



SABIANA

ENVIRONMENTAL COMFORT



Pulsar Ceiling Mounted Radiant Panels

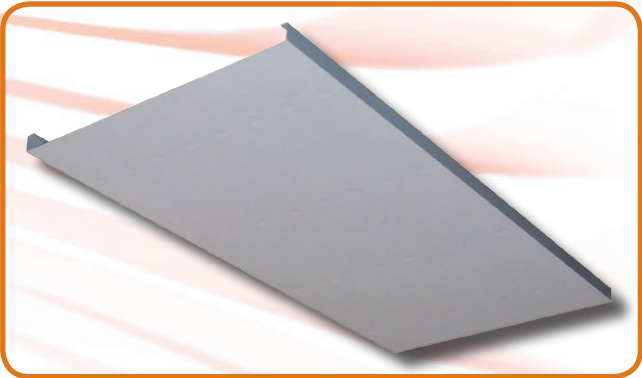
The **Pulsar ceiling mounted radiant panels** are made in 4 sizes, with a width of 600 mm and a length between 1.2 and 3 m, in 2 standard colours, and others upon request. The panel has a very elegant design, perfectly matching the false ceiling, features simple maintenance, very long life and can be connected in series or in parallel to others panels using flexible pipes supplied upon request.

The panels feature a very interesting construction: modern welding units, without leaving any visible traces, press the copper pipes into the thick electro-galvanised steel panel, guaranteeing an optimum heat output and a uniform temperature across the entire radiating surface. The product is ideal for many types of environment, especially schools and hospitals.

The panel can be supplied with hot or cold water: in the summer, it should be used together with a primary air system, as only sensible cooling is provided.

The heating capacity values have been certified by the leading European laboratory in the sector (University of Stuttgart), applying the European EN 14037 standard.

The painting process, using an epoxy polyester resin powder coat dried in a furnace at 180°C, ensures high resistance over time, in compliance with the international standard ISO 2409, certified by tests performed at the Milan Polytechnic University.



Technical Specifications:

The Sabiana Pulsar radiant panels are supplied in four sizes, which can be perfectly integrated into any false ceiling.

Indeed, the lengths of 1.20, 1.80, 2.40 and 3.00 m ensure optimum integration into 600 x 600 mm modular ceilings, the standard dimension for false ceiling panels in Europe.

The visible side is perfectly flat, meaning that the Pulsar radiant panels can match all types of false ceiling panels available on the market.

As standard, the panels are supplied in the colour RAL 9010, with a satin finish created by an epoxy-polyester coat dried in a furnace at 180°C. Other RAL colours are also available for the architect to choose from.

The Pulsar radiant panels are made of a radiating galvanized steel plate, 1 mm thick.

On the panel is fixed a copper pipe, 1 mm thick and with 22 mm of external diameter. The pipe is oblong-shaped in order to optimize the contact surface with the radiant panel.

The galvanized hanging strips welded to the panels hold the correct spacing of the tubes and secure the best surface contact between the tube and the panel.

The painting complies to the European Standard 76/769/EEC.

Class of reaction to fire: A1

Emission of the radiant surface: $\epsilon = 0,96$

With the Pulsar is supplied an insulating layer of mineral wool (30 mm thick) protected by an aluminium sheet (25 micron thick) to be mounted on the top of the panel.

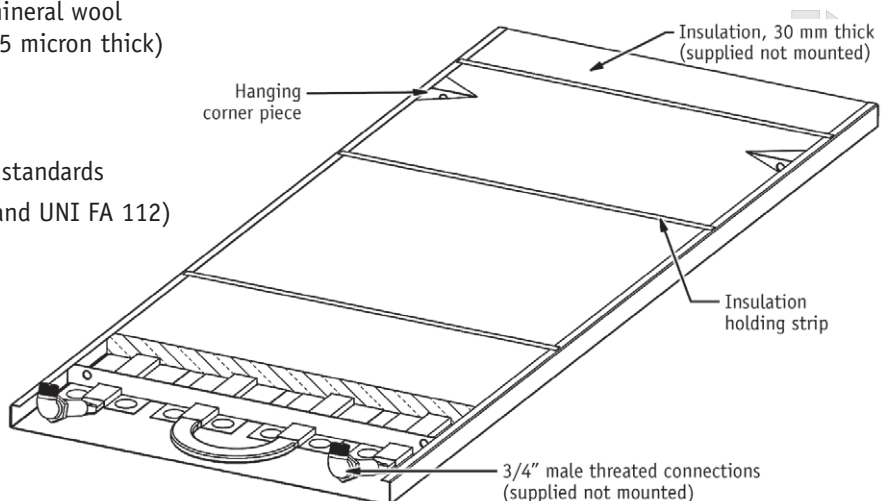
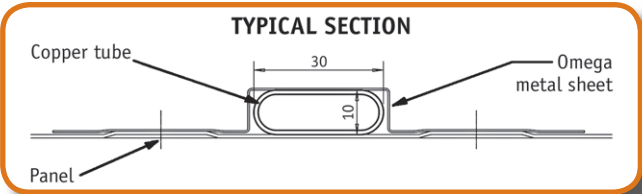
Mineral wool insulation specifications:

