

Thermatile Ten-Twelve Radiant Panels

Installation instructions



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1. General

1.1 Description

The SPC Thermanite TEN-TWELVE panels are manufactured from a unique aluminium sandwich panel that is both structurally rigid and an excellent conductor of heat.

The TEN panel incorporates a bespoke cartridge element bonded to the back of the panel through which 10mm copper tubes run; connections are 10mm, the tubes are based on 'D' technology with flattened bases for increased contact. The TWELVE panel uses individual aluminium extrusions fixed to the back of the panel through which 12mm copper pipes run. The TEN panel is most usually used for individual panels while the TWELVE is most usually used on long continuous runs. Depending on run lengths TWELVE panels may incorporate manifolds in which case they will terminate in 15mm connections, otherwise they will be 12mm.

Panels are suitable for laying in false ceiling grids between T bars, free hanging or for installation into plasterboard ceilings. Panels for grids and plasterboard would normally be supplied with a pre-installed insulating pad to minimise heat loss into the void. Panels for such applications can be supplied without the insulation but it is recommended that the installer provides their own insulation in this instance. Panels intended for installation in plasterboard will be supplied with edge extrusions for plasterboard fixing.

Panels can also be supplied with special brackets for wall rather than ceiling mounting. Free hanging panels would normally be supplied without insulation and may be used for cooling as well as heating. Such panels can be supplied with extruded aluminium trim to cover the cut edges which adds around 10mm to the dimensions of the panels and makes them unsuitable for installation in grids.

Panels are supplied with fixing brackets for wire hangers as standard though threaded rod adaptors are available to order. Panels may be supplied with suspension kits, control kits and/or flexible connection hoses. The hose for the TEN panels would normally be 10mm to 15mm push-fit and the TWELVE hoses 12mm to 15mm push-fit and 750mm long (hoses with compression fittings are also available on request). Shorter hoses for interconnecting TWELVE panels are supplied with 12mm fittings (push-fit by default) on both ends. A range of different hose fittings and lengths may be supplied.

While bespoke sizes are possible the standard panel width is 595mm and standard panels lengths are 590, 1190, 1790, 2390, 2990 and 3590mm. Maximum depth over the panel and pipes is less than 25mm; insulation, if fitted, is additional to this.

1.2 Receipt and Preparation

Panels are supplied suitably packed with an additional plastic film applied to the finished lower surface. This film should remain on until such time as the panels are to be fitted and then peeled away. Cleaning of the underside of the panel can be undertaken using a wet or dry cloth but abrasives and staining cleaning agents must not be used. If the protective film is removed after hanging care must be taken to prevent damaging the brackets and anchors.

1.3 Storage and Handling

Panels are packed in cardboard cartons bearing the SPC works order number, model reference and site references where appropriate. Installation, operation and maintenance instructions are also supplied along with any special drawings or instructions required for the project. On receipt check that all details are correct to the schedule

and report any damage or missing parts to the carrier and SPC immediately.

It is recommended that the panels remain in the packaging until they are required. When handling panels safety gloves must be worn.

1.4 Dimensional Data

Panels can be supplied in bespoke sizes but the approximate sizes and weights of standard panels are as shown in the table below:

Nominal Panel Size	600x600	1200x600	1800x600	2400x600	3000x600	3600x600
Outside dimensions (mm)	590x595	1190x595	1790x595	2390x595	2990x595	3590x595
Approximate dry weight (kg)	3.2	6.4	9.6	12.8	16.0	19.2
Internal volume (l)	0.3	0.5	0.8	1.0	1.3	1.5
Approximate wet weight (kg)	3.5	6.9	10.4	13.8	17.3	20.7

1.5 Technical Data

Panel Type	Ten	Twelve
Tube O/D (mm)	10.0	12.0
Tube wall thickness (mm)	0.35	0.5
Underside (visible) skin	0.7mm painted aluminium	0.7mm painted aluminium
Upper skin	0.5mm primered aluminium	0.5mm primered aluminium
Core	Aluminium (honeycomb or equivalent)	Aluminium (honeycomb or equivalent)
Panel thickness	5.0/5.5mm	5.0/5.5mm
Tube holders	Cartridge panel	Aluminium extrusion
Maximum working pressure	10 bar	10 bar
Maximum working temperature	90°C	90°C

2. Installation

2.1 Ceiling Grid

Single panels are typically placed into a T-bar type ceiling grid based on a 600mm square grid pattern. While the panels will rest unsupported in the grid they must be fixed to the ceiling for safety reasons. Panels will be supplied, by default, with brackets suitable for wiring hanging, if rod hanging is preferred then adaptor brackets need to be ordered, Gripple type wire suspension kits are recommended. The wires or rods must hang vertically between the brackets and ceiling as the brackets/rivets are not suitable for significant lateral loads.

