

# *Radiant Spectrum HD Radiant Panel*



**RADIANT**  
HEATING & COOLING SOLUTIONS  
— SIMPLY RADIANT —

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## HD Radiant Panel

### What does Radiant Heating and Cooling signify?

Radiant Heating and Cooling offers heating and cooling solutions that are the informed choice for commercial applications across the UK.

We have invested in world class manufacturing facilities. Our products undergo rigorous testing and are subject to stringent quality control, so you can be assured our products will meet the high standards that you would expect from us.

On top of this we invest heavily in new technology. Our products lead the way in design, performance and energy efficiency. We have a commitment to innovation and continually develop new products which permit our customers to be as competitive as they can, in their market place.

Our success is based on a wealth of engineering knowledge and is backed by a sales and technical team who each have 20-30 years' experience of working in the Heating and Ventilation industry.

We see the role of a supplier as being an integral part of customer's company. We aim to build long term partnerships with our customers and work closely with you: from understanding your needs, to on time deliveries into your site. We truly believe in good customer service and we want to take the stress out of our customers' lives so you can buy from us in confidence.



# Spectrum - Innovative, discreet and energy efficient heating solutions

Our revolutionary designs, stringent quality procedures and advanced manufacturing processes, guarantee efficient products, manufactured to the highest quality standards and supplied with our commitment to superior customer service.

Our heating solutions are simple to use whilst being extremely low maintenance. They can be used in any commercial application and are produced to guarantee a durable, strong finish.

The Spectrum range of Radiant ceiling panels is all about people and providing a comfortable environment for occupants. Our Radiant ceiling panels provide an alternative to traditional heat emitters delivering heat directly to those areas where it is required. This creates a more comfortable environment for occupants by creating an even temperature across the room.

With a range of ceiling panels available, RHCS can offer the perfect solution to your heating or cooling requirements.

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## Product description

The Spectrum range of radiant ceiling panels from RHCS provides an alternative to traditional heat emitters.

### **Radiant panels offer many benefits:**

- » Create a more comfortable environment for occupants by creating an even temperature distribution across the room
- » Save energy (up to 30% with a Spectrum system) and money by achieving a higher perceived temperature than the actual room temperature
- » Work well with lower temperature heating systems
- » Provide an efficient solution offering a short heating and cooling time
- » Installed within a ceiling or high on a wall they maximise wall and floor space
- » Silent operation
- » No dust/bacteria dispersal offering a hygienic solution
- » Maintenance free
- » Lower cleaning costs

Spectrum radiant ceiling panels are a perfect choice for retail and educational establishments, theatres, auditoriums, warehousing, sports halls, aircraft hangers, car showrooms and factory facilities.

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## Application

Spectrum Radiant Ceiling Panels provide the ideal heating solution whatever the size and type of application. They can be particularly effective in large spaces that would be difficult to heat by using traditional methods.

Spectrum HD panels are static heating elements formed by pipes welded into large area profiled steel sheets with thermal insulation attached to the upper face. Hot water in the building provides the heat source to the pipes integrated in the panels and downward radiant heat is provided unhindered through the room air to warm the walls, floor and occupants of the room. The surface temperature of the elements in the room rise to 1-3°C above the room air temperature, the air is then heated as a secondary action by all of the warm elements.

The desired heat intensity and/or the temperature of the heating medium will determine the size and amount of ceiling panels that are required. Water at a temperature of 80/60°C will result in some 10 to 20% of the ceiling area able to accommodate radiant panels. Panels offer a flexible solution as they can generally be positioned where required, for example above a work station, as there are generally no constraints regarding location. The low water content enables short heat up and low inertia even in large spaces. This offers an efficient solution in addition to enabling good comfort control.



# Standard and Optional Features

## Certified outputs

Spectrum Radiant Ceiling Panels have been independently tested and their outputs certified in accordance EN 14037 Parts 1 to 3.

## Robust construction

Manufactured from cold rolled steel plate with a thickness of 1.2mm and utilising welded precision steel tubes of 28 x 1.5mm placed on 150mm centres, the Spectrum product will provide long and reliable service and is suitable for applications up to 10 bar.

## Durable finish

Factory powder coat finished in white RAL 9016 and free from toxic substances, the panels require no further decorating. A variety of alternative colours are available on special request.

## Wide range of dimensions

With nine panel width options from 300mm to 1500mm at 150mm increments and the possibility to connect many panels together, high output can be created. The maximum length of a single panel is up to 4000mm. Installed panel lengths in excess of 4000mm are made up of multi-panels connected together on-site by press fittings (or welding for higher service pressures and temperatures).

## Highly insulated

In order to prevent heat loss by convection, each Spectrum panel is factory pre-fitted with a 40mm thick layer of quality, non-flammable aluminium foil backed insulating material with a density of approximately 16kg/m<sup>2</sup> and a thermal conductivity of 0.04W/mK.

## Cut-out openings

If required as an option panels can be provided with round, square or rectangular cut-out openings to facilitate the inclusion of light fittings, loudspeakers or ventilation diffusers.

## Cover plates and mitre panels

To add the finishing touch to an installation of Spectrum panels, cover plates for concealing the gap between multi-panels are provided, plus angled dummy panels for those inevitable changes in direction.

## Sports Hall safety

Ball projectile safety has been tested in accordance DIN 18032 part 3 when using non-demountable fixings. In addition ball protection guards are available as optional extras and are indispensable in freely suspended installations in gymnasiums and sports halls. The guards provide protection for the insulation from high flying balls and prevent balls from remaining on the top of the panels.

## Dummy panels available

Spectrum panels can be used to create a contrasting feature in a ceiling and where sufficient heat can be provided by less panels than is desirable for aesthetic effect, dummy panels can be provided to complete a pattern.

## Dust covers

In order to prevent dust build up on the back of the panel, dust covers can be provided.

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## Product Information

### Benefits

- » Even temperature distribution across the whole room
- » Reduced CO2
- » Rapid response warm up times
- » All pipe-work at high level
- » Radiant panels operate at lower room temperatures (thus reducing costs and valuable energy)
- » A Radiant Panel system can be used in conjunction with green energy sources such as Solar Energy, Biomass or Heat Pumps which could lead to heating without CO2 Emission
- » Alternative against Gas Fired Radiant Heating
- » (No requirements to always be reliant on fossil fuel energy)
- » No moving parts - silent in operation and maintenance free
- » Frees up valuable wall and floor space
- » No open flame within the building
- » No risk of explosion
- » Less dust transportation
- » No lighting degradation issues, can use integrated lights
- » Can offer cooling

<b>WIDTH (MM)</b>	300	450	600	750	900	1050	1200	1350	1500
<b>PANEL MODEL</b>	300/2	450/3	600/4	750/5	900/6	1050/7	1200/8	1350/9	1500/10
<b>NO. OF TUBES</b>	2	3	4	5	6	7	8	9	10
<b>WATER CONTENT</b>	1.0	1.6	2.1	2.7	3.2	3.7	4.3	4.8	5.2
<b>WEIGHT (KG/M) INCLUDING WATER AND INSULATION</b>	6.6	9.9	13.2	16.5	19.8	23.1	26.4	29.8	33.1
<b>NOMINAL HEAT OUTPUT</b>	178	245	311	384	456	529	601	674	747

N.B – Perforated ceiling panels are available to a maximum width of 1200mm

# Product Information

## Technical Specification

Spectrum Radiant panels, made of cold rolled steel plate DC 01 1.2mm, with lateral and upper edges bent by 90° and additional stabilising bending to the inside, welded precision steel tubes 28mm, flush surface and, for fixing purposes, suspension bars are welded to the top of the panels, including thermal insulation to DIN 4706/1, consisting of dimensionally stable laminated mats, minimum thickness 40mm, non-flammable, lined with reinforced aluminium foil. Finished in powder coating free from toxic substances according to DIN 55900, part 2, colour white RAL 9016.

## Dimensions

- » **WIDTHS:** 300mm, 450mm, 600mm, 750mm, 900mm, 1050mm, 1200mm, 1350mm & 1500mm.
- » **DEPTH:** 50mm.
- » **LENGTHS:** Spectrum Radiant panels are available in single length of up to 4m (6m available upon request).
- » For total lengths exceeding this several modules are supplied, these are joined together using crimp fittings. Maximum panel lengths available are 100m.
- » **TUBE DIMENSIONS:** 28 x 1.5mm, distance 150mm centre to centre.
- » **CONNECTIONS:** Two horizontal or superimposed manifolds with welded connecting sockets, external diameter DN 15 to DN 25 for tube connections, air-venting or draining respectively, as well as corresponding baffles.
- » **SYSTEM PRESSURE:** Spectrum Radiant ceiling panels are pressure tested for a system pressure of up to 10 bar.
- » **OUTPUT:** Tested according to EN 14037, part 1 to part 3. Registered under registration number: 6 D 007/2004 at DIN CERTCO, Berlin.

## Special versions

- » 6m modules
- » Perforated radiant panel fascia
- » Special manifolds
- » Cut-out openings for light fittings, speakers, smoke alarms etc
- » Angled (e.g. plate mitred) or straight dummy panels
- » Alternative RAL colours

## Accessories

- » Ball protection (Sports Halls)
- » Dust covers
- » Flexible Hoses for flow and return connections
- » Combination volume flow/regulating/preset commissioning valves
- » Mounting sets for suspensions on trapezoidal steel sheets, structured steel girders or concrete ceilings

## Transport packing

Stacking-pallets with a maximum of nine radiant ceiling panels with wrapping in plastic film.

## Handling

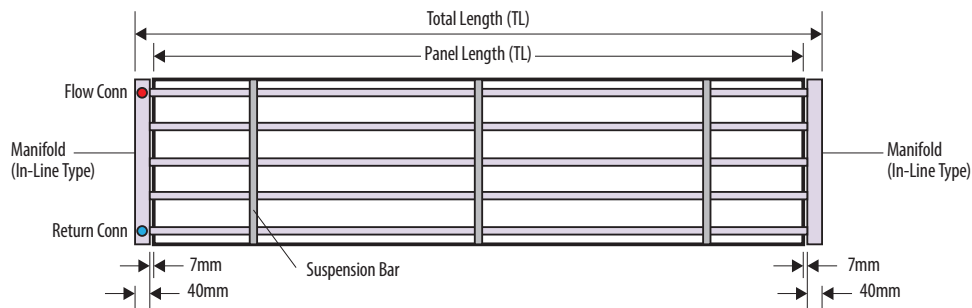
Attention is drawn to the labour and/or handling aids when offloading and moving Spectrum Panels on-site. Panels can be long and heavy. Check consignment weights before accepting deliveries.

## Product Information

### Single Panel

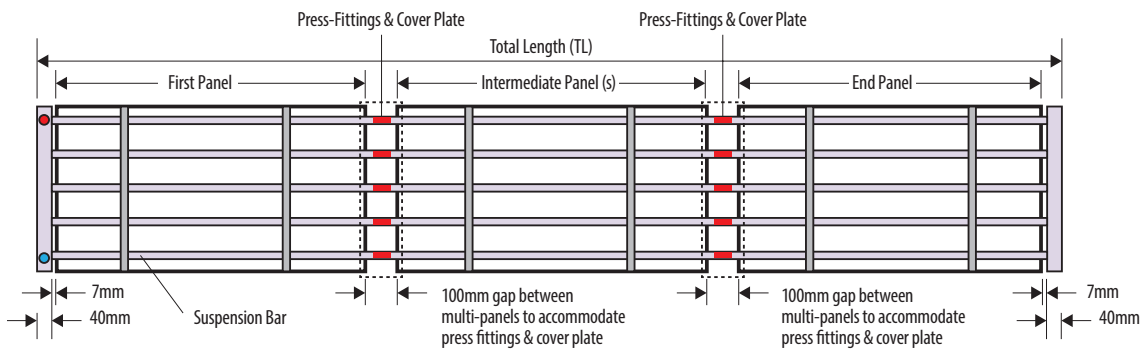
Single panel lengths are available from 1500mm – 4000mm

The total length of a single RHCS radiant ceiling panel (max 4000mm) is composed of the radiant steel plate length, the projecting ends of tubes (2 x 7mm) if using horizontal connections, plus manifolds (2 x 40mm). The heat output always refers to the Total Length (TL).



### Multi-Panel Modules in Series

For a total length greater than 4000mm, a multi module arrangement is used, utilising press fittings for the connection. Cover plates are provided to cloak the connection and to present a continuous appearance.



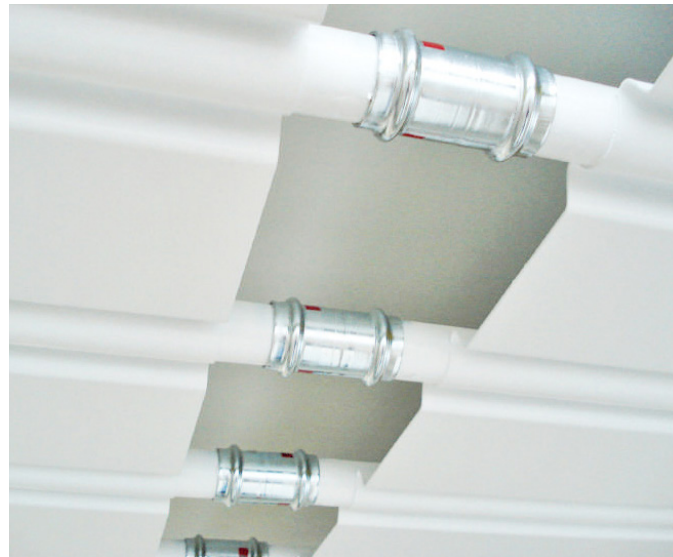
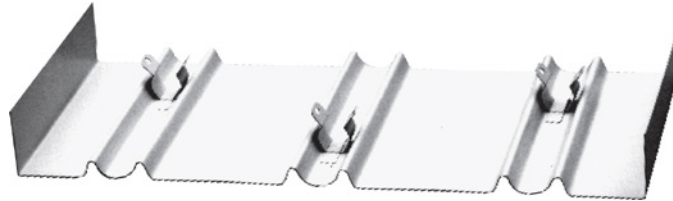
The first and last modules are provided with header arrangements to control the flow and return, with a choice of configurations.



# Product Information

## Connecting Panels in Series

Where panels are to be joined, the usual method is to use Viega 28mm O Press/Crimped fittings (provided), unless the water temperature is to exceed 110°C when the joints should be welded. Where required the Viega Press-Fittings are supplied by RHCS.



## Connection Configurations

All connections are drawn in plan view and according to the water throughput requirements of the panel, connections will be made using either: DN15 (1/2" BSP), DN20 (3/4" BSP), DN25 (1" BSP). 1/2" BSP

Connections for Air vents are standard supply. Ensure that the required connection configuration is clearly specified when ordering panels.

### Opposite End Connections

Central Horizontal



Central Rear



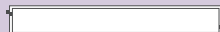
Horizontal Diagonally Opposite



Rear Diagonally Opposite



Horizontal with Baffle



### Same end connections

Horizontal with Baffle



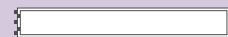
Rear with Baffle



Combination with Baffle



Horizontal Twin Flow with Baffle



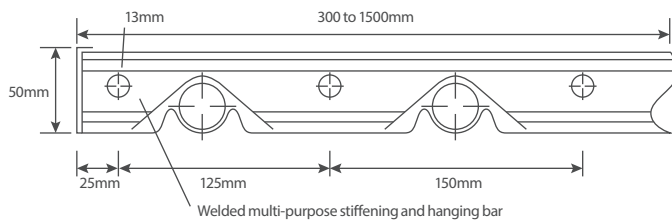
Rear Twin Flow with Baffle



## Product Information

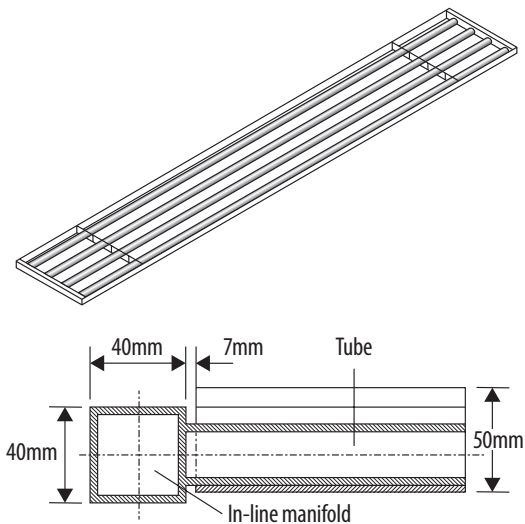
### Suspension Bars

Welded cross members also offer suspension opportunities  
Total Length 1500 – 4000mm (only 2 suspension bars are necessary)  
Total Length 4100 – 6000mm (3 suspension bars are necessary)

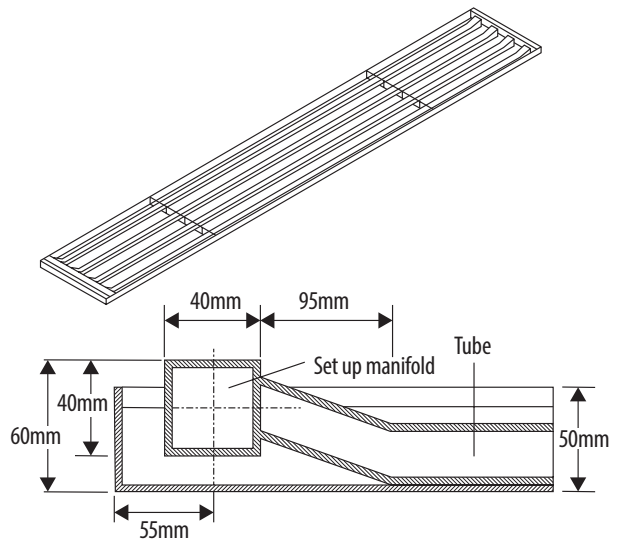


### Manifold Arrangements

Manifolds can either be "In-line" or "Set-up/Superimposed" type as shown in the diagrams below. A variety of connection arrangements are available for the connection of system flow/return pipes and air vents.



**AVAILABLE ON REQUEST**



**STANDARD OPTION**

# Product Information

## Colour Finishes

RHCS radiant panels are finished to a high quality powder coated RAL 9016 as standard.

Alternative RAL colour finishes are available at an additional cost.

Please contact RHCS for availability on other RAL colour finishes.

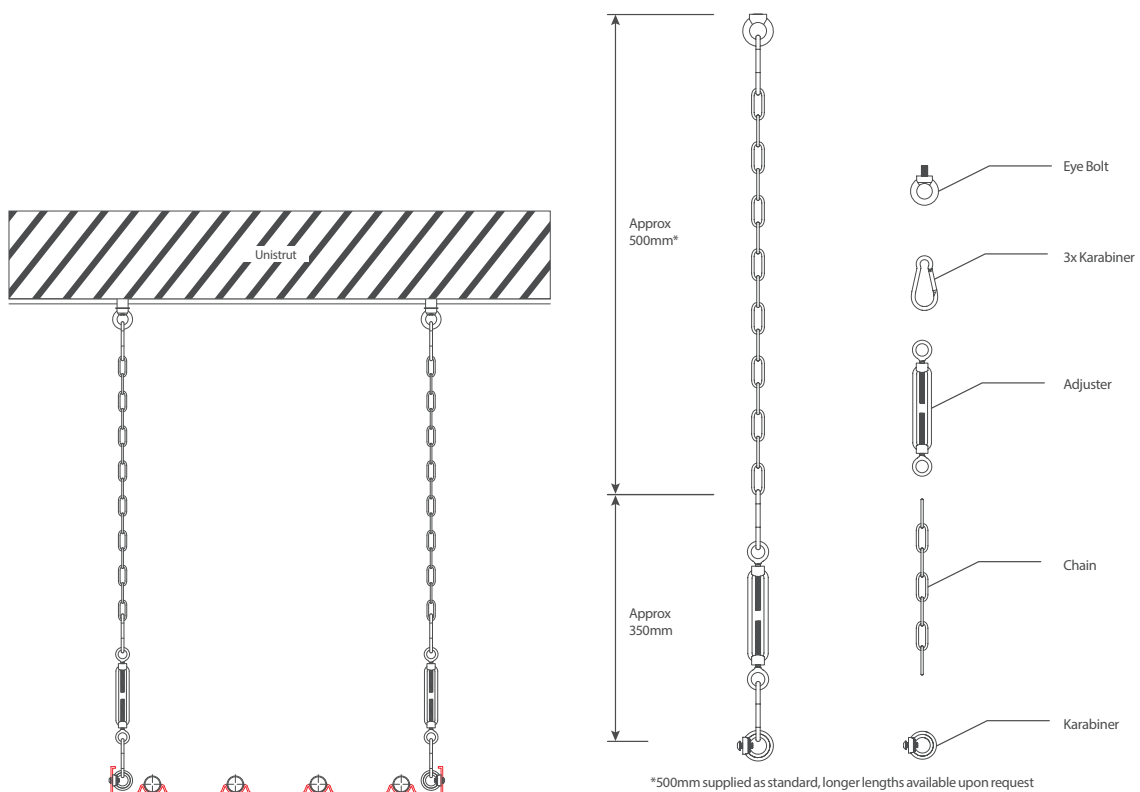
## Fixing Accessories

Suspension kits are available to suit the most common forms of ceiling construction and include as standard 0.5m of chain per hanging position. Longer chains can be provided upon request at extra cost above the standard provision.

**ENSURE TYPE OF SUSPENSION COMPONENTS ARE SPECIFIED AT TIME OF ORDERING PANELS.**



## Typical Fixing Kit



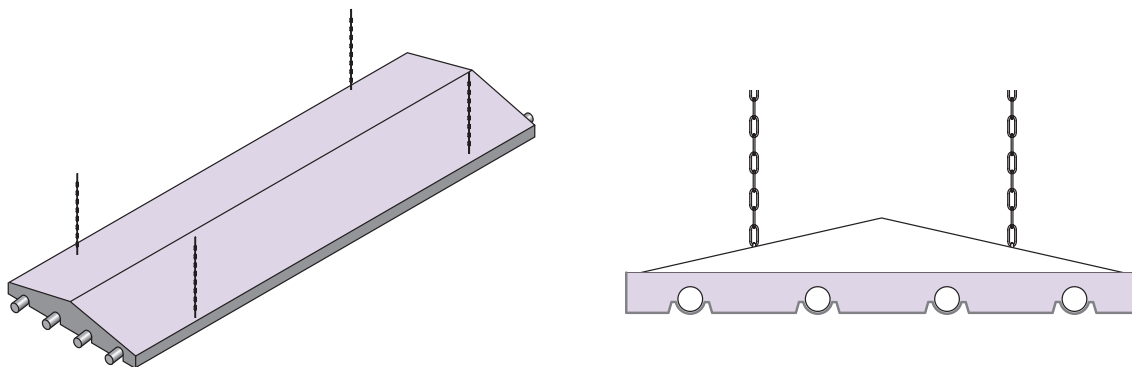
## Product Information

### Ball Guards for Sports Halls



Available in metal or in a lightweight composite material to B2 flame resistant.

WIDTH (MM)	300	450	600	750	900	1050	1200	1350	1500
WEIGHT (KG/M) - STEEL	1.2	1.75	2.4	2.90	3.50	4.10	4.70	5.25	5.80
WEIGHT (KG/M) - COMPOSITE	0.30	0.44	0.58	0.73	0.87	1.02	1.16	1.32	1.46



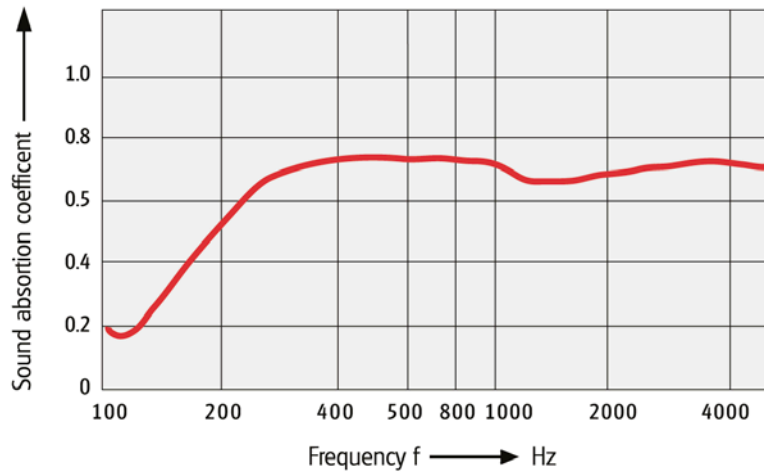
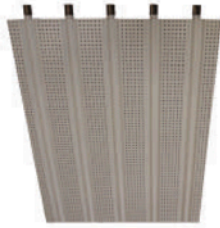
### Rear Dust Covers

The same steel or composite sheets can be laid flat as dust protection, the same additional weights apply to this option.

Echo attenuation can be achieved by the use of perforated panels and these are particularly useful in sports halls and auditoriums. Panels can be provided perforated with multi-holes of 5mm diameter. This feature provides a noticeable reduction in noise level through the absorption of sound by the thermal insulation layer.

# Product Information

## Perforated Panels for Sound Absorption



**SOUND ABSORPTION CURVE**

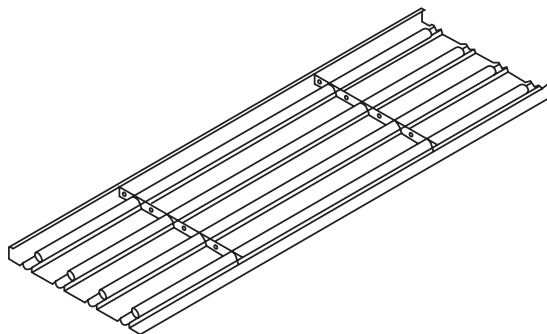
## Special Panels

If requested it is possible to incorporate ex-works cut-out openings in round, square or rectangular form to accommodate lighting fittings, loudspeakers or ventilation grilles in the panels. This optional feature is especially useful in closed ceiling construction arrangements. Mitred angled panels can be produced to meet the site requirements.



## Dummy Panels

Where for aesthetic reasons it is desirable to finish a pattern created by panels within the ceiling as whole, but to use standard panels would result in overheating of an area, then Dummy Panels can be provided for integration into the installation.

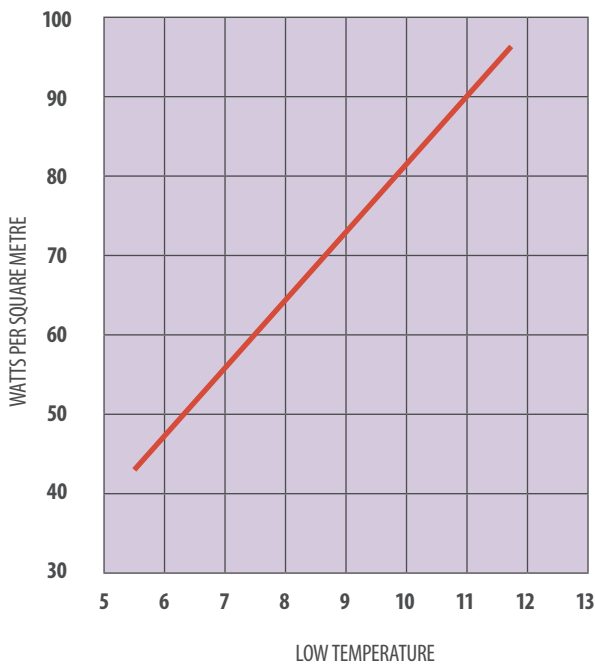


## Performance Outputs

### Heating Outputs - Watts per linear metre

DELTA T																							
MODEL	30	32	34	36	38	40	42	44	46	48	50	52	54	55	56	58	60	62	64	66	68	70	
WATTS PER LINEAR METRE																							
<b>SHD 300/2</b>	94	101	109	117	125	132	140	148	156	164	172	180	188	192	198	205	213	222	230	239	247	255	
<b>SHD 450/3</b>	131	141	151	162	172	183	194	204	215	227	238	249	260	266	272	283	294	306	317	329	341	353	
<b>SHD 600/4</b>	168	180	194	208	221	235	248	262	276	290	305	319	333	340	347	361	376	390	406	421	435	450	
<b>SHD 750/5</b>	203	218	234	250	267	284	300	317	334	351	369	386	404	412	421	439	456	475	493	511	529	547	
<b>SHD 900/6</b>	236	252	273	292	313	332	351	371	391	412	432	453	473	483	494	516	536	557	579	600	622	644	
<b>SHD 1050/7</b>	269	292	313	335	357	381	403	426	449	473	497	520	544	557	569	593	617	641	667	692	716	742	
<b>SHD 1200/8</b>	302	327	352	377	402	428	454	480	507	533	560	586	614	628	641	669	696	725	753	781	811	839	
<b>SHD 1350/9</b>	342	371	398	426	454	484	512	542	571	601	632	661	692	708	723	754	785	816	848	880	911	943	
<b>SHD 1500/10</b>	380	411	441	472	504	536	568	601	633	666	700	733	767	785	802	836	870	904	940	976	1010	1045	

For outputs using other  $\Delta T^{\circ}C$  not stated above, please contact RHCS Radiant Panel team.  
Flow rates and Pressure drops available on request.



### Cooling Outputs

DELTA T	WATTS PER SQUARE METRE
5.6	42
6	46
7	55
8	64
9	73
10	82
11	91
11.7	97

# Product Specification

## Spectrum HD Radiant Ceiling Panels

The following specification can be used for specifying Spectrum HD radiant panels:

### Technical Specification

- » 1.2mm Steel flush profiled sheet fascia
- » Rear mounted 28mm OD x 1.5 mm waterways made of precision seamless steel tube spaced at 150mm centres
- » 50mm double folded side profiles for high rigidity
- » Dual purpose welded integral stiffening/suspension bars
- » 40mm header tubes for flow control
- » Welded connection options 15mm-25mm
- » Vent and drain options
- » Powder coat paint finish DIN 55900 part 2
- » Joining cover-plates and fixings

### Performance

- » Weight of product with insulations and water: 24.7kg/s/m
- » Heating performance to be certified to EN14037
- » Cooling performance to DIN 4715
- » Acoustic performance to DIN EN ISO 354

### Technicalities/Operating Parameters

- » Max working pressure 10 bar
- » Max operating temperature 120°C

### Front Fascia

Smooth/Perforated

### Headers

Super imposed – Standard option

Open/visible – Available on request

### Connection size

15mm	20mm	25mm	Vent and drain	Connection code
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### Insulation

Standard Factory fitted:  
Laminated mat 40mm, non-flammable, foil lined  
DIN4706/1

Foil encapsulated  
PTE encapsulated  
Insulation to be removed for increased performance

### Finish

Ball guards:  
Steel/Composite

White powder paint finish to be standard RAL 9016  
Non-Standard colour reference

### Installation

All panels to be installed in accordance with the manufacturers recommended methods/guidelines.

All final connections to panels to be via steel braided flexible hoses.

## Warranty

Radiant Heating and Cooling products are guaranteed for a period of 10 years from date of purchase in respect of defective materials and workmanship.

The system should be designed in accordance with British Standard Code of Practice for Water Based Heating Systems in Buildings.

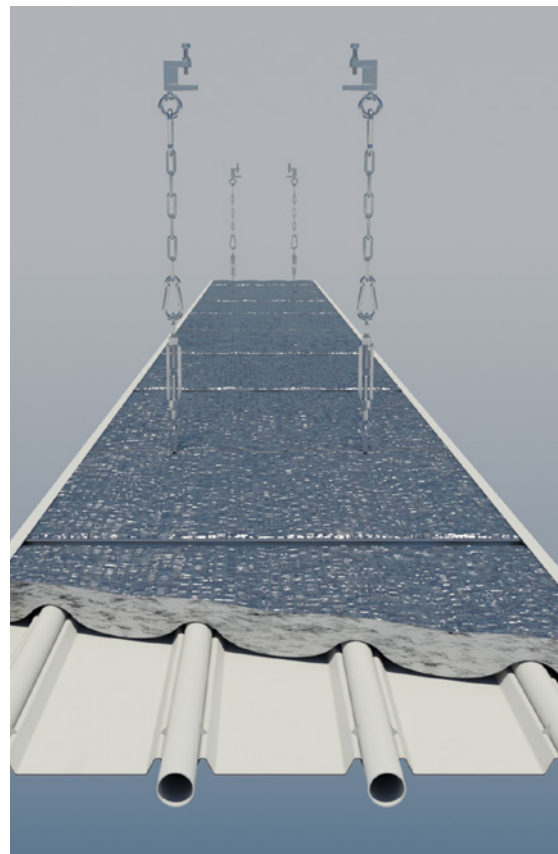
On completion of the installation, the system should be properly flushed and filled in accordance with the British Code of Practice for the Treatment of Water in Domestic Hot Water Central Heating Systems, Part L of Building Regulations and Good Practice Guidance for Scotland.

Failure to adhere to these standards may invalidate the manufacturer's warranty.





## Product Application Photos



# Contact Details

## Radiant Heating and Cooling (Manufacturing Facility)

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