Reaction to fire: class A1 according to EN 13501-1 standards

Thermal conductivity: 0,037 W/mK (UNI CTI 7745 and UNI FA 112)

Density: 14 kg/m³

Thermal resistance: 0,81 m²K/W

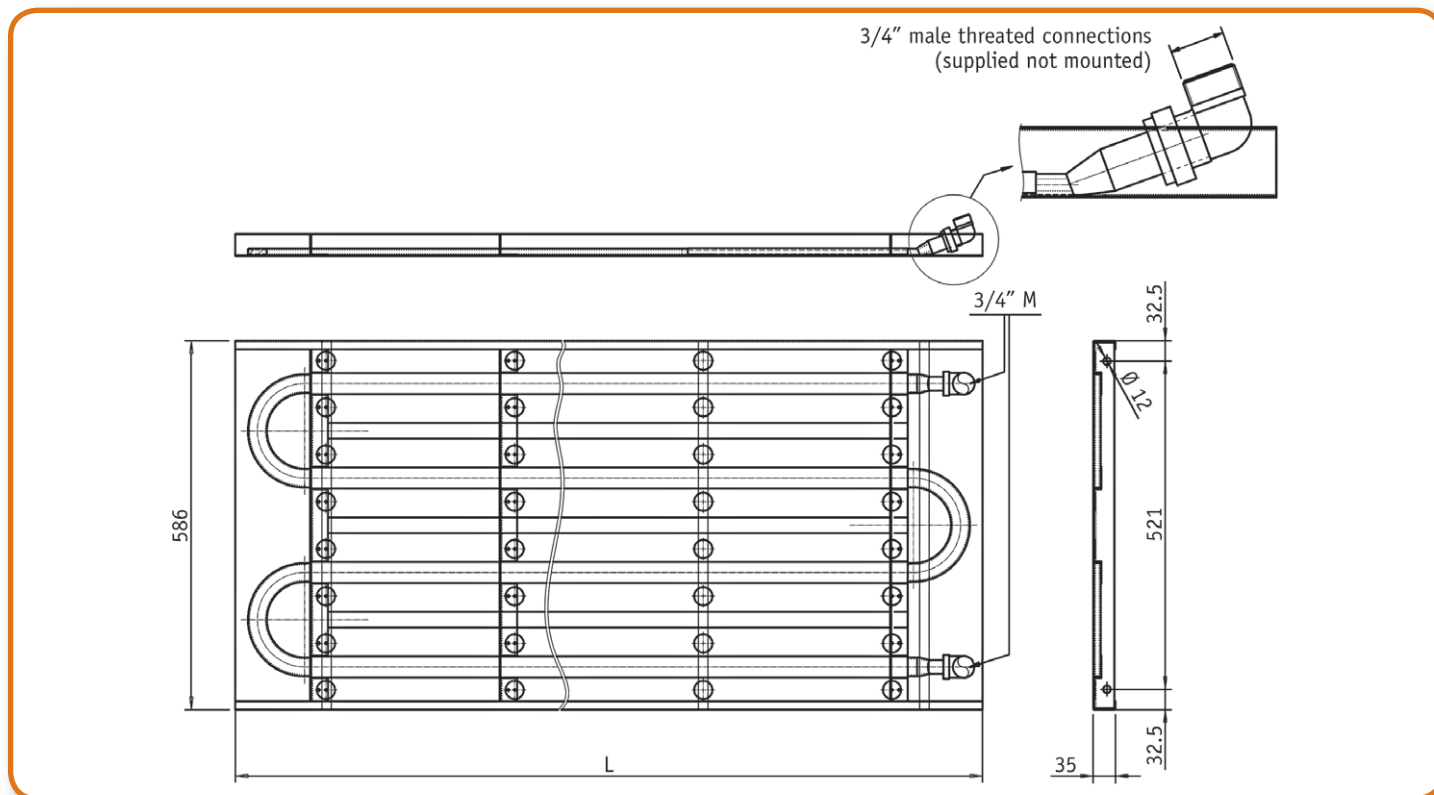


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Dimensions, weight and water content



| | | MODEL | | | |
|---------------|------|------------|------------|------------|------------|
| | | Pulsar P.1 | Pulsar P.2 | Pulsar P.3 | Pulsar P.3 |
| Length | (mm) | 1186 | 1786 | 2386 | 2986 |
| WEIGHT | (kg) | 13,8 | 20,7 | 27,6 | 34,5 |
| WATER CONTENT | (l) | 1,3 | 2,0 | 2,8 | 3,5 |

Thermal emission:

Characteristic curves of the product taken from tests carried out as per the EN 14037 standard:

$$Q = K \cdot (\Delta T_m)^n$$

Q = emission W/m

K = heating coefficient of the unit = 3,28086 W/m

ΔT_m = difference between the mean water temperature and the room temperature

n = heating exponent of the unit = 1,1536

The emission of the Sabiana **Pulsar radiant panels** have been certified by the laboratory at the University of Stuttgart H.L.K. applying the harmonised European Standard EN 14037, with the report number DC205 D12.2108

In accordance to part 2 of the standard, the K coefficient is equal to the above one divided by 1.1.

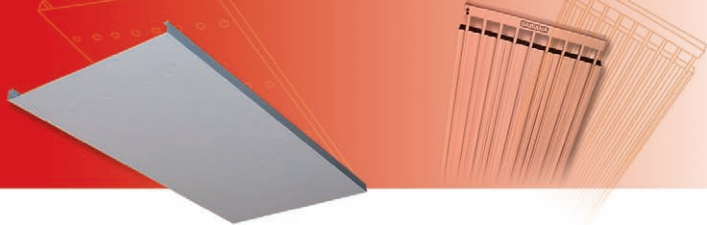
Nominal emission for a meter of P.1 ÷ P.4 Pulsar panels with $\Delta T_m = 55^\circ\text{C}$: 334 W/m

