Content

Installation Instructions-PowerBoard Ceiling Applications

1) Product description

The PowerBoard-S is a heated and insulated panel incorporating LaminaHeat's novel full surface carbon fiber heating film. The POWERBOARD-S was designed to be analogous to standard size plaster/gypsum board making it ideal for residential and commercial suspended ceiling applications. The POWERBOARD-S heating system provides a comfortable and low-cost sustainable radiant heating solution with top of class safety guarantees!

PowerBoard-S reaches operating temperature within 8 minutes and has a 92% into room heat transfer efficiency helping to create a warm comfortable environment within 10-20 minutes of being turned on. The PowerBoard-S heats primarily through far infrared radiative heating, creating a more comfortable and lasting warmth, quickly, safely, and efficiently.

2) IMPORTANT INFORMATION

READ THESE INSTRUCTIONS CAREFULLY AND RETAIN FOR FUTURE REFERENCE. Failure to observe these instructions will invalidate the warranty (See Appendix 3 for Warranty information).

- These instructions are also available on the LaminaHeat website www.laminaheat.com
- Wiring for this appliance must be connected in accordance with the relevant national electrical safety standards. LaminaHeat's PowerBoard-S is a Class I appliance and thus must have a grounding connection.
  When installed in public areas, the installation must comply with relevant local electrical standards. For certain public buildings such as schools and/or retirement homes the heaters must be installed in compliance with the specific guidelines/regulations pertaining to said class of building.
- The electrical supply to each heater should be provided through connection to a residual current operated breaker device with overcurrent protection (RCBO), fuse, or Ground Fault Circuit Interrupter (GFCI) electrically rated for the chosen appliance.
- ALWAYS Ensure that the main power is OFF before commencing an installation involving fixed wiring. If in doubt always consult a qualified electrician.
- Prior to installation ensure that the supply power cable is not coiled or damaged. If the supply cable is damaged, in order to avoid a hazard it must be replaced by LaminaHeat, a relevant service agent or similarly qualified agents for a proper replacement.
- DO NOT drill through the heater as this will cause irreparable damage to the heater and may also cause bodily harm!
- DO NOT connect a heater that is damaged in any shape or form to the electrical power source. If there is any doubt, please first consult with a LaminaHeat representative for confirmation.

- This appliance may be used by children aged 8 years and above as well as persons with reduced physical, sensory or mental capabilities and/or lack of experience and knowledge ONLY if they are given supervision and/or instruction concerning the safe use of the appliance and understand the hazards involved. Children under the age of 8 are not allowed use of the appliance. Additionally, Cleaning and user maintenance shall not be made by children without direct supervision.
- PowerBoard-S has internal safety thermal cut out sensors to provide fail safe design in case of overheating.
- It is advisable to at all times use the PowerBoard-S system with a temperature controller.
- DO NOT under any circumstances cover the PowerBoard-S with any thermally insulating material that would induce a rapid increase in temperature of the surface. If there is any question please contact a LaminaHeat representative or equivalent specialist for confirmation.
- The typical operating PowerBoard-S temperature is 55+/- 5degC
- The PowerBoard-S is designed for use with an AC voltage between 220-240volts 50 Hz AC
- If your supply voltage exceeds 240v DO NOT USE The PowerBoard-S and refer to your local agent or dealer for advice. Failure to adhere to this will void the warranty.
- UNDER NO CIRCUMSTANCES should one attempt to repair or adjust any electrical or mechanical functions on the PowerBoard-S. Doing so will void your warranty. Repairs must only be carried out by qualified LaminaHeat staff or an authorized LaminaHeat service provider.
- The PowerBoard-S is an electrical product and thus is not allowed to be disposed of in household waste. For proper disposal instructions please contact a LaminaHeat representative.
- A high percentage of The PowerBoard-S can be recycled. It should be treated as electrical waste and recycle in accordance with one's local regulations.
- Follow section 7) PowerBoard-S Installation for proper ceiling installation guidelines.
- Wiring must comply with BS7671 IET Wiring Regulations. In accordance with said guidelines a means of disconnection must be incorporated into the fixed wiring.
- - Children aged less than 3 years should be kept away from the PowerBoard-S unless constantly supervised.
- - Children aged 3 to 8 years shall only be allowed to switch on/off the PowerBoard-S provided that it has been placed and/or installed in its intended normal operating position and they are being supervised and/or given instruction concerning the use of the PowerBoard-S in a safe way so that they understand the hazards involved. Children aged from 3 to 8 years shall not be allowed to plug in, regulate and/or perform user maintenance on the PowerBoard-S.
- - CAUTION — Some parts of this product can become very hot and cause burns. Particular attention needs to be given when children and the vulnerable are present.
- - For mounting of the Powerboard-S, care should be given not to install in areas where the height of the ceiling is less than 1.8M.

