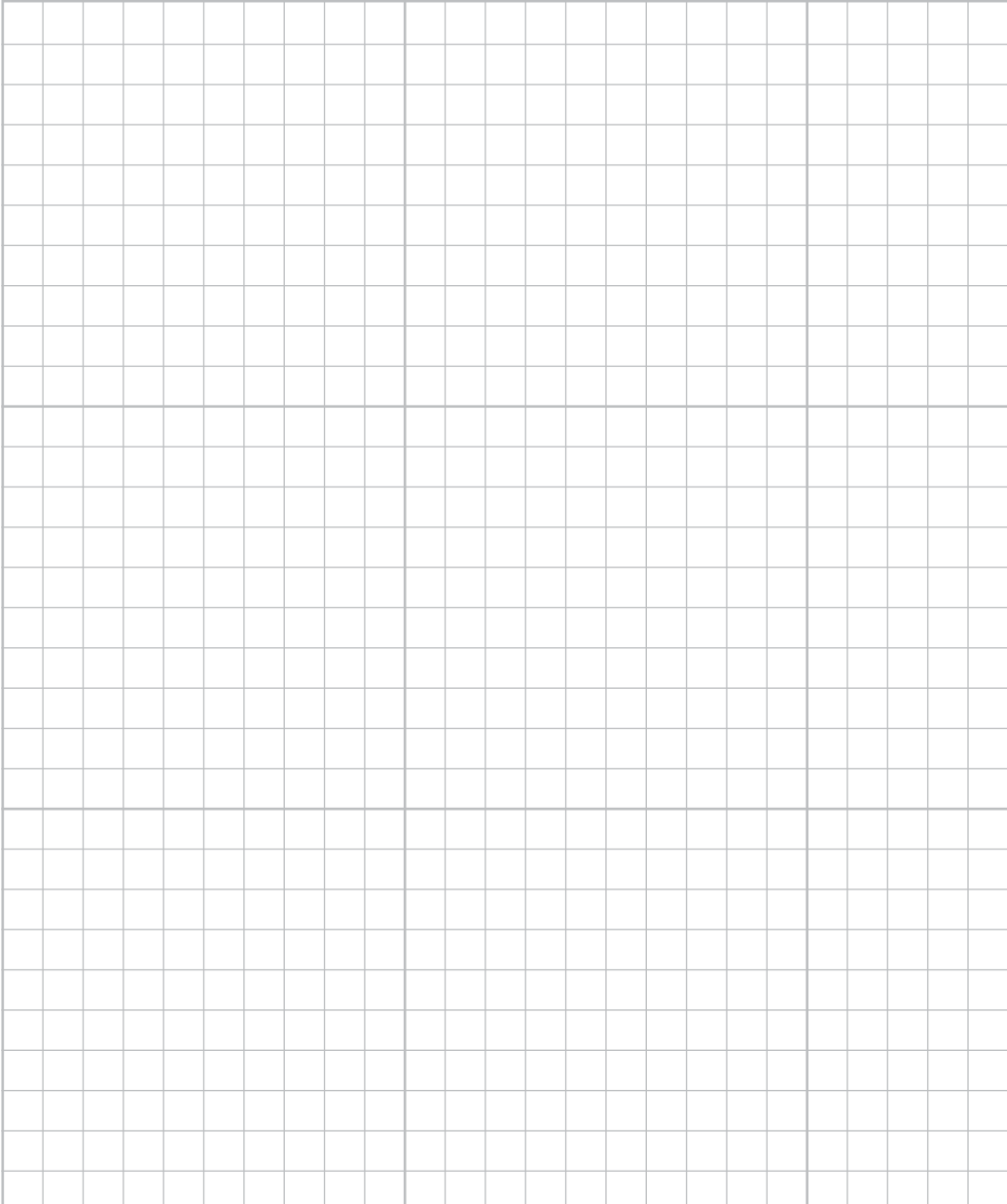
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Total Load

FLOOR PLAN SKETCH

Calculate your total heat area



FLOOR PLAN SKETCH

Calculate your total heat area

A large grid for drawing a floor plan sketch. The grid is composed of small squares, with a larger square grid pattern overlaid on it. The larger squares are approximately 10 units wide and 10 units high. The smaller squares are approximately 1 unit wide and 1 unit high. The grid is intended for sketching a floor plan.

Scale approx 1:18 (56mm = 1m)

When sketching your floor plan, please work around any permanent / fixed furniture items as these will block the heated areas

TROUBLESHOOTING

Refer to the table below and contact us with any questions on 01473 559088

Symptom	Probable Causes	Corrective Action
Floor does not heat	No power at controller	Check power supply
	RCD/MCB tripped	Check the circuit is not overloaded
	Thermostat not set correctly	Refer to thermostat instructions
	Cable not correctly connected with thermostat	Refer to thermostat instructions
	Floor temperature sensor not connected	Refer to thermostat instructions
	Faulty sensor/thermostat	Contact the Harmoni Helpdesk 01473 559088
	Heating element cut or damaged	Contact the Harmoni Helpdesk 01473 559088
Floor warming all the time	Thermostat not set correctly	Refer to thermostat instructions
	Floor temperature sensor not connected	Refer to thermostat instructions
Floor not getting warm enough	Thermostat not set correctly	Refer to thermostat instructions
	Floor sensor too close to heating element	Contact the Harmoni Helpdesk 01473 559088

Contact the Harmoni Helpdesk with any questions on 01473 559088

NOTES

Use this space to make notes for reference

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harmoni