Total nominal emission of Pulsar panels with $\Delta T_m = 55^\circ\text{C}$

| Pulsar P.1 | Pulsar P.2 | Pulsar P.3 | Pulsar P.4 |
|-------------|-------------|-------------|-------------|
| L = 1186 mm | L = 1786 mm | L = 2386 mm | L = 2986 mm |
| 396 W | 596 W | 797 W | 997 W |

**05**

EN 14037 Standard - Ceiling radiant panels



Thermal emissions in accordance to the European Standard EN 14037

| Δt_m | Emission | Δt_m | Emission | Δt_m | Emission | Δt_m | Emission | Δt_m | Emission |
|--------------|----------|--------------|----------|--------------|----------|--------------|----------|--------------|----------|
| °C | W/ml | °C | W/ml | °C | W/ml | °C | W/ml | °C | W/ml |
| 89 | 582 | 75 | 478 | 61 | 376 | 47 | 279 | 33 | 185 |
| 88 | 574 | 74 | 470 | 60 | 369 | 46 | 272 | 32 | 179 |
| 87 | 567 | 73 | 463 | 59 | 362 | 45 | 265 | 31 | 172 |
| 86 | 559 | 72 | 456 | 58 | 355 | 44 | 258 | 30 | 166 |
| 85 | 552 | 71 | 448 | 57 | 348 | 43 | 251 | 29 | 160 |
| 84 | 544 | 70 | 441 | 56 | 341 | 42 | 245 | 28 | 153 |
| 83 | 537 | 69 | 434 | 55 | 334 | 41 | 238 | 27 | 147 |
| 82 | 529 | 68 | 427 | 54 | 327 | 40 | 231 | 26 | 141 |
| 81 | 522 | 67 | 419 | 53 | 320 | 39 | 225 | 25 | 134 |
| 80 | 515 | 66 | 412 | 52 | 313 | 38 | 218 | 24 | 128 |
| 79 | 507 | 65 | 405 | 51 | 306 | 37 | 211 | 23 | 122 |
| 78 | 500 | 64 | 398 | 50 | 299 | 36 | 205 | 22 | 116 |
| 77 | 492 | 63 | 391 | 49 | 292 | 35 | 198 | 21 | 110 |
| 76 | 485 | 62 | 383 | 48 | 285 | 34 | 192 | 20 | 104 |

