

Suspended Floor Systems



System shown: Overlay™ Lite 15 - suspended floor application

Underfloor heating for suspended floors

For suspended timber and composite joists, typically found in new build and renovation projects - Polypipe offers a range of unique pre-insulated and pre-configured systems, as well as more traditional suspended floor under floor heating options. Giving you a solution for every type of suspended floor installation.

Double Heat Spreader Plates (DHSP)

Offering a simple installation system for traditional joists and spacings, double heat spreader plates can also be used in 'sprung' flooring systems such as sports halls.

This system uses aluminium double heat spreader plates to transmit the heat evenly across the finished floor surface.

✔ Fit From Above with Overlay™ Lite 15 - Suspended floor application

For enhanced performance, especially over larger floor areas, use with our new Overlay™ Lite 15 panels for an integrated insulated solution.

✔ Optimum performance system

Suspended Floor Systems

Fit From Below (FFB) Double Heat Spreader Plate

Suitable for use with traditional or composite joists, this system offers the ability to fit from below, even if the floor above has already been installed. Perfect for cellars or where upper floor coverings are already in place.

✔ Modular Heating Panels

For the ultimate quick and easy installation solution, use our pre-configured, insulated panels that include all the system components already integrated. The panels are supplied in sized panels which are simply fitted and connected together on site.

All systems

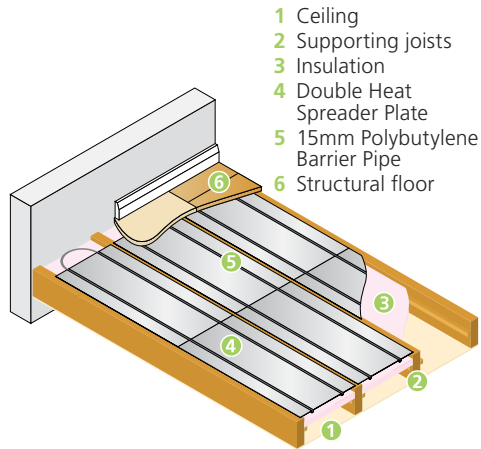
For use with our 15mm pipe systems. All suspended floor systems are fitted within the joists so do not add any build height to the floor.

Design and Materials

	Double Heat Spreader Plate 50m ² at 225mm pipe centres	Fit From Below (FFB) Double Heat Spreader Plate	Overlay™ Lite 15 - Suspended floor application	Modular Heating Panels (MHP)
Key design information				
Typical heat output at 60°C mean water temperature (50°C mean water temperature for MHP only)	Approx. 52W/m ²	Approx. 52W/m ²	Approx. 65W/m ²	Approx. 76W/m ²
Recommended design flow temperature	60°C	60°C	50°C	50°C
Maximum circuit length	80m (15mm pipe)	80m (15mm pipe)	80m (15mm pipe)	N/A
Maximum coverage per circuit	17m ² at 225mm average pipe spacing (15mm pipe)	17m ² at 225mm average pipe spacing (15mm pipe)	20m ² at 200mm pipe spacing	20m ² approx coverage required 70 W/m ² : 80% of floor 50 W/m ² : 60% of floor
Materials required				
Pipe	4.5m ²	4.5m ²	4.5m ²	See product information table on page 69
Heat Spreader Plates	2 plates/m ²	2 plates/m ²	N/A	
Overlay™ Lite 15 Floor Panels	N/A	N/A	1 panel/m ²	
End Returns	N/A	N/A	0.5/m ²	
Aluminium Tape	N/A	N/A	1 roll per 10m ²	
Conduit Pipe usage	2m/circuit	N/A	N/A	

Installation - fitting from above

Double Heat Spreader Plates



Step 1: Fitting insulation

Before installing a suspended floor system it is necessary to insulate between the joists. Polypipe recommend that a rigid polystyrene or foam insulation material is used.

Step 2: Fitting the spreader plates

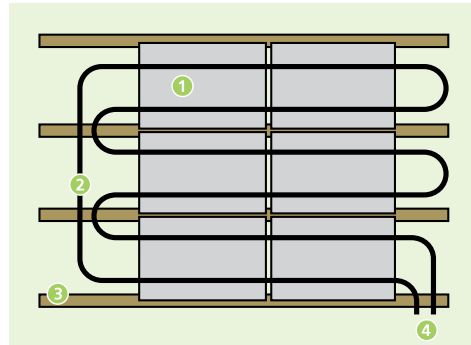
The insulation layer should fit tightly between the joists directly below the spreader plate to ensure that the spreader plate is supported and therefore remains in contact with the underside of timber floor covering. This is necessary to eliminate any air gaps or draughts between the underfloor heating system and the floor. Any other services, such as drainage or electrical wiring, should be installed below the insulation layer.