Panels may be supplied with connecting hoses which will be either 10mm or 12mm by 15mm and either push-fit or compression type. For connecting panel to panel shorter interconnecting hoses may be supplied with 10mm to 10mm connections or 12mm to 12mm connections in push-fit or compression. Push-fit connectors rely on a rubber O ring for sealing and it is important that the ends of the pipework are rounded and filed (deburred) before the push-fit hose is attached to ensure a damage free seal.

2.2 Free Hanging

Panels must be independently supported from the ceiling/soffit using either wire or rod hangers. The panels are supplied, as standard, with the requisite number of standard wire hanging brackets, if rod hangers are to be used then suitable brackets would need to be ordered to adapt the standard wire hanger. Anchors of a suitable type to match the ceiling fabric must be fitted in the ceiling directly above the brackets attached to the panels.

Connecting and inter-connecting hoses may be supplied with the panels and their use and installation should be as above.

If free hanging panels are supplied for use as continuous runs then they may be supplied with a joining strip. This strip connects the ends of adjacent panels and also allows expansion. If the strip is fitted after the panels are mounted then special care must be taken to ensure that excessive strain is not put on the hanging wires or brackets while it is being fitted.

2.3 Plasterboard

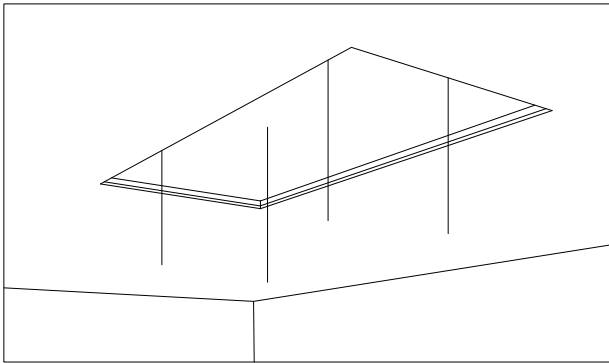
Panels are available for plasterboard ceilings and are supplied with a special frame. The frame is an extrusion which fits around the perimeter of the panel. Fixing screws are tightened through the frame into wooden battens in the ceiling.

The drawing below shows the steps to be taken in

order to properly mount plasterboard panels; the primary support is via the hanging wires and the screws into the battens provide additional support and ensure that the frame sits level. The drawing is intended to give information regarding the method of installation; the actual installation will vary in terms of number and position of fixings.

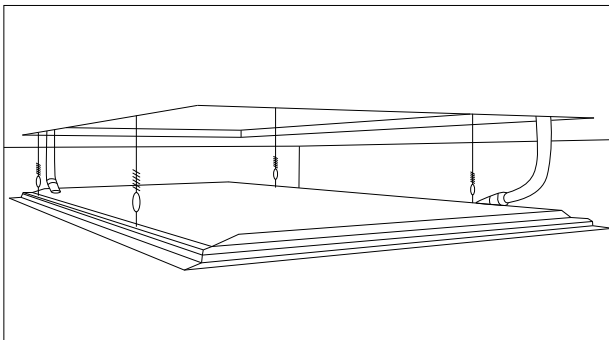
Thermatile Fitting Instruction For Plasterboard Ceiling

Panel Length	Ceiling Aperture Width	Ceiling Aperture Length
590	605	600
1190	605	1200
1790	605	1800
2390	605	2400
2990	605	3000
3590	605	3600



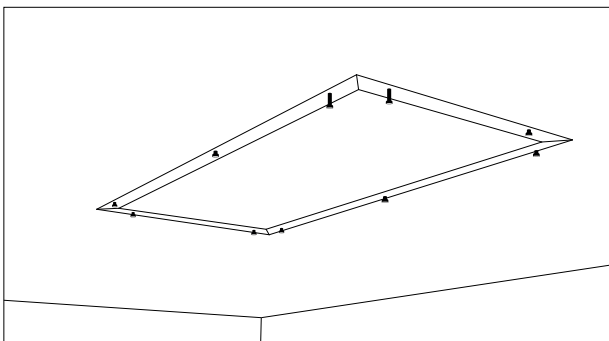
Stage 1

- Cut aperture in plasterboard (see table for size).
- Fit suitable wooden batten around perimeter in ceiling void.
- Attach hanging wires to anchor points above (by others).