3) Items required

- 38 mm drywall screws
- A Tape measure
- An Electric cordless screwdriver
- PowerBoard-S Plug and Play Cable Harness system
- Plaster/wall tape for contact edges.
- A Spirit Level
- A Pencil

4) Calculating the Heating Power Required

To achieve the desired heating effect at the installation site, the proper amount of PowerBoard-S need to be installed in order to satisfy the required heating load. To calculate the heating load please use the following general guidelines:

For Houses built in the following periods allow the corresponding power density required for heating the dwelling as a rule of thumb:-

Houses built:-	Before 1990	100 W/m2
	1990-2010	80 W/m2
	2011+	50 W/m2

If the actual U Value (thermal transmittance) or Kwh/m2*a value for the home is known then exact required power densities can be calculated. Please contact a LaminaHeat representative or qualified building engineer for assistance if said value is known.

5) PowerBoard-S Information

Laminaheat offer 2 types of PowerBoard-S IR panels PB180 and PB 250 see Appendix:1 Tech data sheets

Up to 1990 assume	Powerboard PB-S-250W
1990- 2010	Powerboard PB-S-250W
*Over 2010	Powerboard PB-S-180W and /or PB-S-250W

*The selection of Powerboard type or combination of types 180/250W depends on the furniture and living space layout.
Normally the default Powerboard would be PB-S-250W

6) Calculating The Required # of PowerBoard-S Panels

To calculate the # of panels:

- First, measure the ceiling area- (for flat ceilings measuring the floor also gives an accurate measurement).
- Second, multiply the width of the room by its length which will give you a square metre figure (m2) ie:- 4mts x 5.2mts = 20.8m2 area.
- Third, measure ceiling height ie = 2.5mts.
- Fourth, calculate the room volume = AREA x HEIGHT=20.8 x 2.5 =52m3
- Fifth, choose the power density by referring to the house age(or using the relevant U-Value to derive the relevant heating load requirement) ie: if the house was built in 2001 the power density may be = 30w/m3 (if ceiling height exceeds 3.5M) or 80w/m2 (if ceiling height is below 3.5M)
- Sixth, calculate the total power required = Room volume x power density
- = 52m3 x 35W/m3=1820watts or 20.8m2x80= 1,664Watts
- Lastly, calculate the amount of PowerBoard-S required.

Thus the required # of boards is = 1820/250=.8 or 1,664/250= & PowerBoard-S 250W. Always round up to ensure adequate heat load.

7) Positioning of The PowerBoard-S System

In order to achieve the optimal thermal performance, the following rules of thumb should be adhered to.

1. Have the proper heating load calculated: Either based on the floor area or the total volume depending on ceiling height. <3.5Meters use volume, >3.5 meters use area.
2. When positioning The PowerBoard-S heaters in a room or building the PowerBoard-S should be distributed as evenly as possible to insure the best possible heating effect.
3. The PowerBoard-S heaters should be placed in relation to the heat losses of the surrounding surfaces, i.e. more heat-emitting surface should be positioned near facades and windows. This is in part to cover the heat losses and in part, to heat the window surfaces, thereby counteracting possible draughts. However, radiative solutions should not be placed directly opposite windows since this would greatly reduce the effectiveness of the heating effect. If there are any questions on heater placement please contact a LaminaHeat representative for assistance.

