SUNG Wire Cable Installation Guide

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Product Information

The product in question is a heating mat or cable that can be installed under the flooring to provide warmth to the room. The user manual provides instructions for floor preparation and installation of the heating mat or cable. The product is suitable for installation on both concrete and wooden floors.

Floor Preparation

Prior to installation, the floor must be prepared to ensure correct installation can take place. For concrete floors, the floor should be fully sealed using a primer and all sharp objects should be removed to prevent damage to the cable. For wooden floors, only marine ply or thermal construction boards should be laid to ensure suitability for underfloor heating. Before laying any type of heating mat or cable all floors must be prepared to ensure correct installation can take place.

Concrete Floors
When installing directly onto a concrete floor, ensure the floor is fully sealed by using a primer and removing all sharp objects within the floor that could damage the cable during the laying process or once laid.

Wooden Floors
When laying on wooden flooring ensure that the wood is suitable for heating. Unheated-treated wood i.e. chipboard is not suitable for underfloor heating. Marine ply or thermal construction boards must be laid if this is the case.

Installation of Snug Thermal Boards

When installing snug thermal boards, the correct screw length should be used to prevent damage to the boards. Thermal construction boards can be laid onto an even, level floor in two ways. Firstly, it can be secured using a non-solvent based flexible tile adhesive. Apply the bed of flexible adhesive to the floor using a notched trowel. Snug Boards should be bedded thoroughly, ensuring that no voids remain beneath them. Lay the boards tightly together in a chequer plate fashion, making sure there are no gaps between the boards. Once the flexible adhesive has dried tape the joints with fibreglass reinforcing scrim tape.
Secondly the Snug boards can be secured with screws and washers, fixing should be 30cm centres. The boards are to be laid in a chequer plate fashion. 6mm boards should not be mechanically fixed.

It is important that there are no electrical cables or pipework under the floors that could be damaged by the screw

fixings. The correct screw length should be used.

12 Rules to Correctly Install Your Snug Mat and Cable

There are 12 rules that must be followed to ensure correct installation of the Snug Mat and Cable. These rules include protecting the heating element with an RCD, not cutting the heating element wire, not leaving excess heating mats rolled up under units or fixtures, not running connection leads underneath or across heating element wires, not crossing or overlapping heating wires, not switching the system on for at least 2 weeks after fitting the floor finish, not cutting or preparing tiles on top of the fitted heating system, and setting the controller to Air and floor mode to turn on the floor limiter.

1. Never cut the heating element wire.
2. The heating element must always be protected by an RCD.
3. Never leave excess heating mats rolled up under units or fixtures.
4. Never run the connection leads underneath or across the heating element wires.
5. Never cross or overlap the heating wires.
6. Do not switch the system on for at least 2 weeks after fitting the floor finish; you need to wait for the adhesive / latex / grout to dry naturally.
7. Do not cut or prepare tiles on top of the fitted heating system. When other work is going on in the room, avoid damage by keeping the heating covered until you are ready for the final floor finish to be put down.
8. The cables should never be spaced at intervals closer than 5cm or further than 10cm apart.
9. Only a qualified electrician should connect the heating element to the mains.
10. Install the floor sensor for your thermostat in its tube when fitting the system.
11. When using the Snug Mat FME under wood, do not place any heating beneath areas where a thermal block will be placed on the top floor covering. E.g. Furniture without air gaps or large beanbags could potentially cause the system to overheat.
12. Do not use staples to fix down the floor heating.

Finally, ensure that you set the controller to Air and floor mode to turn on the floor limiter.

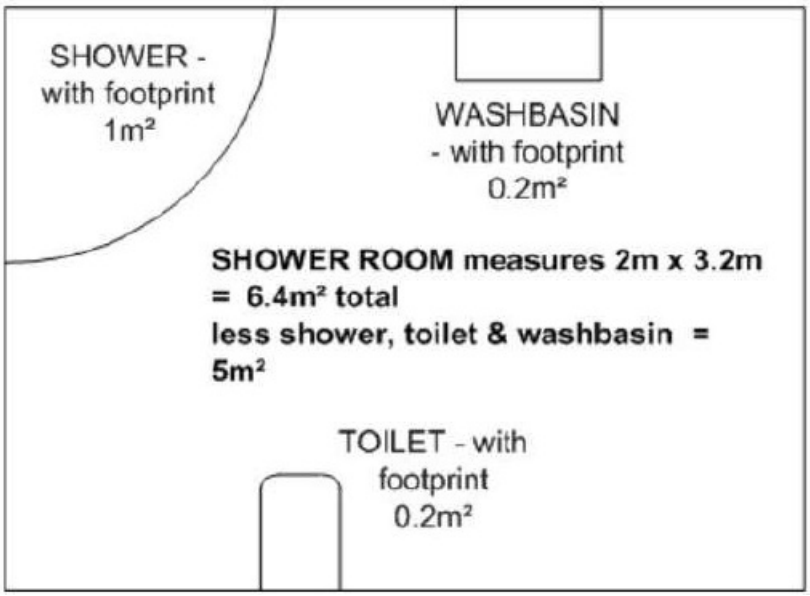
Snug Cable Lengths & Spacings

The product is available in different lengths and spacings. The table provides information on cable lengths, total watts, total amps, and total cable resistance for different part numbers.