The floor joists then need to be notched or drilled in accordance with Building Regulations. This facilitates the passage of the pipe between the joist gap to allow the entry and exit of the pipe to and from the room.

The spreader plates can then be fixed evenly across the joists and in accordance with your installation design.

Step 3: Laying the pipe

Once the spreader plates have been fixed in place the pipe can be fitted in to the grooves in a meander pattern. It is recommended that the flow pipe from the manifold be taken to the furthest point of the room when installing the circuit as this ensures that sufficient heat is provided around the perimeters of the room.



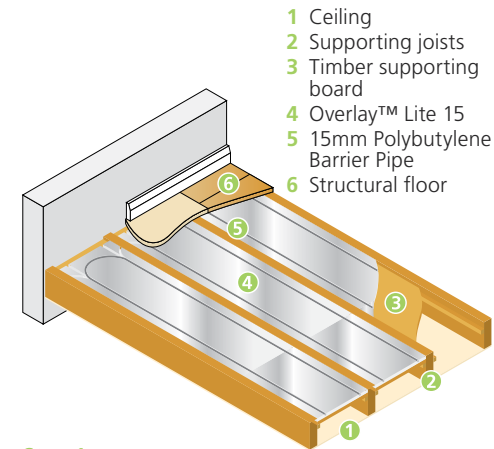
- 1 Double Heat Spreader Plate
- 2 Barrier pipe
- 3 Joists notched to accept pipe returns
- 4 Return/flow

Care should be taken when installing the pipe to ensure the spreader plates are not pushed downwards and away from the underside of the timber finished floor covering as this could lead to potential under performance of the system.

Step 4: Testing

Once the pipe circuits have been installed and connected to the manifold the system should be pressure tested to 6 bar for a minimum of 1 hour before the timber floor covering is laid. It is recommended that the system remains under pressure whilst the flooring is laid.

Overlay™ Lite 15 - Suspended floor application



Step 1:

Fix the battens as used to support the timber board so as to ensure that when the 22mm Overlay™ Lite panel is installed surface contact with the underside of the floorboards is achieved.



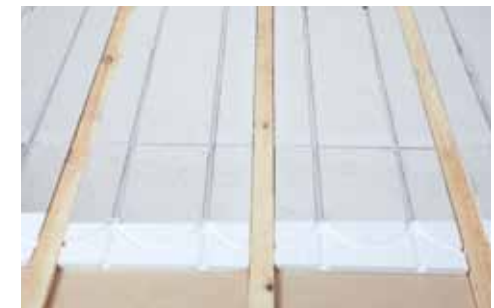
Step 2:

Measure in between joists and then cut the panels to size before laying them on top of the prefixed battens.



Step 3:

Cut the Overlay™ Lite 15 panels to size - the preformed line on the back of the panel indicates the centre line i.e. 400mm.



Step 4:

Lay the panels on to the timber board leaving a gap at one end so as to facilitate notching the joists. Please follow the industry guidelines for notching requirements (0.07 to 0.25 of the span).

NOTE:

No End returns are required in Overlay™ Lite 15 suspended floor system.



Step 5:

Working from a temporary board screw the panels to the timber board so as to prevent any movement.



Step 6:

Lay the pipe in to the grooves of the panels taking care to form a smooth bend at one end.



Step 7:

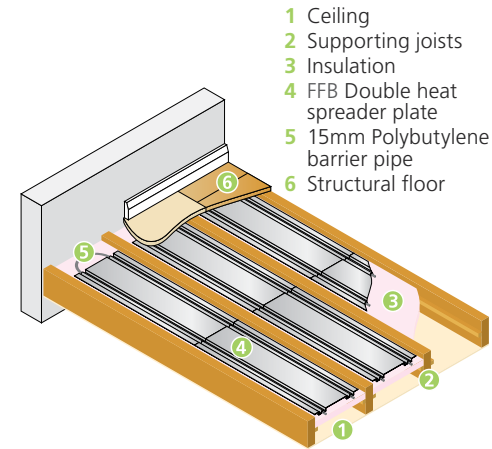
Once the circuit has been laid the pipes can be taken out of the room using the notches in the joists as provided.