The following instructions are given for the theoretical ideal placement of the PowerBoard-S. However, in reality there are often obstacles which prevent this ideal placement. For example there may be ceiling beams, lights, or other installations that are in the way. Additionally, one may decide to reduce costs by simplifying the distribution of the heating panels, saving money at the cost of a slightly reduced heating effect.

- Position the first panel near the outside wall, closest to the window and position the PowerBoard-S 600mm from the wall see FIG1
- Position subsequent panels 1.2meters apart(measuring from the centre) across the ceiling width.
- Space the PowerBoard-S heaters equally across the ceiling length.
- Special care should be taken to not install any boards facing an obstructing surface I.E a slanted wall or a suspended fixture, such as a chandelier, since this would impede the heating effect.

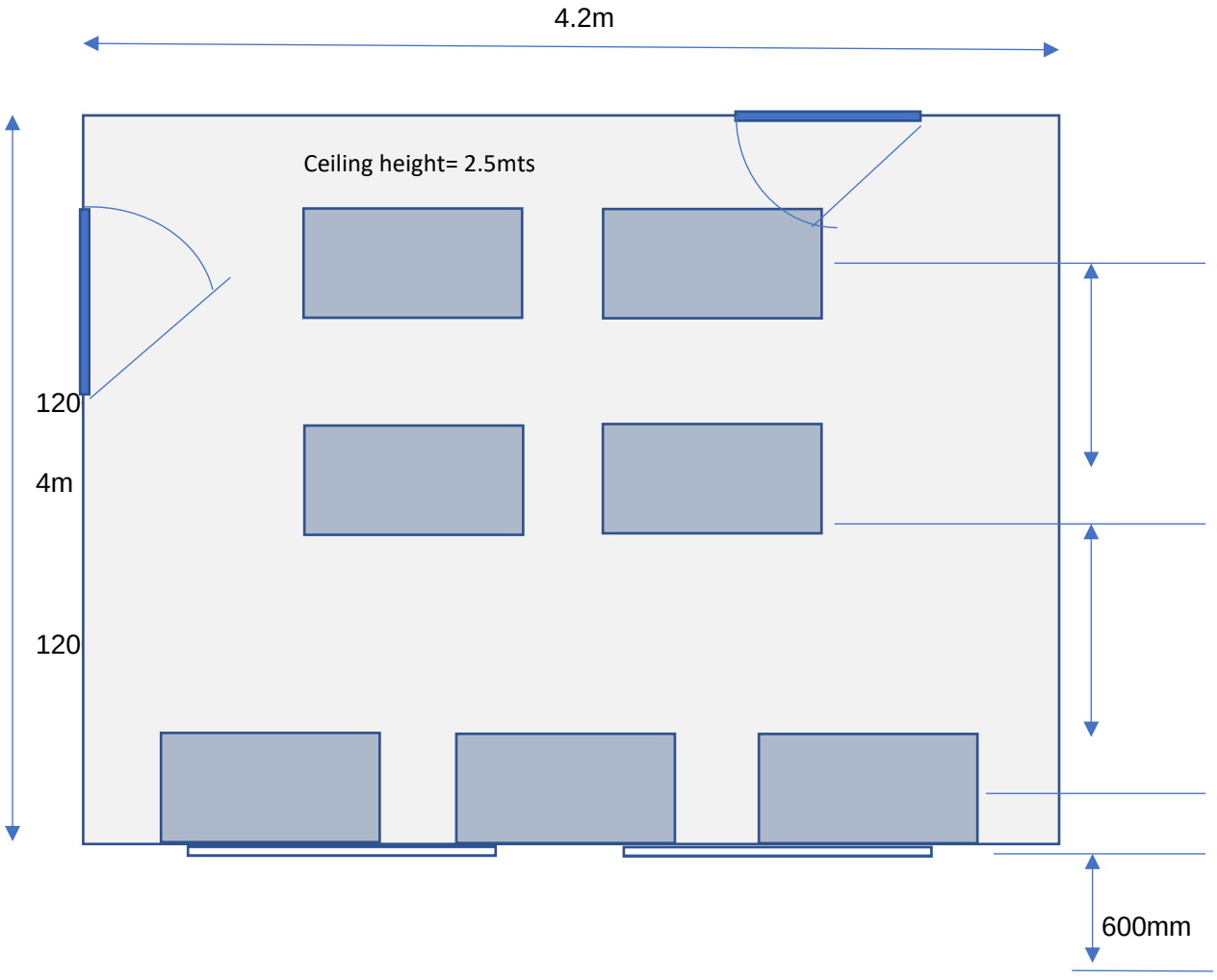
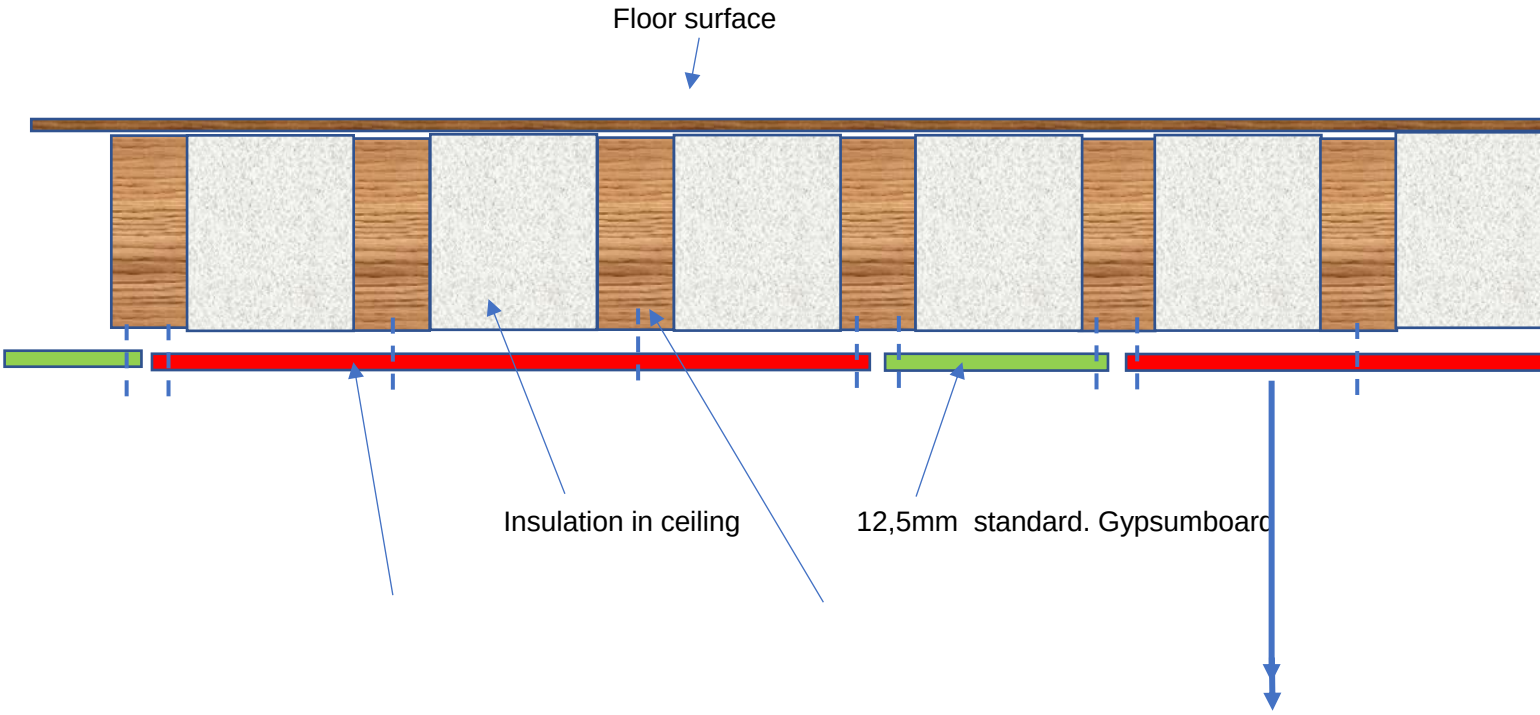