PART NO:	CABLE LENGTH (M)	Floor Area (M²)				TOTAL WATTS	TOTAL AMPS	TOTAL CABLE RESISTANCE (OHMS)
		100w/m² (100 mm spacings)	120w/m² (82mm spacings)	160w/m² (62mm spacings)	200w/m² (50 mm spacings)			
10 Cable 10	10	1	0.83	0.62	0.5	100	0.44A	480-556Ω
10 Cable 20	20	2	1.67	1.25	1	200	0.9A	240-290Ω
10 Cable 30	30	3	2.5	1.87	1.5	300	1.30A	160-195Ω
10 Cable 40	40	4	3.34	2.5	2	400	1.7A	120-142Ω
10 Cable 60	60	6	5	3.75	3	600	2.6A	80-90Ω
10 Cable 80	80	8	6.67	5	4	800	3.5A	61-68Ω
10 Cable 100	100	10	8.34	6.25	5	1000	4.4A	49-55Ω
10 Cable 120	120	12	10	7.5	6	1200	5.2A	40-46Ω
10 Cable 150	150	15	12.5	9.37	7.5	1500	6.5A	32-37Ω

PART NO:	CABLE LENGTH (M)	Floor Area (M²)		TOTAL WATTS	TOTAL AMPS	TOTAL CABLE RESISTANCE (OHMS)
		160w/m² (106mm spacings)	200w/m² (85mm spacings)			
18 Cable 10	10	1.12	0.9	180	0.8A	309 – 267Ω
18 Cable 20	20	2.25	1.8	360	1.56A	154 – 133Ω
18 Cable 30	30	3.37	2.7	540	2.35A	103 – 89Ω
18 Cable 60	60	6.75	5.4	1080	4.70A	51 – 44Ω
18 Cable 90	90	10.12	8.1	1620	7.05A	34 – 29Ω
18 Cable 120	120	13.5	10.8	2160	9.40A	25 – 22Ω
18 Cable 140	140	15.75	12.6	2520	10.96A	22 – 19Ω
18 Cable 165	165	18.56	14.85	2970	12.92A	19 – 16Ω
18 Cable 195	195	21.94	17.55	3510	15.26A	16 – 13Ω

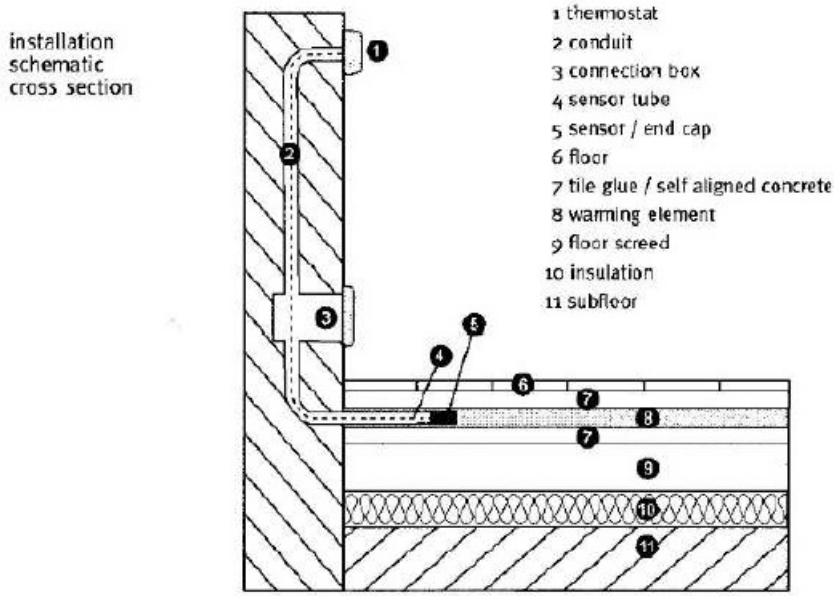
All the cable must be used on the floor and cannot be cut, crossed over or bunched together. The process on the following page is the same for both the 10W/m Snug loose cable and our 17W/m Snug loose cable. Work out the total free area where you will be applying the heat. If the cable is to be placed in between joists, please minus off the thickness of the joists to ensure an accurate calculation. Allow a minimum 50mm gap around the perimeter of the room.