Δt_m = difference between the mean water temperature and the room temperature

Cooling emissions in accordance to the European Standard EN 14240

| Δt_m | Cooling emission | | | |
|--------------|------------------|------------------|--------------------|------------------|
| | With insulation | | Without insulation | |
| °C | W/ml | W/m ² | W/ml | W/m ² |
| 5 | 22 | 38 | 30 | 52 |
| 6 | 28 | 47 | 37 | 63 |
| 7 | 32 | 55 | 43 | 74 |
| 8 | 38 | 64 | 50 | 86 |
| 9 | 43 | 73 | 57 | 98 |
| 10 | 47 | 81 | 64 | 110 |
| 11 | 53 | 90 | 71 | 122 |
| 12 | 58 | 99 | 79 | 134 |
| 13 | 63 | 108 | 86 | 146 |
| 14 | 69 | 117 | 93 | 158 |
| 15 | 74 | 127 | 100 | 171 |

Δt_m = difference between the mean water temperature and the room temperature

Lowest water flow

Lowest water flow to be supplied in order to obtain the correct emission.

| Average water temperature (°C) | 40 | 60 | 80 | 100 |
|--------------------------------|----|----|----|-----|
| Lowest water flow (l/h) | 65 | 48 | 37 | 32 |

Operating limits

| | | |
|---------------|-------------------------------|---|
| Water circuit | Maximum water pressure: 4 bar | Maximum entering water temperature: +90°C |
|---------------|-------------------------------|---|

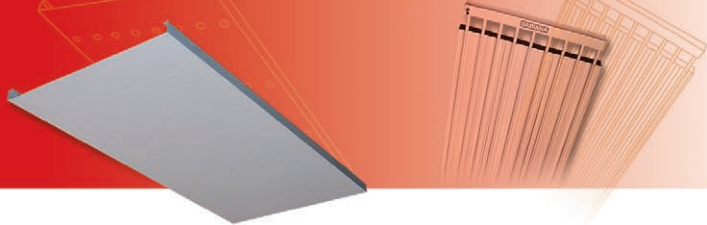
Suggested lowest installation height (in m above the floor)

| Maximum water temperature (°C) | m |
|--------------------------------|-----|
| 50 | 2,5 |
| 60 | 2,7 |
| 70 | 2,9 |
| 80 | 3,1 |
| 90 | 3,3 |



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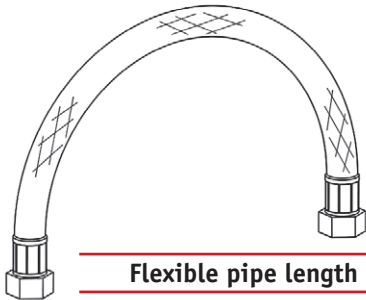


Accessories: Flexible connection pipe

FLEXIBLE PIPE

- Diameter 1/2"
- Made of: EPDM rubber
- With external stainless steel layer
- Operation between -20°C and +110°C