FIG1: TYPICAL CEILING LAYOUT

FIG 2. Typical Ceiling Construction



8) PowerBoard-S Installation Procedure

These installation instructions are not intended to replace or supersede the installation instructions of the Plasterboard Manufacturers.
Please refer to British Gypsum, Knauf, or China Gypsum installation guides for relevant plasterboard installation instructions. Care should be taken to ensure PowerBoard-S be installed on ceilings with a height of at least 1.8M.

- First, starting from the corner of the room nearest to the wall with a window, position the first PowerBoard-S 600 mm from the end of the wall.
- Second, position The PowerBoard-S with the long edge perpendicular to the Joists. Special care should be taken to make sure the extending power cable is facing upwards to the ceiling. See FIG2
- Third, the end of the PowerBoard-S should sit on the Joist's center line in order for the next (plaster board) to be installed adjacent to it.

- Fourth, 38mm plasterboard screws should be used to fix the board to the Joists using the predrilled holes in the PowerBoard-S. The fastening holes are spaced at 400mm distances to coincide with the Joist spacings
- Be careful not to drive the screws too deep otherwise you will create a larger than required depression in the board .When the screw head is flush with the board surface or slightly below stop tightening. See FIG 3

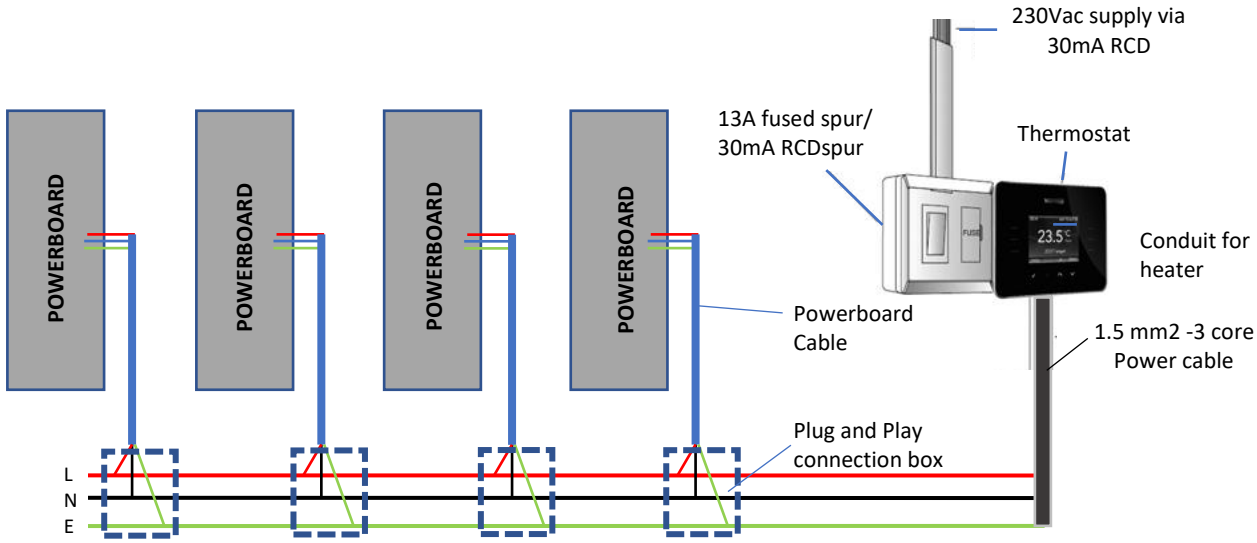
FIG 3:POWERBOARD S INSTALLATION

9) Making The Electrical Connection

PowerBoard-S have been installed to be essentially a plug and play solution taking out the majority of the required electrical work. However, the following should still be taken into consideration. With all electrical installations, work must be carried out by a qualified electrician. All work must conform to current IEE wiring regulation BS7671:2020. Failure to adhere to the above voids the warranty.

1. The installation must be protected by a dedicated 30mA RCD.