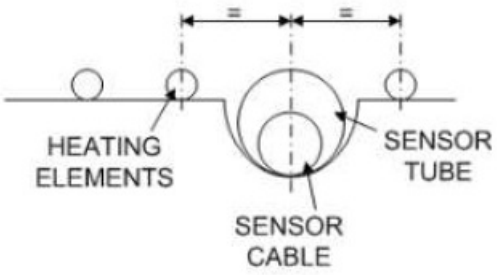
Please see above example:

- The free area is 5m² but now we must deduct the area occupied by the unheated gap around the perimeter – in this example – 0.5m².
- The Area to work with is 5 – 0.5 = 4.5m²
- To calculate the cable spacing multiply the area to work with by 1000 and divide by the cable length.
- This installation would suit Snug Cable part number 10CABLE60, a 60-metre cable rated at 10w/m and total loading of 600 watts.4.5 x 1000 / 60 = 75mm spacing (this spacing is referred to as the c-c distances)
- The spacing is important and the installed loading can be estimated from the table provided. Should your calculations arrive at less than 50mm for the 10Watt cable or 95mm for the 18Watt in screed cable then the cable size is too large.
- Action: select another cable size.

Planning Installation of Your Snug Cable



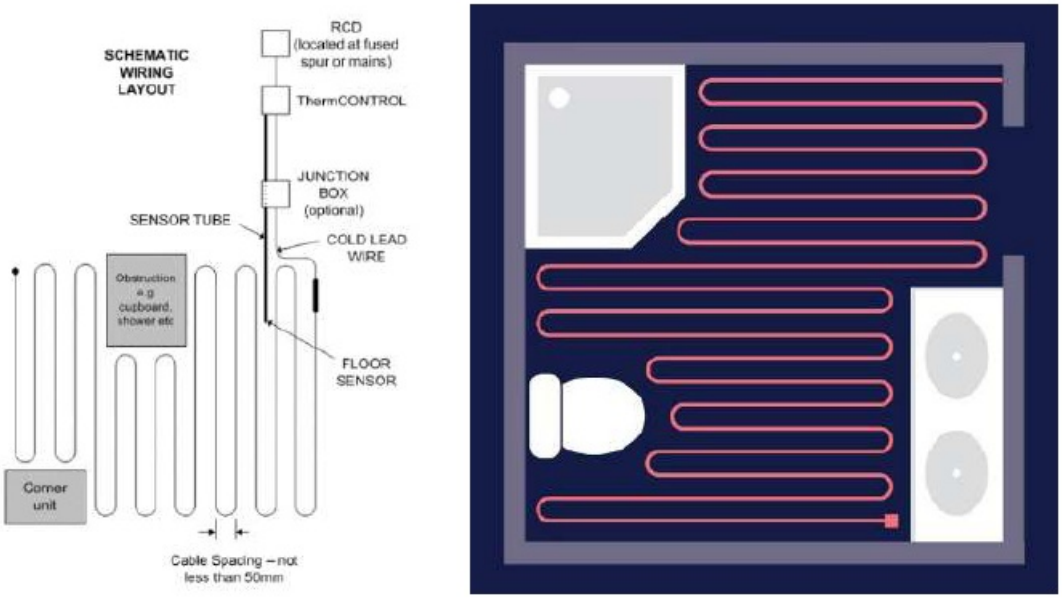
- Before laying your heating mat you must plan the installation.
- Draw a general view of the room and mark the area that will be covered with the heating elements. Avoid heating under units and sanitary ware as this can cause heat blockage and it is unnecessary to heat these areas anyway. Mark the location of the supply lead- the cold lead wire.
- Having decided on this position you can cut a groove in the floor to accommodate the protective floor sensor tube. The sensor must run centrally between two runs of the heating elements so it is important to note where the element will be positioned.



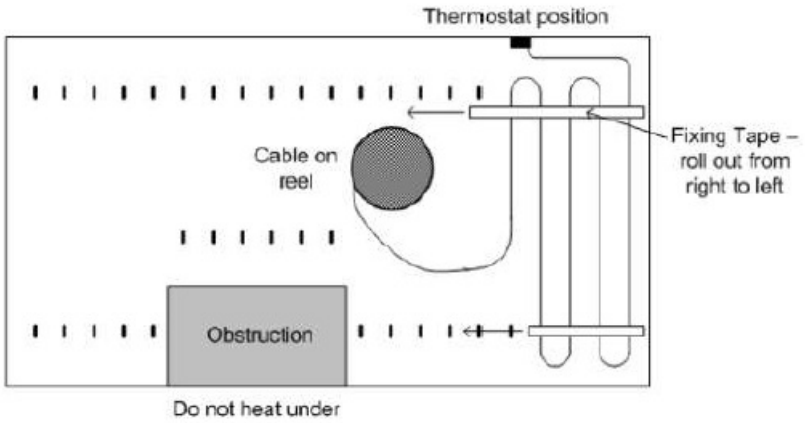
- Make sure the sensor tube has a gradual bend when it enters floor level, this will ensure the sensor cable can be easily inserted or withdrawn. The tube can be cut to length to suit, then seal the end of the tube with masking tape.
- Joints linking the cold tail to the heating mat must be located on the floor. A small groove might be necessary to

ensure the joint is the same height as the heater cable.

Snug Cable Layout & Fixings



- Begin by marking the floor with a felt tip marker pen at intervals equal to the calculated spacing. Always consider the position you have chosen for the thermostat and sensor tube.
- The cable can be fixed to the sub floor by using double-sided tape, ThermBlocks or by using our ThermFIX (metal fixing band).
- After marking out the spacing draw the cable from the reel and follow the chosen route so that is applied with uniform spacing and the cable lines up with the markings. If the cable is passing through joists, notch the joists and cap the cable to reduce the risk of damage.
- Initially secure the fixing tape in the corners of the room only, gradually working across the room and either rolling the fixing tape out to hold the cable in position or fix it in the slots provided on the fixing band.



Testing

- This is a very important stage of the installation and must be done correctly.
- There are 3 stages of testing to make the warranty valid. The Snug Cable should be tested prior to being laid once it has been laid and once the finished flooring has been laid.
- When testing the Snug Cable, you must carry out a continuity test as well as an insulation resistance test. To

carry out a continuity test set your meter to the lowest ohms reading (usually 200Ω or 2000Ω). Connect one of the test leads to any of the heater cable cold leads, and the other test lead to the one remaining cold lead.

- Obtain the reading and write it on the warranty card. You might find that the reading is not identical to the sticker on the heater mat. This is still ok as long as it is not too significant (within 10% – 15% is acceptable). You have now completed the continuity test.
- For your insulation resistance test switch the tester to 'mega ohms', put one of the test leads onto both heater cold leads and the other test lead onto the earth braid.
- The reading should be over 10 MΩ regardless of the length of the element.
- Record your reading on the warranty card, the insulation resistance test is now complete.

FAQ

- **How Safe are Snug Mats and Snug Cables?**
  Perfectly safe!
  All mats and cables have been tested in accordance to National and International Standards for safety. Cables and mats comply with rules regarding the EMC (Electro Magnetic Compatibility) and fulfil the ICNRIP guidelines and regulations with regards to EMF (Electro Magnetic Fields). Heating elements are produced with THREE layers of electrical insulation and an earth braid, aligned to perfect industry specification. Because of the dual wire construction of the heating element there is only one cold lead to connect and electromagnetic emissions are virtually eliminated making it safe for children to play on the heated floor.
- **Is it necessary for an expert to install Snug Mats and Snug Cables?**
  Installation is ideal for either the DIY enthusiast or approved installation contractor. The electrical supply must be protected by a correctly sized RCD (Residual Current Device), either at the mains or a fused spur. The system connects to your household wiring and it is recommended the final mains electrical connection is made by a qualified electrician.
- **What is the temperature of the wood / tile surface?**
  This is between 25-27°C in accordance with the BSI guidelines for comfort heating. BSI Code of Practice CP: 1018 – Electric Floor Warming Systems specifies a maximum floor surface temperature of 27°C on wood and laminate.
- **Can the Snug FME Mat be laid anywhere?**
  When using the Snug FME underneath woods, care should be taken not to place any heating beneath areas where a thermal block will be placed on the top floor covering. Furniture without air gaps beneath them or large beanbags prevent the heat from escaping and can cause the system to overheat. Set the controller to Air and floor mode to turn on the floor limiter. On carpets please make sure that no furniture with spikes are placed where the floor heating is.
- **Can I connect more than one mat to my controller?**
  Yes, you can combine more than one size of Snug Mat or more than one reel of Snug Cable to cover the total floor space as long as the system doesn't exceed the controller rating (please refer to your controller manual). Each Snug Mat and reel of Snug Cable comes with a 4m cold lead wire and with multiple circuits the leads must be connected in electrically in parallel.

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Documents / Resources

	SUNG Wire Cable [pdf] Installation Guide Wire Cable, Wire, Cable