Assembly of 2 panels

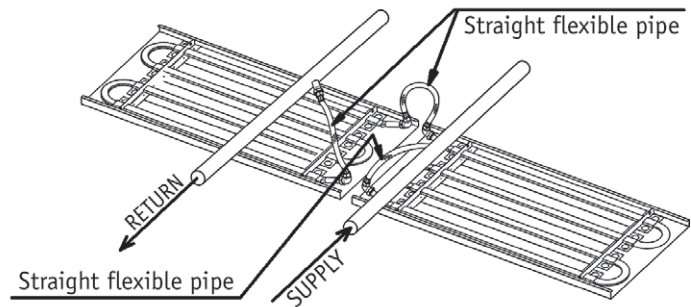


Flexible pipe length mm

350

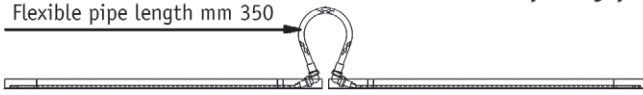
1200

STRAIGHT FLEXIBLE PIPE - 3/4" FEMALE FITTINGS

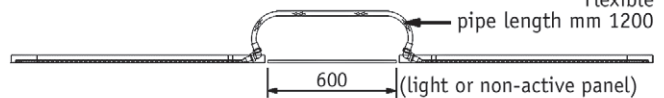


Example of possible connections

Flexible pipe length mm 350

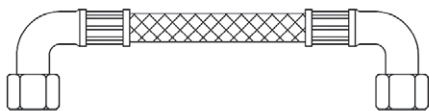


Flexible pipe length mm 1200



Assembly of 3 panels

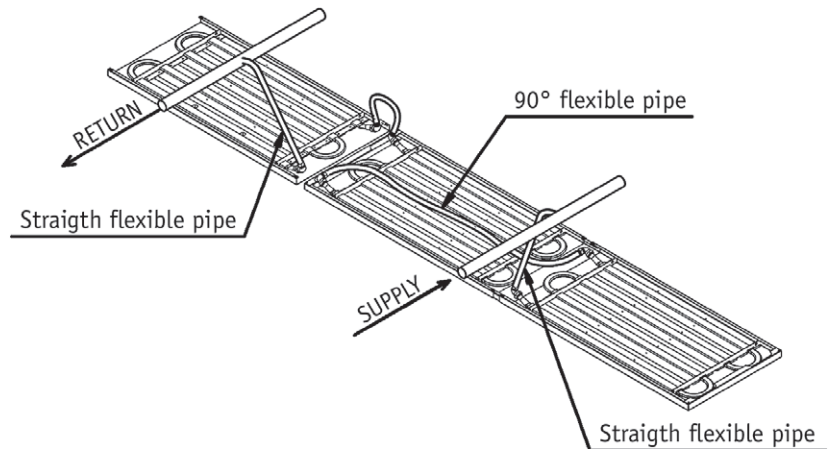
FOR CONNECTIONS UP TO 2 M: 90° FLEXIBLE PIPE - 3/4" FEMALE FITTINGS



Flexible pipe length mm

1450

2000



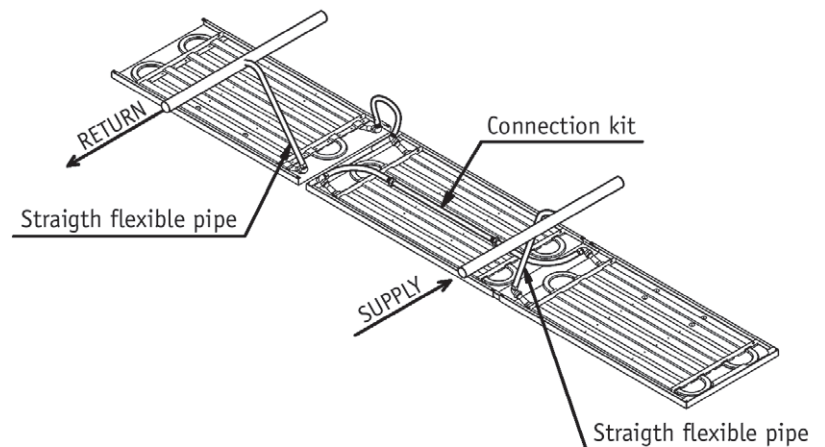
FOR CONNECTIONS LONGER THAN TO 2 M: CONNECTION KIT - 3/4" FEMALE FITTINGS



Flexible pipe length mm

2800

3300





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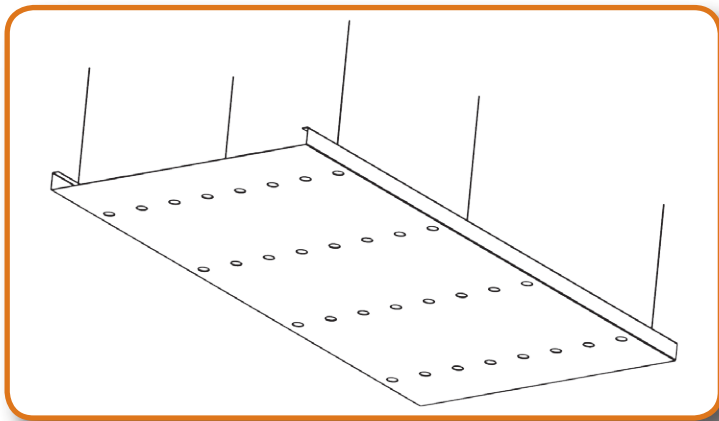
Non-active aesthetic panel

The aesthetic panels are used when the active panels do not need to be installed and when, for aesthetic reasons or local specifications, a non-active panel has to be installed.