Step 8: Testing

Once the pipe circuits have been installed and connected to the manifold the system should be pressure tested to 6 bar for a minimum of 1 hour before the timber floor covering is laid. It is recommended that the system remains under pressure whilst the flooring is laid.

Installation - fitting from below

Fit From Below - Double Heat Spreader Plates



Step 2:

Once the spreader plates have been fixed in place the pipe can be fitted in to the grooves in a serpentine pattern. It is recommended that the flow pipe from the manifold be taken to the furthest point of the room when installing the circuit as this



Step 1: Fitting the spreader plates

Fix the fit from below spreader plates to the underside of the timber decking.

The floor joists can then be drilled in accordance with Building Regulations so as to facilitate the passage of the pipes between the joist gaps and to allow the entry and exit of the pipes to and from the room.



Step 3: Fitting the insulation

Once the pipe has been fitted, pre-cut sections of insulation panel can be pushed up from below so as to minimise any downward heat losses.



Step 4: Testing

Once the pipe circuits have been installed and connected to the manifold, the system should be pressure tested to 6 bar for a minimum of 1 hour before the timber floor covering is laid. It is recommended that the system remains under pressure whilst the flooring is laid.

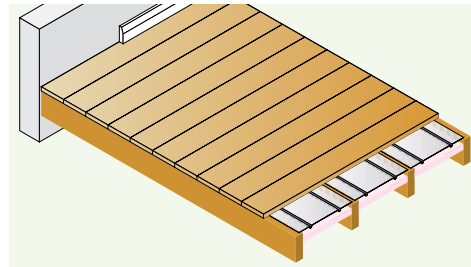
Finishing

Step 5: Laying a timber floor covering

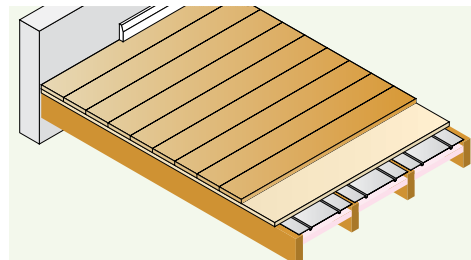
It is strongly recommended that the timber floor covering is laid immediately after the underfloor heating pipes have been installed and pressure tested to eliminate any risk of damage to the system by other trades.

Either traditional tongue and groove floorboards or 18mm/22mm chipboard can be fitted directly on top of the spreader plates. These can be fixed directly through the spreader plate down in to the joists below. It is important to indicate the position of pipework in areas where the additional fixing of items such as carpet grip rod or door threshold strips may be fitted at a future date.

Polypipe does not recommend the application of two layers of timber floor covering as this will severely reduce the heat output of the underfloor heating system.



Incorrect application



If a manufactured timber floor is to be used then it is recommended that this be of a suitable load bearing quality. (Please request advice from the specialist flooring supplier).

Batten systems (DHSP only)

Used for spans greater than 450mm or less than 350mm. Where it is not possible or desirable to drill or notch the floor joists, and the floor height can be raised, spreader plates can be used.

Step 1: Fitting insulation with a batten system

To prevent downward heat transmission, insulate between the voids in the joists with appropriate foam insulation.

Step 2: Fitting the battens

Lay 75mm x 25mm battens across the existing joists at 450mm centres. Trim the ends of the batten back to the last joist at alternative ends.

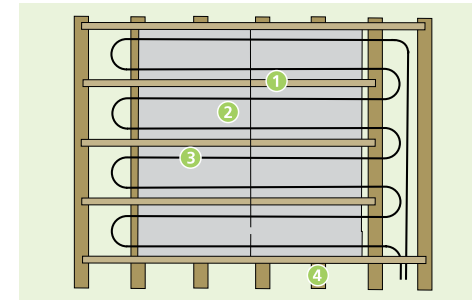
Step 3: Fitting the spreader plates

Lay spreader plates between the battens and pin in position.



Step 4: Laying the pipe

Lay pipe into the spreader plates in accordance with the installation instructions on page 62, ensuring you follow the testing procedure.



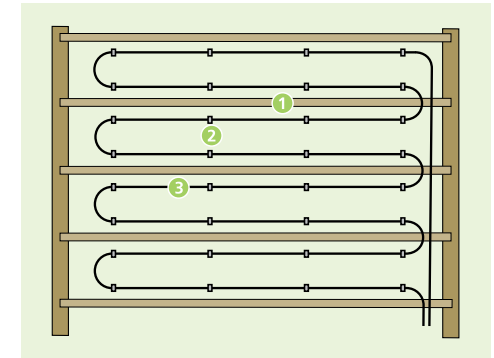
- 1 75mm x 25mm battens at 450mm centres
- 2 Double heat spreader plate
- 3 Barrier pipe
- 4 Joists at spacing greater than 450mm or less than 350mm

Pipe only systems

The use of heat spreader plates is recommended, as they assist the response time and heat dispersion. However, in some circumstances, simply laying pipe in an air void between foil faced reflective insulation and the underside of the floorboard will be adequate.

The space between the top of the insulation and the underside of the floor deck should be kept to a minimum (20mm) and care should be taken to ensure that the insulation is sealed at the edges and ends.

Pipe only applications are suitable in areas where the heating response is less important, e.g. bedrooms, and is not recommended in living spaces or over unheated spaces, e.g. rooms above garages.



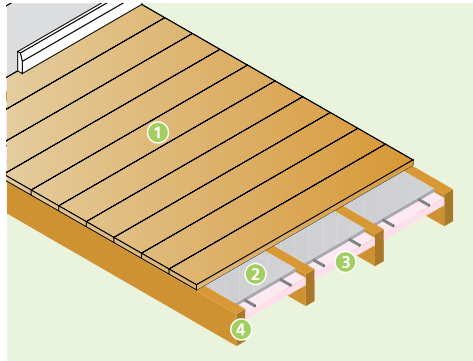
- 1 Joists at spacing greater than 450mm or less than 350mm
- 2 Pipe clip
- 3 Barrier pipe

Enhancing pipe only systems

The effectiveness of pipe only systems can be enhanced by laying a weak (1:6) dry mix screed approximately 25mm thick between the joists.

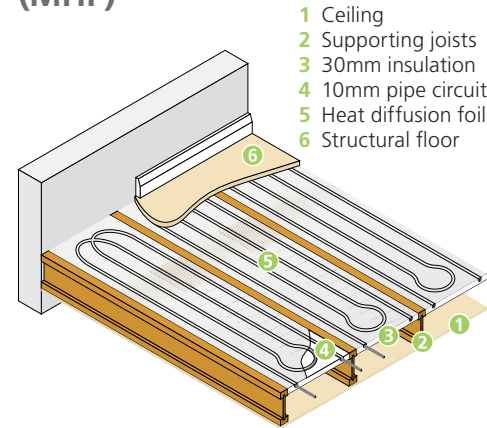
In order to apply this, extra support may be required below the insulation. Although pipe only systems are designed to operate at 60°C flow temperature, the flow temperature may be reduced in these circumstances.

Before this system is considered it is suggested you consult a structural engineer to confirm its suitability.



- 1 Tongue and groove flooring
- 2 25mm thick dry mix screed
- 3 Insulation
- 4 Joists

**Installation -
Modular Heating Panels
(MHP)**



As the name suggests, a Modular Heating Panel (MHP) is a pre-configured solution, where all of the floor heating system components are supplied fitted within complete panels, which are simply fitted and connected together on site. Thanks to MHP it is now possible to fit panels quickly into the existing joist voids and connect them to a standard heat source. MHP works with both traditional and composite joists and can be fitted from above or below.

Designing your layout

Designing the ideal room layout for an MHP installation and selecting the required products couldn't be simpler. Follow the steps below or use the online product selector tool at www.polypipe.com/plumbing-heating

Step 1: Select panel width

The spacing of joists and the available gap will determine which MHP panel width will be most suitable for each project. Select the MHP width nearest to the gap width, ensuring that this does not encroach on the space for other services. The 490mm width panel will normally be fitted in the wider joist spacing used by composite joists and 'I' beams.

Step 2: Select panel length

The span of the joists in each room will determine which MHP panel length should be selected. The span is defined as the free space from wall to wall that needs to remain uninterrupted by trimmers or other services. Ideally, install MHP panels prior to other services whenever possible.

Use the table below as a quick guide to suitable arrangements of MHP panels leaving a 200mm gap for pipe connections.

Arrangement	Span
1 x 1.3m Panel	1.4m to 2.2m
1 x 2.0m Panel	2.2m to 2.8m
2 x 1.3m Panels	2.8m to 3.5m
1 x 1.3m Panel + 1 x 2.0m Panel	3.5m to 4.2m
2 x 2.0m Panels	4.2m to 5.0m

Modular Heating Panels are an exciting new product concept from Polypipe that enable quick and simple installation of underfloor heating into suspended floors in both new build and renovation projects.

Installing underfloor heating into upper floors can be challenging, even in new build projects.

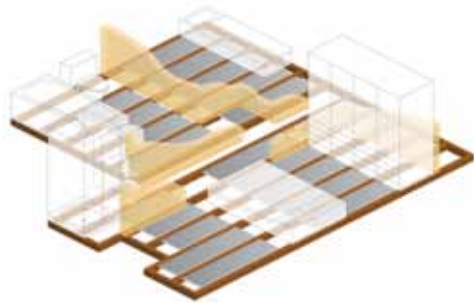
Most conventional underfloor heating systems comprise a single section of pipe, housed or placed within another part of the system structure, such as floor panels, which are cut to size on site.

This works fine as there are no interruptions to the laying of the pipe. In suspended floor installations however, the pipe, plates and insulation have to fit within an obvious obstruction: the supporting floor joists. It is working around the joists, and avoiding other services, that has often led to underfloor heating being avoided in upper floors.

Step 3: Planning your room arrangement

Calculating the amount of floor area to be covered by MHP will be based on the required heat output (see our heat output table on page 70) and will take into account areas of the floor that do not require heating, such as under built-in wardrobes, baths and shower cubicles.

The diagram below illustrates a typical layout that might be considered.



Pre-installation requirements

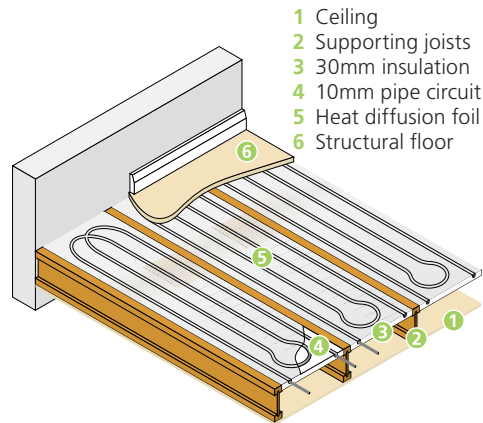
Planning

Before installing MHP panels ensure you have planned out the positioning of the required panels avoiding all other services such as electrics, gas and water supply.

You will not need to do any specific preparation for the installation in a new build property as there will be no ceilings or floors in place.

For existing room refurbishment, you will need to take up your floor if fitting from above or take down the ceiling if fitting from below. Ensure that the area where the MHP panels are to be positioned is free from any debris before commencing installation.

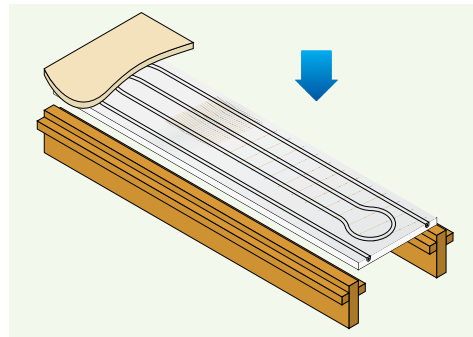
Installation



- 1 Ceiling
- 2 Supporting joists
- 3 30mm insulation
- 4 10mm pipe circuit
- 5 Heat diffusion foil
- 6 Structural floor

Installation from above

To install MHP panels from above simply fit support bearers to each side of the joists. These support bearers should be positioned 30mm from the top of the joist and the MHP panel is then simply laid on to these supports.



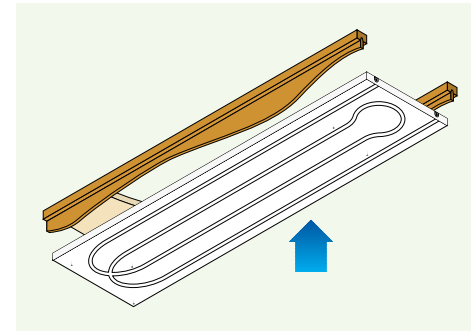
Installation from below

When installing MHP panels from below you will need to mark out the positioning of the panels to ensure you have them situated in the correct places for heating the room above.

Once you have checked the marked out positioning, the MHP panels can be slotted into place and fixed to the underside of the floor using 1 3/4" x 8 woodscrews with M6 x 30 dia washers. It is advisable to use 6 fixings per panel ensuring you avoid the moulded pipe marking on the underside of the panel and fix each panel securely.

IMPORTANT NOTE:

Polystyrene can cause deterioration to cable insulation when it comes into direct contact with it. Always ensure that electrical cables are not in physical contact with the MHP panels using tape or a polythene strip.



Finishing

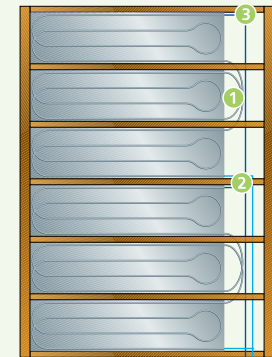
Once you have connected your system up to the manifold and tested it you can then finish the room by fitting the floor or ceiling in the normal way depending on whether you have installed MHP from above or below.

Testing

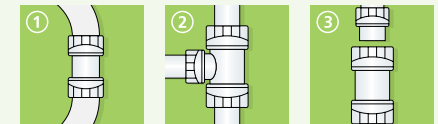
Where possible installations should be tested at 20°C to 18 bar pressure. Any installations once connected to the manifold have a maximum test pressure of 6 bar.

Panel layouts

1 Panel layout



15mm Polypipe flow and return connections to manifold



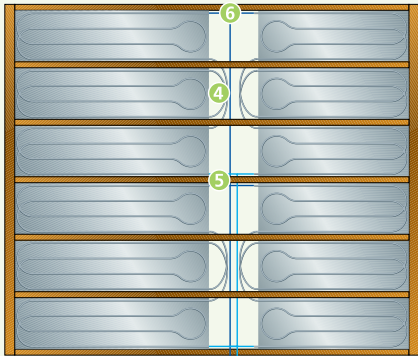
Part No: PB010
10mm
Straight
Coupling

Part No: PB1115
15mm - 10mm
Reduced Branch
Tee

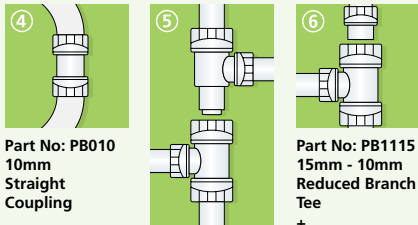
Part No: PB015
15mm
Straight
Coupling
+
Part No: PB1815
15mm - 10mm
Socket Reducer

Product information	Code	No panels per pack
MHP 490mm (W) x 2.0m (L)	MHP49020	5
MHP 490mm (W) x 1.3m (L)	MHP49013	5
MHP 380mm (W) x 2.0m (L)	MHP38020	5
MHP 380mm (W) x 1.3m (L)	MHP38013	5
MHP 330mm (W) x 2.0m (L)	MHP33020	5
MHP 330mm (W) x 1.3m (L)	MHP33013	5

2 Panel layout



15mm Polypipe flow and return connections to manifold



Part No: PB010
10mm
Straight
Coupling

Part No: PB1115
15mm - 10mm
Reduced Branch
Tee
+
Part No: PB1215
15mm - 10mm
Reduced Branch
Spigot Tee

Part No: PB1115
15mm - 10mm
Reduced Branch
Tee
+
Part No: PB1815
15mm - 10mm
Socket Reducer

Heat output						
Maximum floor area for flow and return 20m ²						
Room at 20°C	Flow temp (°C)	40	45	50	55	60
	Floor temp (°C)	25.0	25.8	26.6	28.9	30.8
Heat output per panel	MHP 49020 (W)	63	75	86	120	147
	MHP 49013 (W)	42	50	58	80	99
	MHP 38020 (W)	49	58	67	93	114
	MHP 38013 (W)	33	39	45	62	77
	MHP 49020 (W)	42	50	58	80	98
	MHP 33013 (W)	29	34	39	53	66
Approximate coverage required:						
For 70W/m ² room = 80% coverage						
For 50W/m ² room = 60% coverage						
Connect up to 3 panels in series						
Maximum coverage per circuit 20m ²						