   For installations NOT exceeding 13A, a fused spur or 30mA RCD/spur should be used with contact separation in all poles.
2. For systems larger than 16A a suitable protection device must be used that meets the relevant electrical code requirements.
3. A Qualified electrician should make the final cable connection to the thermostat to comply with local safety regulations. Follow your local guidelines on this matter.

FIG 4: Electrical Connection of Powerboards

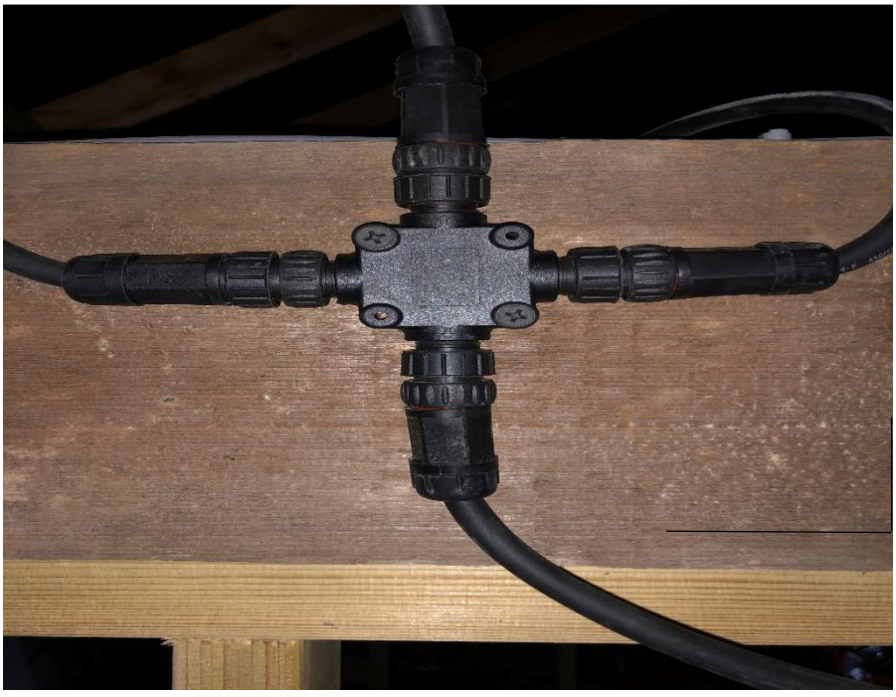


4. All PowerBoard-S must be connected in parallel to a wire harness which is connected to a thermostat for room temperature control see FIGs 4 /5.
5. The thermostat should be installed in the room which is being heated for optimal results.
6. The thermostat needs to support a current of 16A. For larger installations and higher loads extra contactors may be added to the thermostat i.e. OJ Power module ASG see: https://ojelectronics.com/floorheating/products/asg/
7. It is recommended to install The PowerBoard-S unit on either a room by room basis or a floor by floor basis which each system having it's own MCB/RCBO in order to prevent against an issue in one zone affecting the entire heating system.
8. It is important to make sure that each panel has an insulation resistance test carried out between L-E & N-E before being plastered over in order to assess operability and prevent the installation of dysfunctional units. This test can be carried out by certified electrician on site while the electrician is testing the circuit at the thermostat. Only a dead test needs to be carried out to make sure the wiring harness and panels connected have the resistance standards of a new installation of >500Mohms. If this value is not achieved or if other irregularities are identified then it is recommended to assess the PowerBoard-S's individually.
9. Lastly, the PowerBoard-S system can also be controlled with Smart Heating systems. For recommendations or help setting these up please contact your LaminaHeat representative.