Stage 2

- Attach wires to wire hanging brackets and connect push fit hoses for flow and return.



Stage 3

- Push panel up flush with ceiling and screw through plasterboard to batten

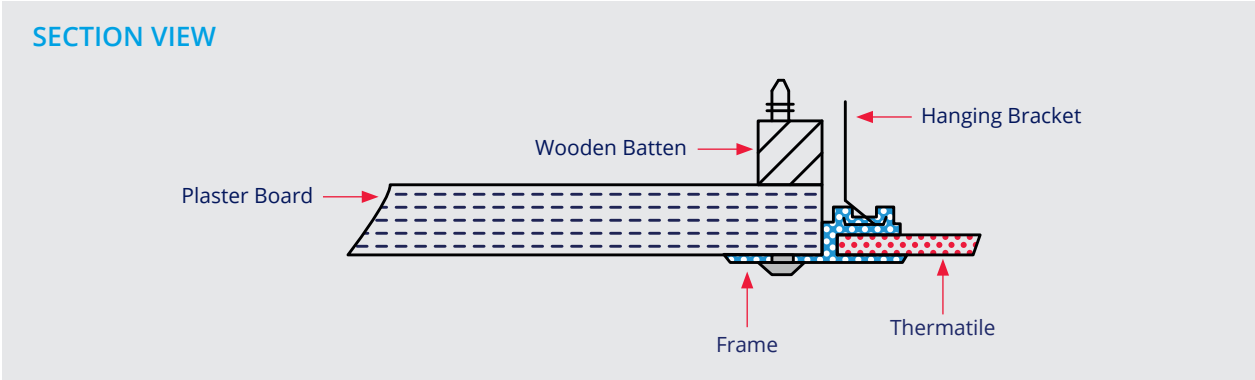


Figure 1. Plasterboard hanging

2.4 Multiple Panels

When panels are intended for installation in continuous runs they may be supplied with interconnecting hoses. Due to the high flowrates associated with continuous runs they will be from 12mm tube i.e. the TWELVE type panel and are also likely to be fabricated with manifolds. The drawing below gives examples of multiple

panel runs with both opposite and same end connections. The actual arrangement of panels may differ from this example and can be ascertained (if unclear) by contacting SPC with the order details.

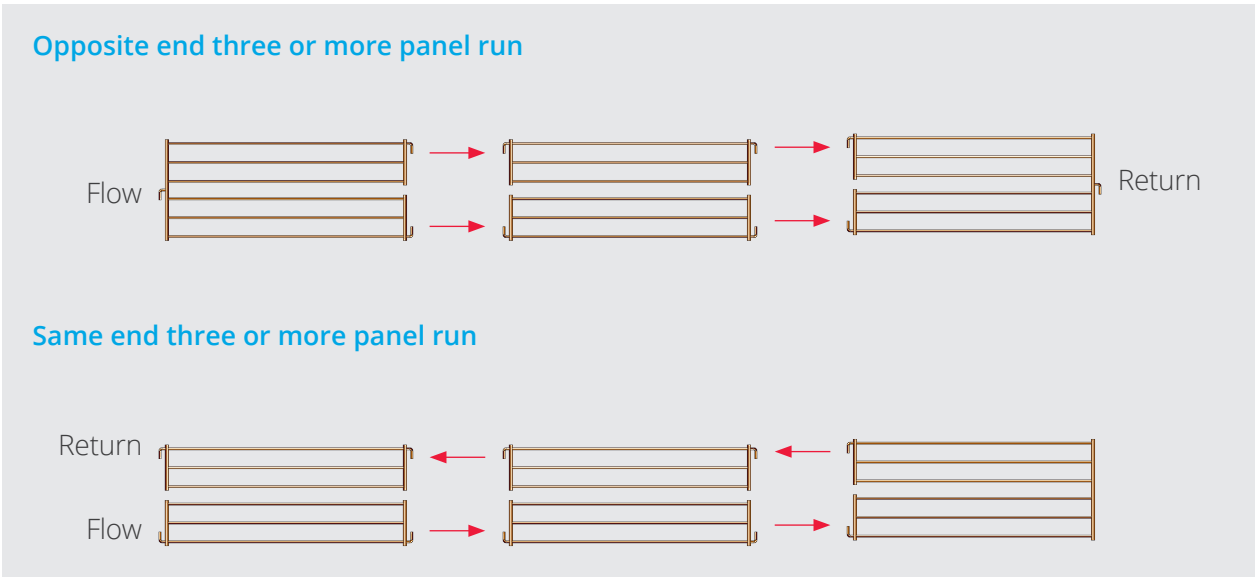


Figure 2. Example of multiple panel runs

2.5 Wire/Rod Hanging Requirements

The panels are supplied as standard with the necessary quantity of fixing brackets fastened to the rear of the panel. The standard bracket suits wire hanging but adaptors are available to make the brackets suitable for hanging via threaded rod.

Irrespective of the hanging type, wire or rod, the hangers must be vertical and anchored to the ceiling directly above the bracket. The brackets are

not designed to be suitable for significant lateral forces.

When installing panels they must not be hung from some of the brackets unsupported. All of the brackets must be properly secured before the support is released. This support could be a fitter or fitters or, if available, a scissor lift or other mechanical means.

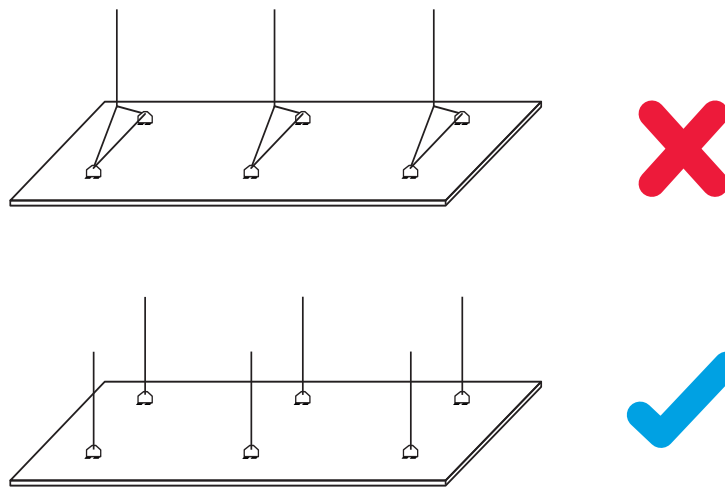


Figure 3. Incorrect and correct hanging method

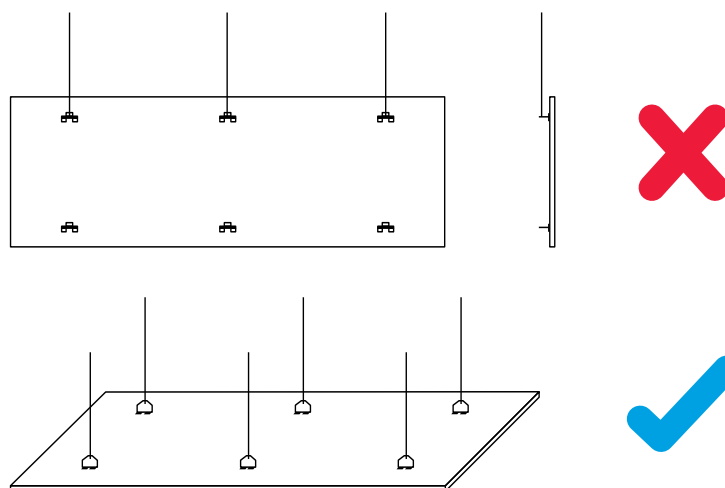


Figure 4. Panels must be supported on all brackets (scissor lift etc useful for large panels)

2.6 Non-standard Applications

Panels may be supplied for other than ceiling mounting. Panels can be fitted vertically to walls or at an angle from the wall at high level. In this instance the panels will be supplied with the

necessary support struts and hanging brackets. Such installations are normally bespoke and fitting instructions will be separately supplied or must be requested from SPC.

2.7 Electrical Connections

There are no electrical connections to the panels themselves. The arrangement of panels will normally be in zones and these will be controlled by valves which will require electrical power and

control wiring. The schematic is an example of how the panels may be controlled; it is not representative of the panels themselves.

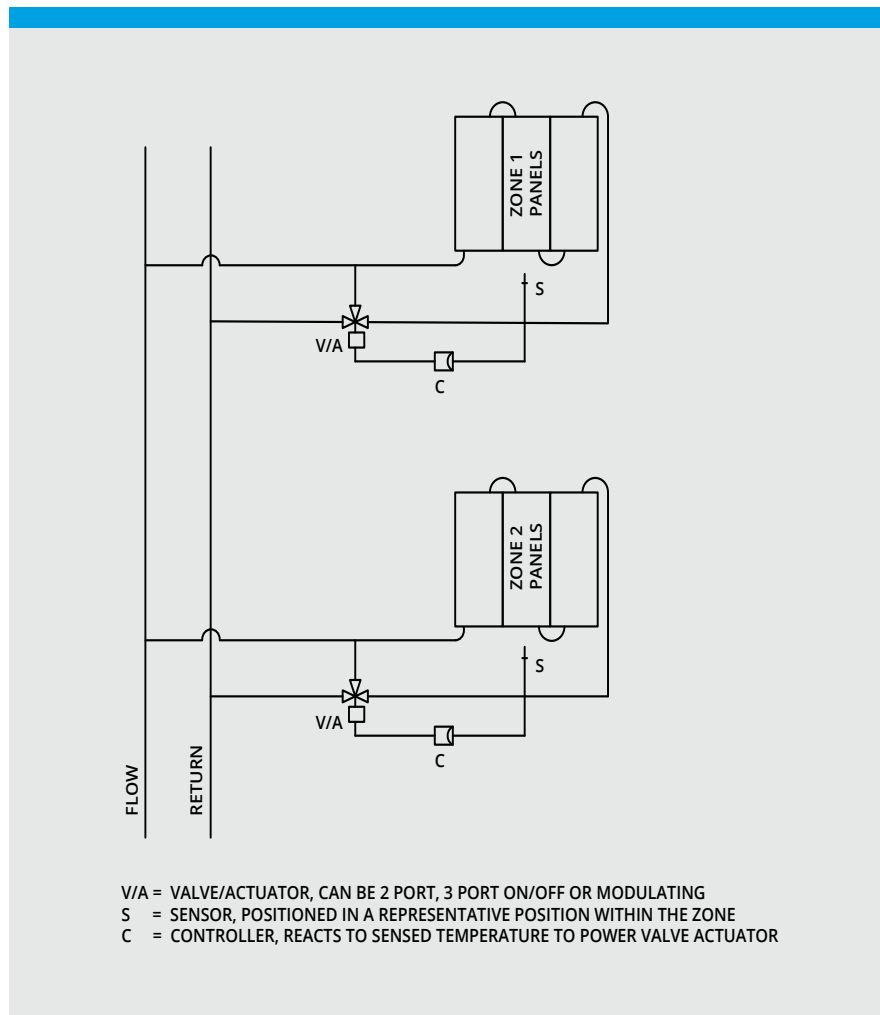


Figure 5. Control example

2.8 Mounting height

The chart showing minimum mounting heights recommends the minimum height that the panels should be mounted at, from the ground, as a function of the water temperature in order to prevent any discomfort occurring as a result

of asymmetric radiation. The chart is for static occupancy; if occupants are moving around the space then comfort can be ensured at higher water temperatures or lower mounting heights.

Minimum Mounting Height Against Mean Water Temperature For Static Occupancy Comfort (ISO 7730)

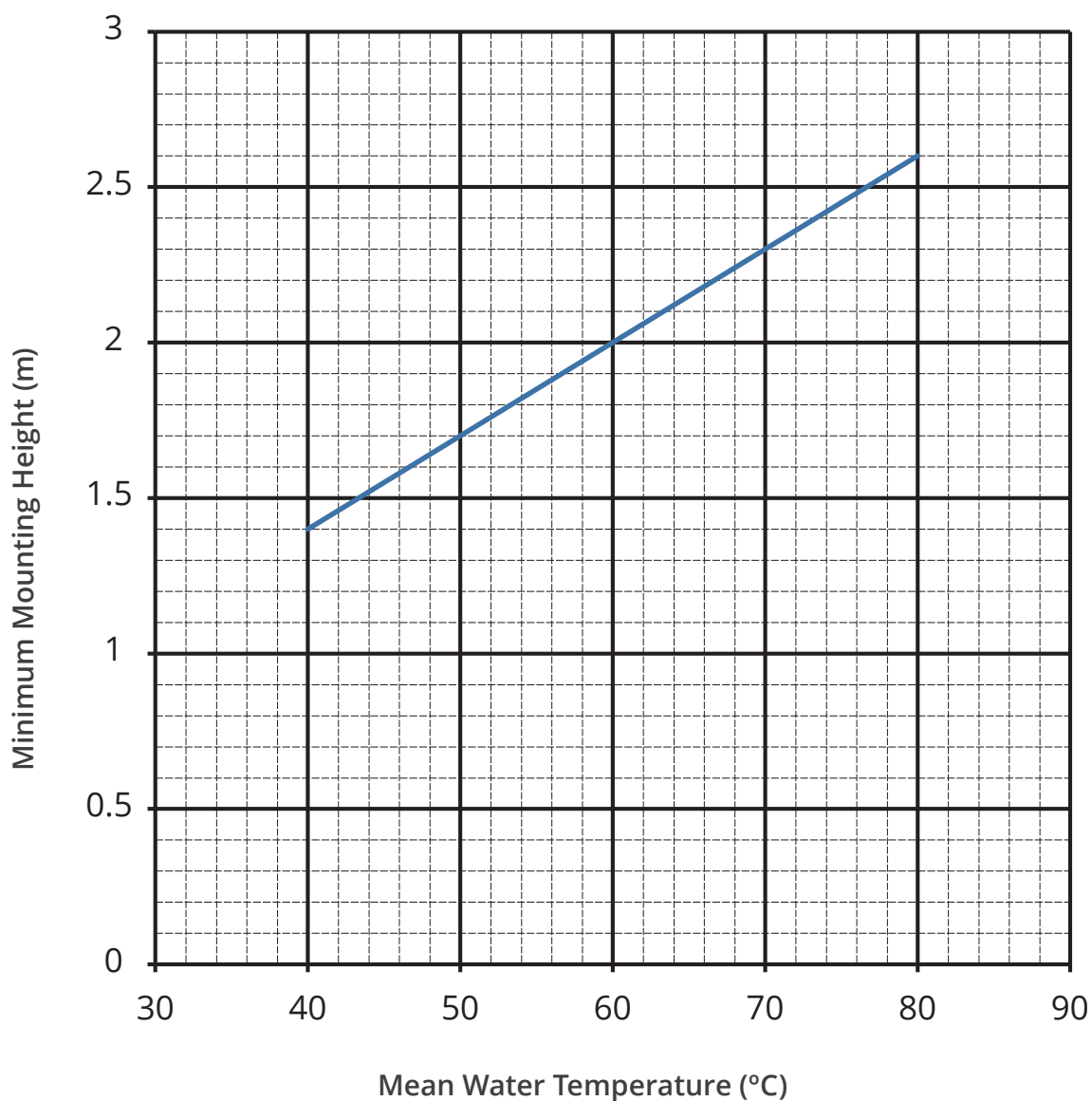


Figure 6. Mounting heights

3. Operation

Ensure that the panels are piped together and into the heating (cooling) system as required by the application. Manual and or automatic air vents should be fitted at high points in the piping systems. Ensure that all manual valves are opened and allow fluid to circulate through the heating system. Open air vents to ensure that there is no air trapped; close manual vents as soon as water is released.

Zone valves should open and close in response to the sensed room or zone temperature and sensors should be positioned in representative position within the space to achieve optimum comfort.

3.1 Cooling Applications

When chilled water is used it is important that its temperature is not less than the dewpoint of the air in the space; In this way the panels will not sweat. The temperature of the chilled water must be controlled in response to the humidity in the

space and/or condensation sensors must be fitted. Note that the pipework to and from the panels will also sweat and should be insulated/vapour sealed wherever possible.

3.2 Sensors

For radiant systems black bulb sensors are often used as they give a better indication of the effective temperature in the space. If standard air temperature sensors are used then allowance

needs to be made for the radiant effect – setpoints can be a couple of degrees lower in heating mode and higher in cooling mode.

3.2 Fault Finding

Fault	Remedy
Air in system	Open vent plug(s)
Low water temperature in heating mode	Check operation of boiler and mixing valves
High water temperature in cooling mode	Check operation of chiller and mixing valves
Low water flow rate	Check operation of pump and diverting valves
Valves closed	Check valve settings

4. Maintenance

Radiant panels are largely maintenance free. The surface of the panel can be cleaned using a dry cloth or non-abrasive/corrosive detergents; if unsure first try cleaning fluid on a small area of the panel.

The waterways consist of copper pipes and flexible hoses will normally be EPDM rubber, any flushing undertaken or inhibitors used need to be suitable for use with these materials.



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