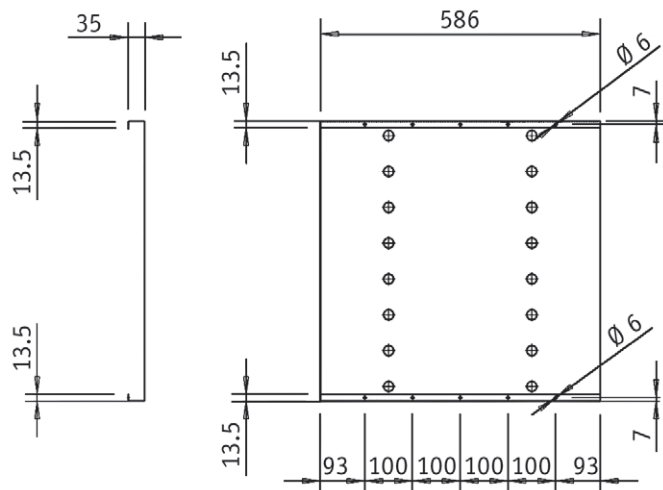
Available in 2 models:

| Size | Length mm |
|------|-----------|
| 1 | 586 |
| 2 | 1186 |

Can be cut to measure on site.

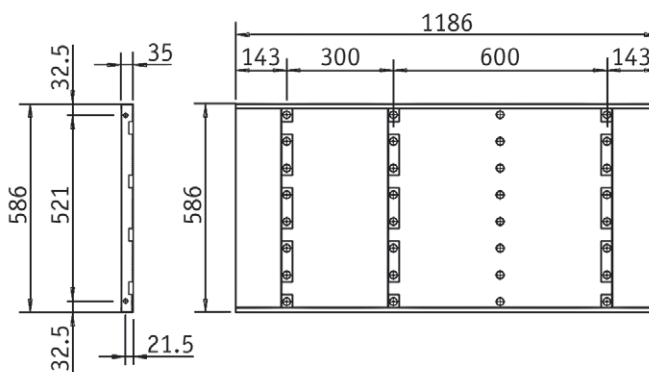


600 NON-ACTIVE PANEL



Hanging holes on the lateral sides of the panel (every 100 mm).

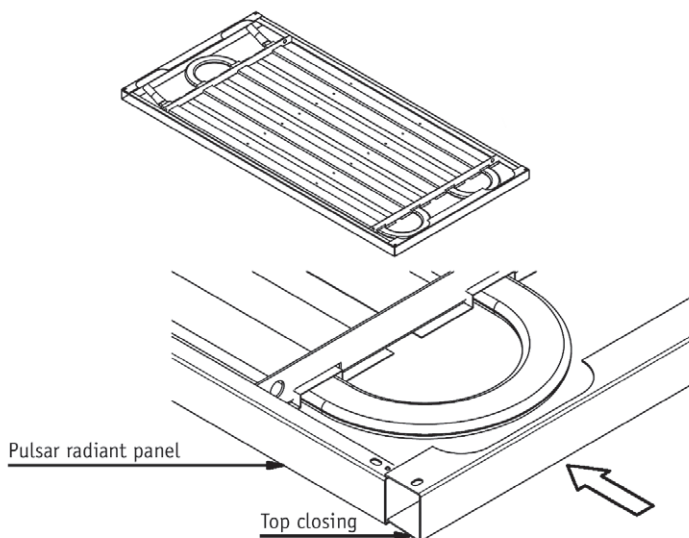
1200 NON-ACTIVE PANEL



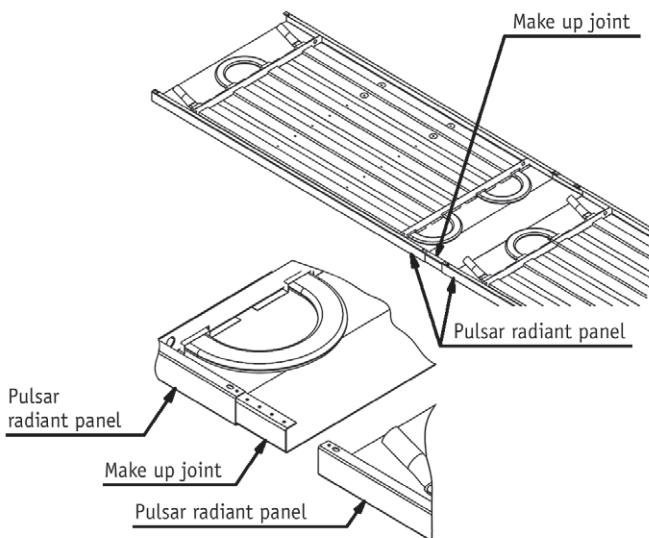
Hanging holes on the sides of the hanging brackets (distance 521 mm).

Accessories for panels not installed into false ceilings

TOP CLOSING KIT



MAKE UP JOINTS

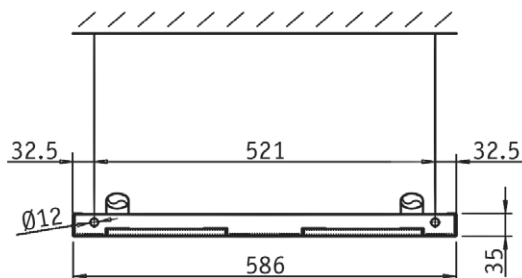
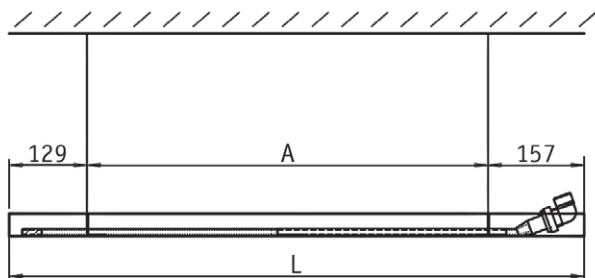




Hanging systems

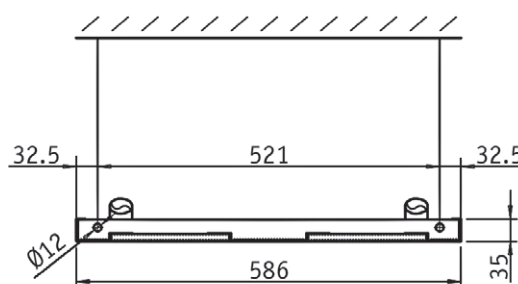
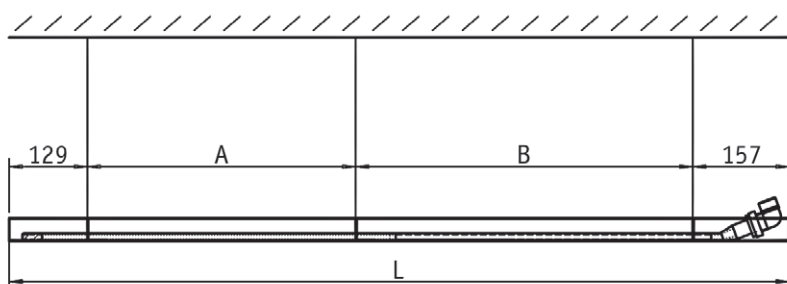
HANGING BRACKETS

PULSAR P.1 AND P.2



| Description | L | A |
|-------------|------|------|
| Pulsar P.1 | 1186 | 900 |
| Pulsar P.2 | 1786 | 1500 |

PULSAR P.3 AND P.4



| Description | L | A | B |
|-------------|------|------|------|
| Pulsar P.3 | 2386 | 1200 | 900 |
| Pulsar P.4 | 2986 | 1200 | 1500 |

The maximum vertical bendings f of the Pulsar radiant panels between two suspension points are lower than 2 mm.
The maximum bending from the longitudinal axis of the 3m panels is 5mm.

Hanging kits