10) Operating The PowerBoard-S System

1. Once the PowerBoard-S system has been connected to a relevant thermostat or other control system the power may be switched on.
2. Set the thermostat to a temperature that produces an acceptable environmental comfort level. Note: with radiant heating solutions often the ideal room temperature is 1-2 degrees lower than what one programs for traditional floor heating or A/C heating solutions.
3. Once turned on the PowerBoard-S system will quickly reach the optimum operating temp of 50-60deg C and create a warm and comfortable environment within 10-20 minutes of being turned on.
4. Once the system has been connected and tested, switching on the heaters at a high temperature can cause damage to the Plaster if it hasn't been dried correctly. It is suggested to switch on the heat gradually to prevent any cosmetic damage and to confirm that the plaster/topcoat has dried completely. It is recommended to confirm adequate drying has occurred with the project manager/relevant contractor.

FIG 5 Plug and Play installation



APPENDIX 1: POWERBOARD PRODUCT PICTURES

FIG 6. FRONT SIDE of POWERBOARD

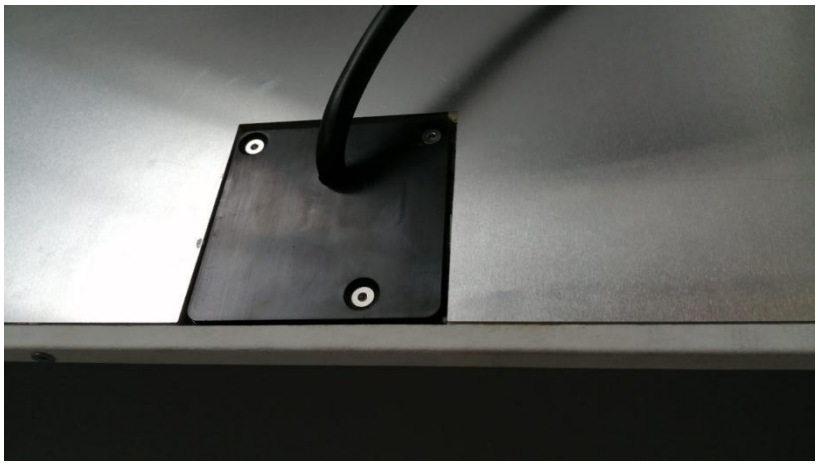


FIG 7. BACKSIDE OF POWERBOARD

APPENDIX 2: TECHNICAL DATA

POWERBOARD-S (Steel Version With Paper Coating)

Product Specification

LaminaHeat Product ID		PB-S-180W	PB-S-250W
Wattage /m²	**W/m²**	**351 +/- 10%**	**488+/- 10%**
Wattage / Board	**W**	**180 +/- 10%**	**250 +/- 10%**
Total Length	mm	1200	1200
Total Width	mm	600	600
Heating Width	mm	470	470
Amps per board	A	0,75 +/- 10%	1,04 +/- 10%
AC Voltage	V	240	240
Resistance per Board	Ω	320	230
Weight (Board)	kg	6,6	6,6
Thickness	mm	12,5	12,5
Max. No. of panels per 16A supply (one zone)	*Pieces*	*17*	*12*

APPENDIX 3: GENERAL WARRENTY

LaminaHeat® (“Manufacturer”) warrants that its PowerBoard (“Product”) is free from defects in manufacturing; materials and workmanship and will perform under normal use for 10 years from when product is installed through a certified LaminaHeat® installer (“Limited Warranty Period”). This limited warranty is extended to the original owner of the property where the Product is installed (the “Owner”) and does not cover damage to the floor, floor covering, or anyplace where

The PowerBoards are not installed. This Limited 10 year Warranty is further subject to the exclusions
and limitations provided below.
To obtain warranty service, follow the instructions in step 4 Below：
Upon receipt of the defective product, paperwork, receipt and resistance measures, manufacturer
will examine and test the Product. If it is determined that the product was properly installed and failed during normal use as a result of a manufacturing, defect, the manufacturer will remedy the defect or failure without charge to the owner, provided manufacturer receives notice of the warranty claim in the manner provided below within the limited warranty period.
* The remedy for any such defect is Limited to the repair, replacement, or refund of the purchase price of the product.
* This limited warranty does not apply to after market accessories that are used with any LaminaHeat product.
* If in the first ten years since installation the PowerBoard product encounters issues which lead to
their needing to be replaced, then LaminaHeat will help compensate for the cost of reinstalling a new panel, the amount to which will be determined on a case by case basis.
* After this ten year period, manufacturer assumes no liability for the cost of any covering materials,
ceiling repairs or the cost to remove or replace them.
* Important: For this warranty to be valid, this product must be connected to the electrical source and properly grounded according to the instructions provided in the installation manual and relevant electrical code.

Owner Name：

Owner Contact Info：

Contact the Manufacturer’s Representative at the number listed below or by mail at the address listed below.
Complete the claim form on page 1 and mail it along with the defective Product, Product Label showing serial number, the original dated sales receipt and a copy of the resistance measures recorded during installation to the Manufacturer’s Representative by mail return receipt requested within the Limited Warranty Period.
This warranty shall not be valid under the following conditions: 1) The preparation, conditions and
installation of the Product is not in accordance with industry standards, Manufacturer’s installation
guidelines, and UK Code guidelines, 2) the installation is not conducted as per Manufacturer’s written
instructions; 3) vertical cracking, settling or displacement occurs; 4) improper installation materials or
methods are used, 5) the Product’s heating elements are cut, punctured or tampered with outside
regular norms(see product installation guideline for reference on any puncturing of the panels and
how repairs should be carried out).
THIS LIMITED 10 YEAR WARRANTY IS FURTHER MADE SUBJECT TO THE FOLLOWING CONDITIONS AND EXCLUSIONS, PLEASE READ THE FOLLOWING CAREFULLY:
1. Required Installation. To be covered by this Limited 10 Year Warranty, the Product must be installed
indoors following the exact Manufacturer’s installation instructions for the Product.
2. Limitation on Causes of Defects Covered Under Warranty. This limited warranty covers only defects
in manufacturing materials or workmanship and does not cover defects, malfunctions or failures resulting from any other cause including, without limitation: (i) improper or inadequate installation;
(ii) damage caused by trades people or visitors to the job site or by cutting or puncturing or other

post installation damage to the heating elements; (iii) defects caused by fire, flood, tornado, hurricane, earthquake, acts of God(force majeure), differential settlement, insect infestation, extraordinary environmental conditions, riot or other civil insurrections, or acts of war or conflict; (iii)
defects caused by abusive conditions or accidents, such as but not limited to cutting, severe impact
or abnormal vibrations; (iv) installation or use of the Product in any manner not recommended by the
Manufacturer; and, (v) defects caused by improper or inadequate maintenance, cleaning, use or care
of any surface material installed over the Product.
3. Controlling Document. This warranty is the sole and exclusive description of warranties applicable
to the Product. Any written or oral representation, warranties or guarantees concerning the Product
which are inconsistent with or beyond the scope of the description contained herein are superseded
by this document and deemed inapplicable or void.
4. Required Procedures to Submit a Warranty Claim.
In order to obtain performance of any warranty obligation, please do the following :
The phone number and address to contact the Manufacturer’s Representative for these purposes is
as follows: