FRASER ENGINEERING (UK) LTD

RADIANT PANELS • TRENCH • PERIMETER • GRILLES • ELEMENTS

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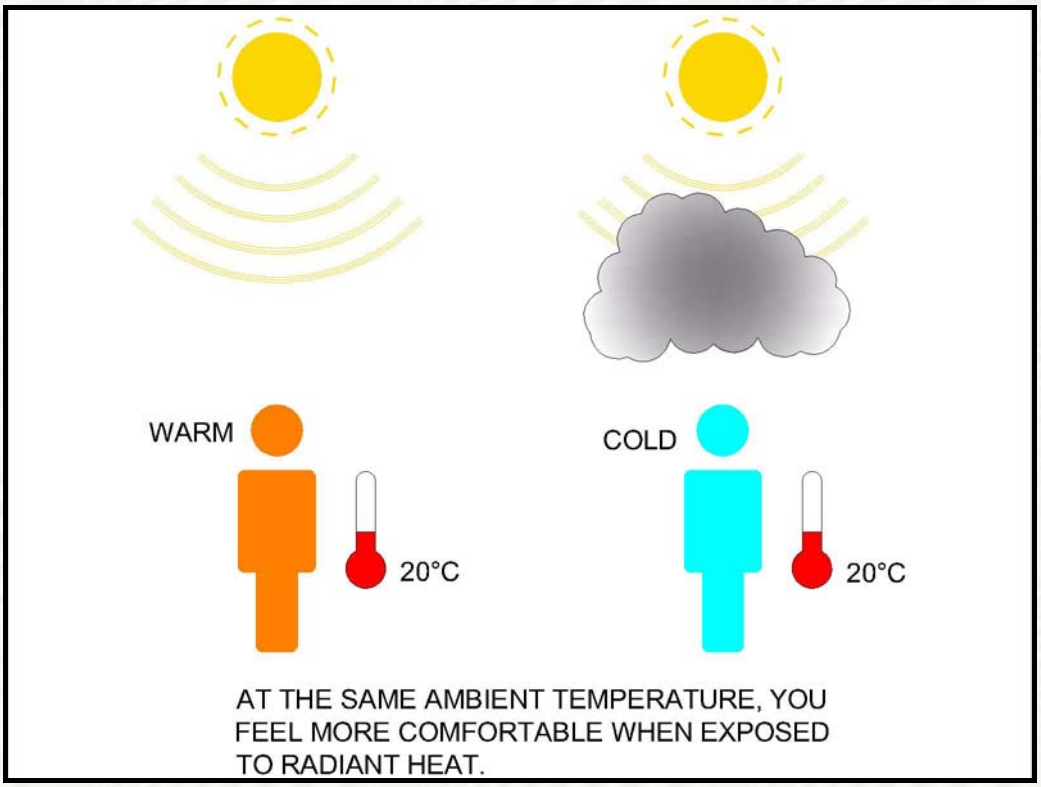
RADIANT PANEL RANGE

EMCP
ASSOCIATION OF EUROPEAN MANUFACTURERS OF CEILING PANELS

INTRODUCTION

HOW DO RADIANT PANELS WORK?

A common misconception, even among heating professionals, is that heat rises. In fact, hot air rises and cold air falls due to differences in their density. Heat however, will always travel from a hot surface to a colder one. Radiant panel operation is based in principle on the primary source of heat familiar to us all - the warmth of the Sun. The Sun warms you and the objects around you instead of the air. The warmth felt from the Sun's rays is not warm air, but actually infra-red energy.

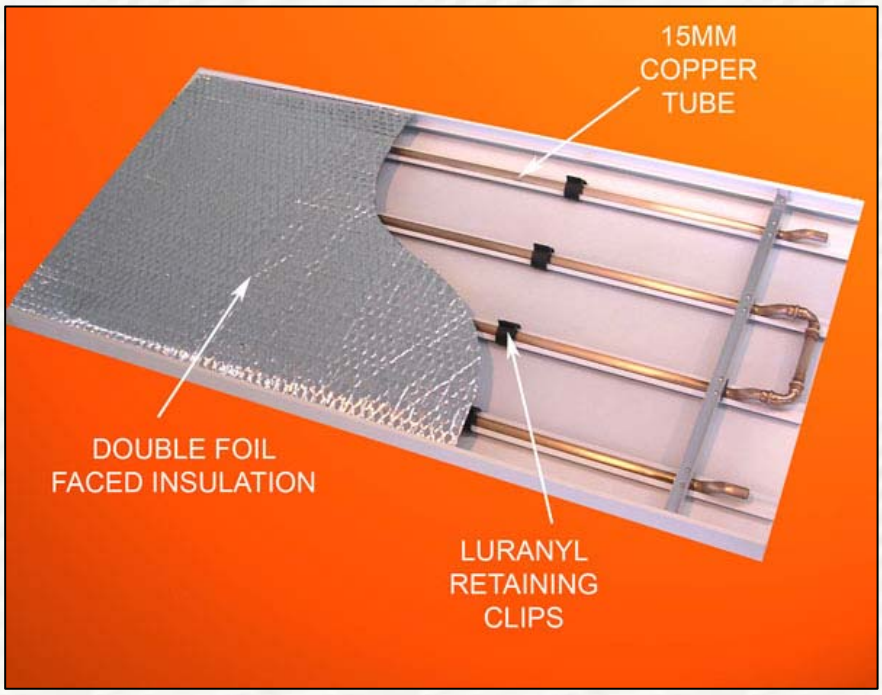


Like the Sun's rays, radiant heat moves in straight lines, warming all objects in its path. These objects in turn become heat radiators, giving off their own gentle heat thus preventing building occupants losing warmth to cold objects such as walls, floors, tables, chairs, etc. Air is transparent to the transfer of energy, which occurs directly from warmer to cooler objects.

ADVANTAGES OF RADIANT HEATING

1) FEUK's radiant panels provide an unobtrusive, effective and efficient form of radiant heating, which ensures even and comfortable warmth with minimal air temperature difference between floor and ceiling from a relatively hidden source.
2) FEUK's radiant panels heat objects within a room, which in turn heat the air. Warmed air systems merely heat the air in the room without heating the objects.
3) The internal air temperature for radiant heated buildings may be lower than for a conventionally heated building to achieve the same level of body comfort (when adjusted so the perceived temperature is actually the same).
4) The air quality within the room is cleaner because dust and other air pollutants such as mould, fungi, bacterium and viruses are not circulated by the constant air movement associated with conventional convection systems.
5) Zone control of the FEUK radiant system permits flexible management, allowing selected areas to be heated to different temperatures as required.
6) Radiant heat is transmitted by infrared waves and is directional. Radiant panel heating ensures that cold spots are avoided.
7) Radiant heat is not absorbed by the air, so it is ideal for buildings which have high air exchange rates. Radiant heat offers considerable energy savings over warm air systems, especially under otherwise difficult conditions.
8) Conventional heating systems allow the heat to collect unevenly where it is most likely to escape - the ceiling and along walls. Because the temperature in a room with radiant heat remains relatively constant, heat loss can be significantly reduced.
9) Rooms heated by convection heaters lose heat as soon as they are switched off because they only heat the air, not the objects which in turn heat the air.
10) Draughts and natural convection currents make it difficult to control warm air movement within a building. As warm air rises to areas where it is not beneficial, heating costs also rise.
11) The lower temperature required for a radiant heat system helps to maintain natural humidity and lower static electricity levels. Humidification is usually unnecessary with a radiant system because radiant heat does not significantly alter air moisture content, which is generally adequate if the air is not dried out by combustion or by increased infiltration of cold, dry outside air.

SPECIFICATION



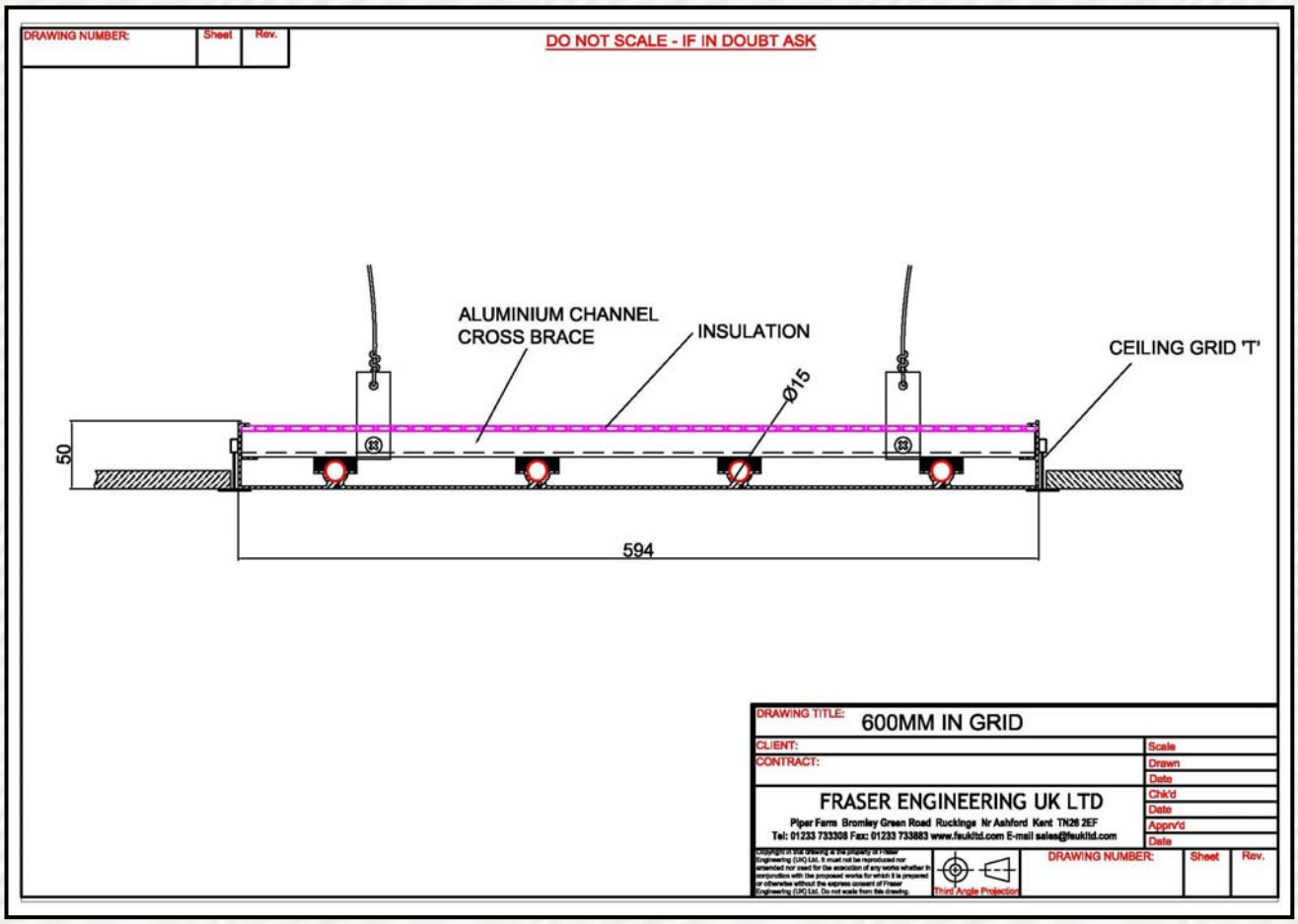
Designed for ease of installation and low ceiling loads, our radiant panels are constructed of modular 150mm wide extruded 6063 T6 aluminium sections to BS1615, which interlock together with matching 75mm wide edge sections to achieve the industry norm 600mm nominal width for installation into standard ceiling grids. Other widths can be accommodated from 150mm to 1200mm in multiples of 150mm. Radiant panels are normally supplied in 600 x 600, 1200 x 600 and 1800 x 600 configurations. However, panel lengths can be supplied in infinitely variable increments from 600mm to a maximum of 3000mm. Finished with oven-baked polyester powder paint to industry standard RAL 9010 - 30% gloss (White) specification, the panels will retain their appearance for many years without degradation. The design is such that the centre lines of adjoining panel sections, which are exposed on the visible face of the panel, correspond with the centre line of the copper tubes. The overall height of these radiant panels is 50mm with a rebated return of 6mm along both edges. The rebate is provided to facilitate fitment of a 2mm aluminium plate, which may be employed to ‘close off’ the top of the panel or to provide a location for ‘sports hall canopies’, if required.

The modular sections of the radiant panel are firmly locked together with Nylon blocks, which are screwed to either side of the copper tubes through the flanges of the tube-seating feature of the panel. These screws will also pass through 19 x 19 x 1.6mm aluminium bracing channel, the ends of which will be fixed to the extruded flange on the two edge sections. C106 Copper tube conforming to EN12449 is secured with Luranyl® retaining clips at intervals of approximately 500mm. A standard 600mm width panel has four ‘passes’ of such tube along its length. A continuous foil-faced double-sided radiant heat reflector is secured to the upper part of the assembled panel. This extremely lightweight material provides superior performance over traditional fibreglass insulation. Unlike fibreglass products, it does not collapse, compress or disintegrate. Similarly, it does not promote growth of bacteria and fungi, nor is it affected by humidity or condensation. This means that the insulating value remains unchanged from a dry state to a very high humidity condition.

VARIANTS

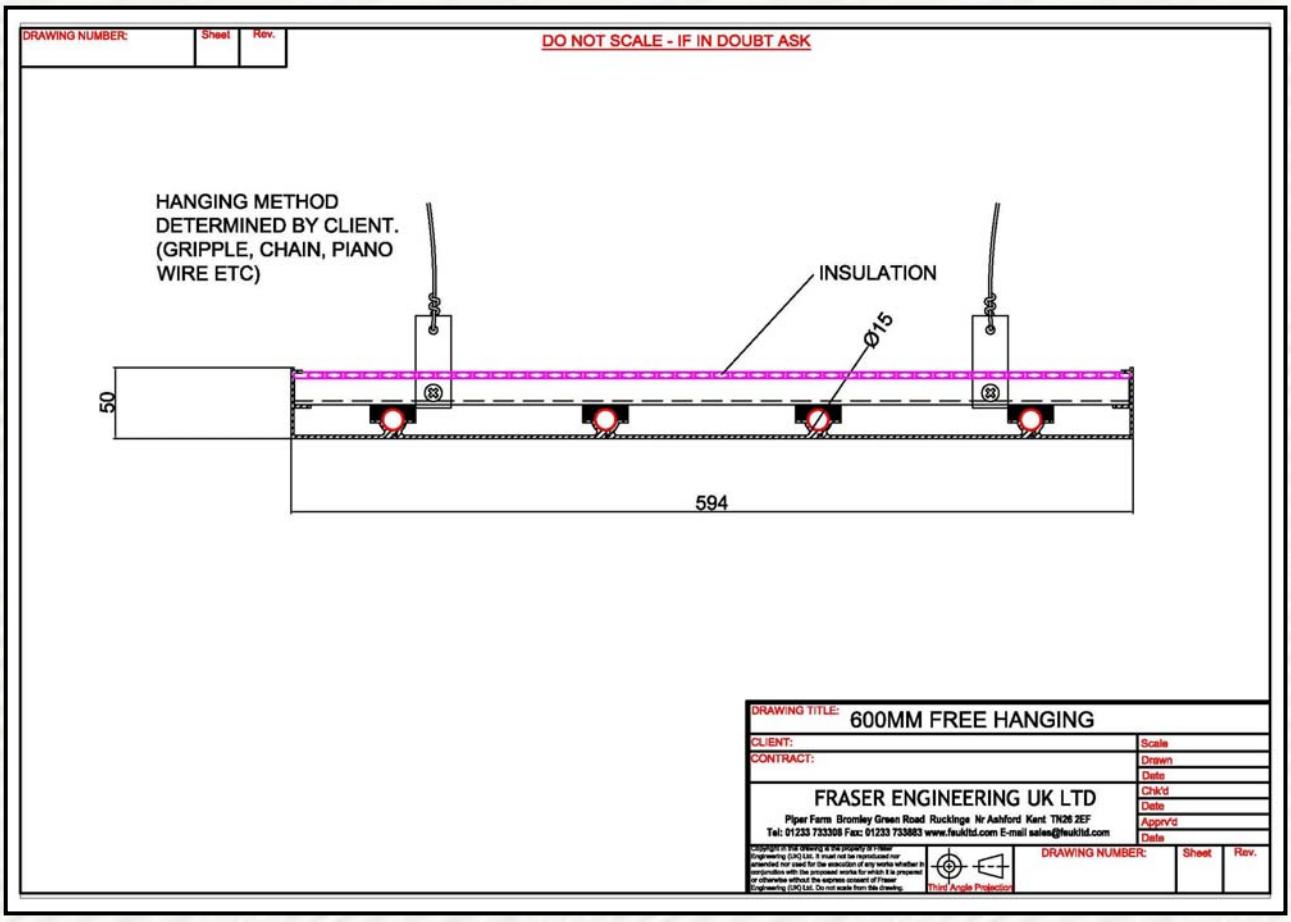
1) CEILING GRID

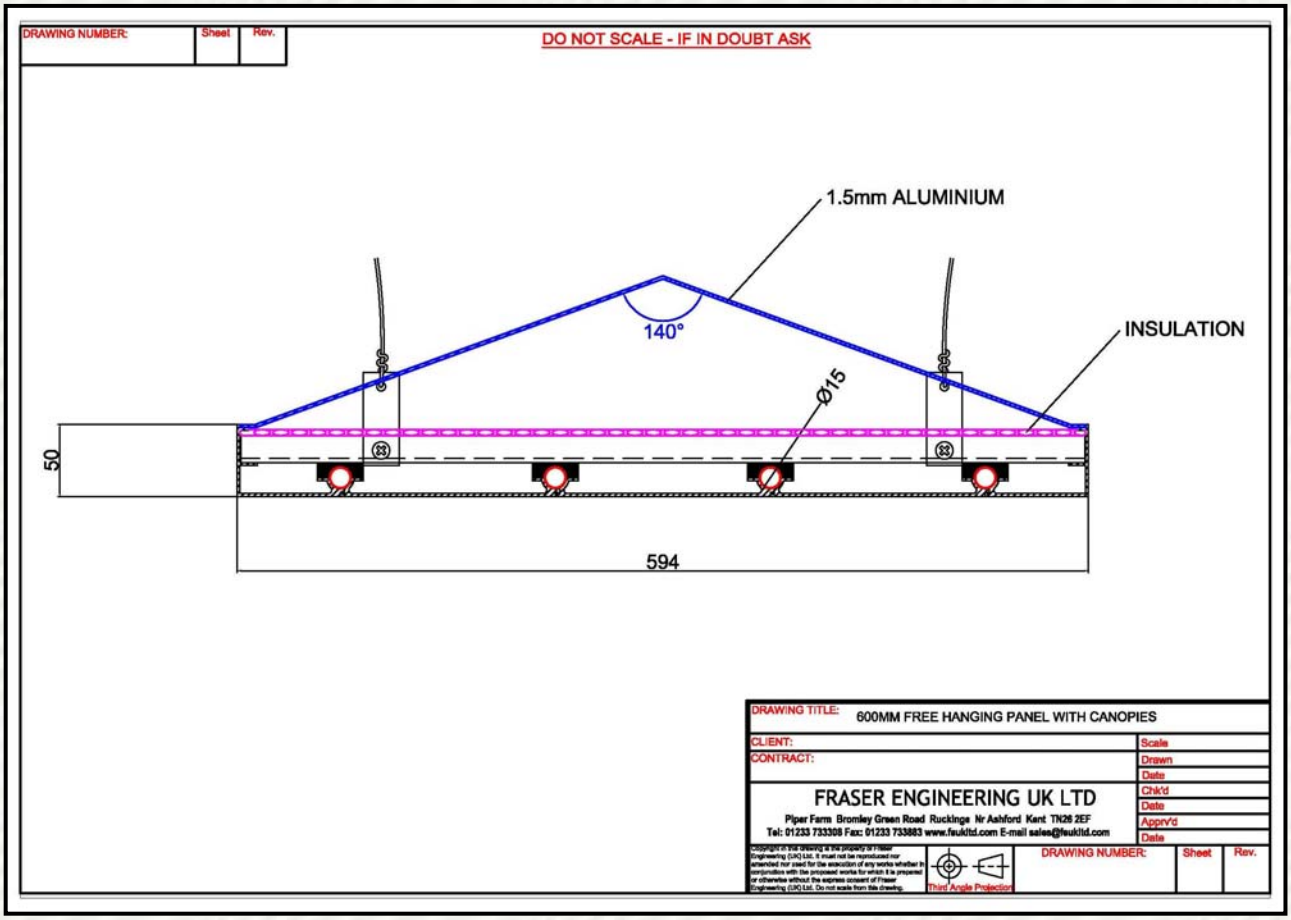
Panels are manufactured, sized for fitment within a standard ‘T’ bar grid. Nominal 600mm panels actually measure 594mm. These are supplied in modules of up to 3000mm. Where a longer run is required, panels are sized so that joins coincide with the ceiling ‘T’. These joins are concealed with a bespoke ‘H’ extrusion which can be utilised in both standard and mini ‘T’ ceilings, having flanges of differing widths. Panels are generally fitted by wiring them to the structural ceiling by the same method as the grid itself.



2) FREE HANGING

These are mainly used in sports halls but sometimes in other areas with high structural ceilings. The panels are supplied with colour matched end caps to close off the end of the panel. Joins are covered with the same extruded 'H' as the grid panels.
They can be hung in various ways; chain, Gripple®, piano wire or threaded rods.
For areas where there is a chance of balls or shuttlecocks landing on the upper surface of the panel we offer optional aluminium canopies. (see below).



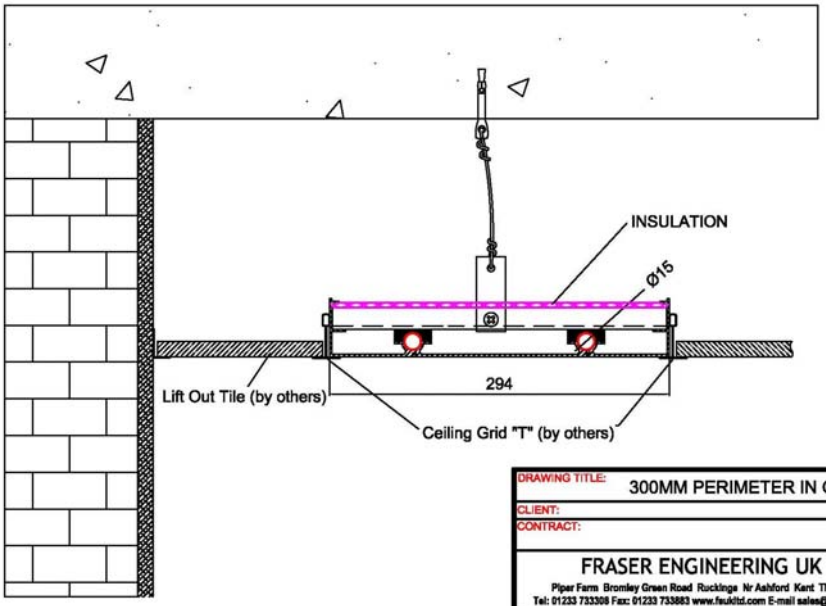


3) PERIMETER

As the name suggests, these are panels installed around the perimeter of a room or building. This method is often used when the installation of lights, smoke alarms, sprinklers etc. prevents the installation of panels through the centre of the room. Generally two methods are used to install perimeter panels. The panel can either be fixed to a batten (installed by others) with the room side suspended. This fixes the panel close to the wall. An alternate method is to fit a tile or part tile from the wall and then install the panel as it would be in grid. Again, joins are covered by 'H' extrusion.

DRAWING NUMBER: | Sheet | Rev.

DO NOT SCALE - IF IN DOUBT ASK



DRAWING TITLE: 300MM PERIMETER IN GRID

CLIENT:

CONTRACT:

Scale | Drawn | Date | Chk'd | Date | Apprv'd | Date

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Third Angle Projection

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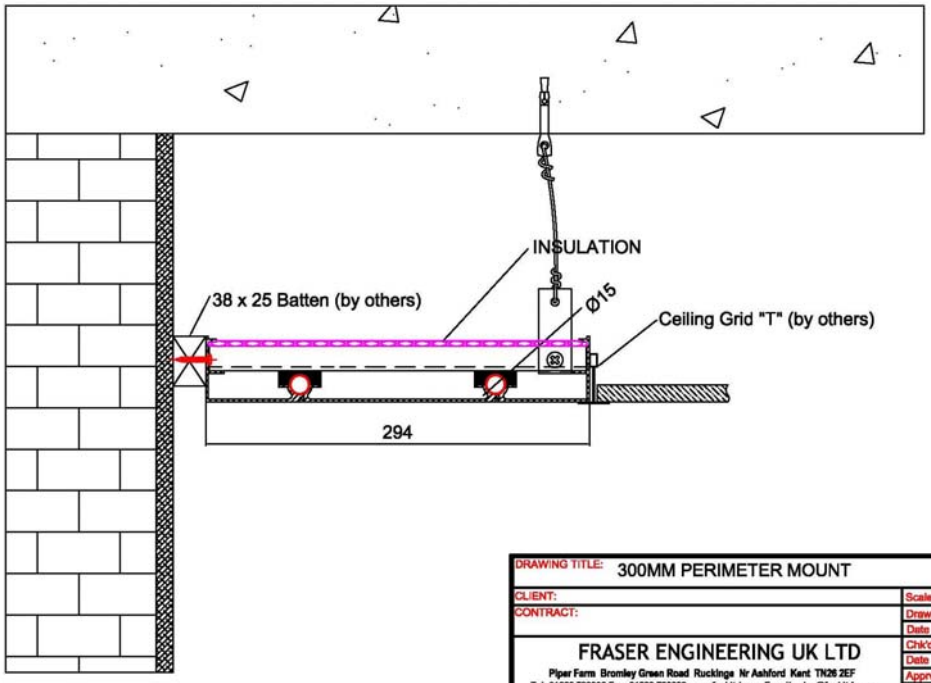

DRAWING TITLE: 300MM PERIMETER MOUNT

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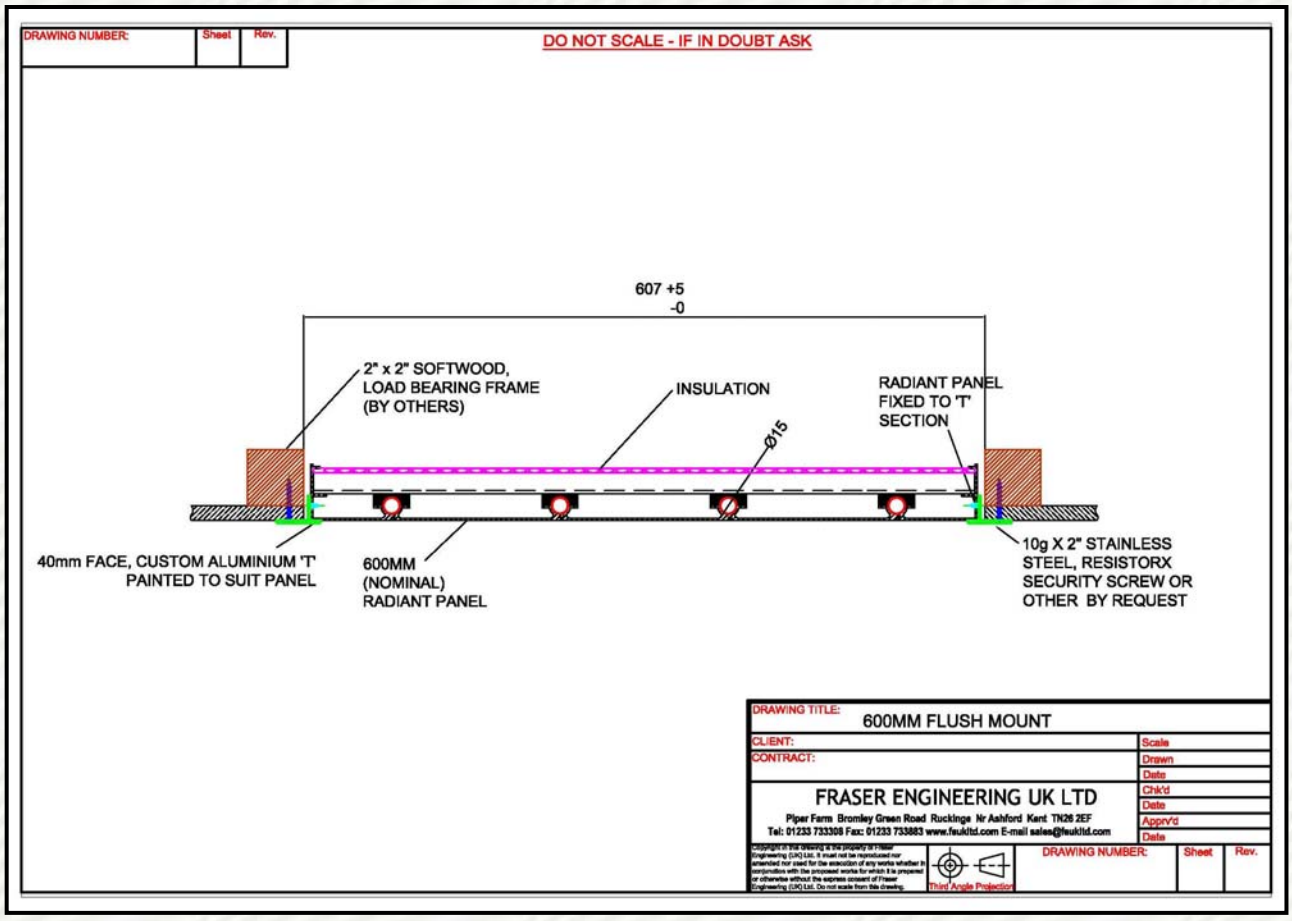
Third Angle Projection

DRAWING NUMBER: | Sheet | Rev.

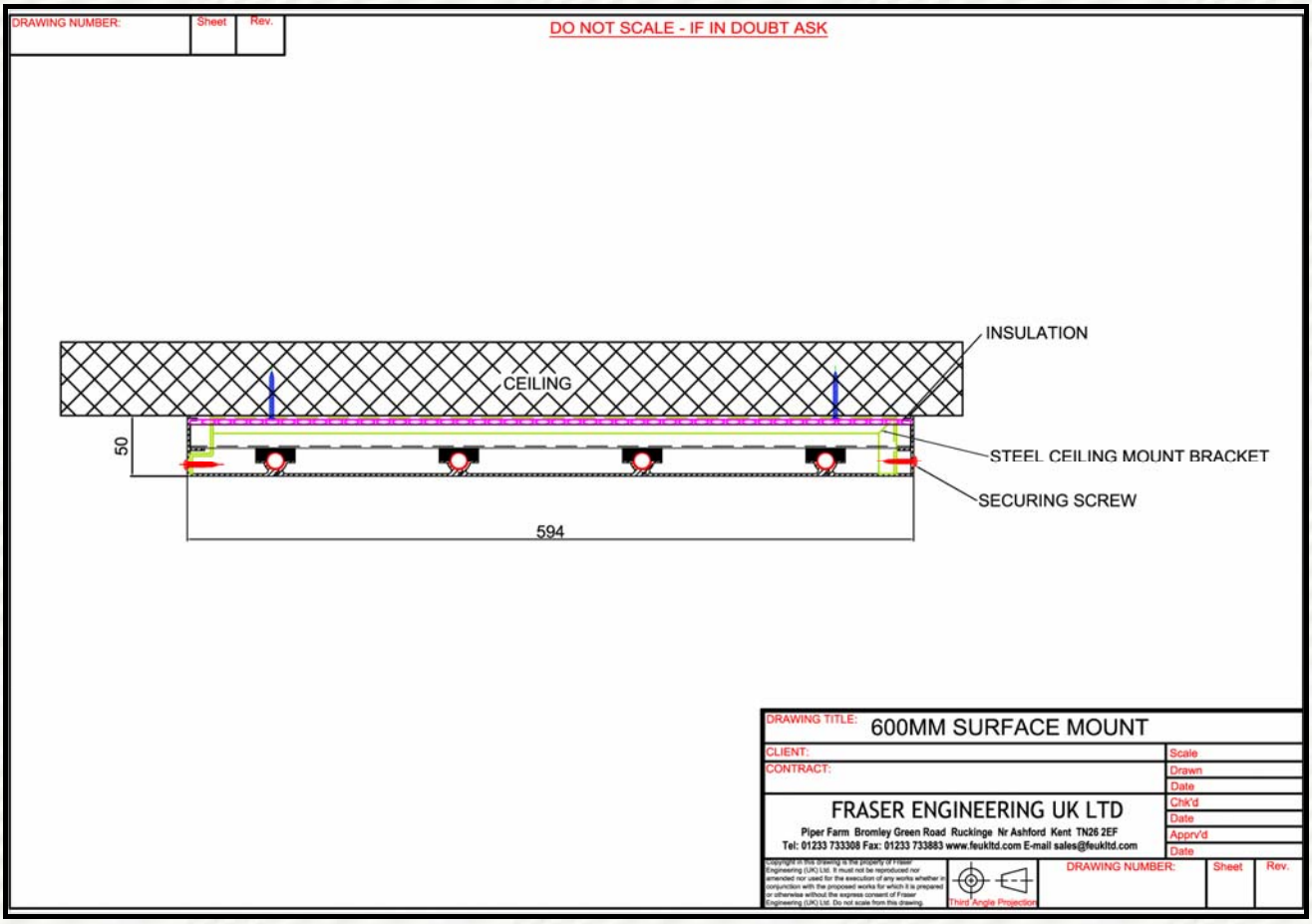
4) FLUSH MOUNT

This fitment is most often used in plasterboard ceilings where free hanging or surface mount panels would be unsuitable. The panel is supplied fixed within a specially extruded, slimline, offset ‘T’. With its’ chamfered outer edge, the frame readily blends with the existing ceiling, resulting in an unobtrusive fitment. Fitting is achieved by securing the frame and panel into an aperture that has been trimmed to suit the installation with either a wood or metal surround. (by others). In conjunction with suitable security screws, this fitment is often used in secure areas and considered ligature resistant.



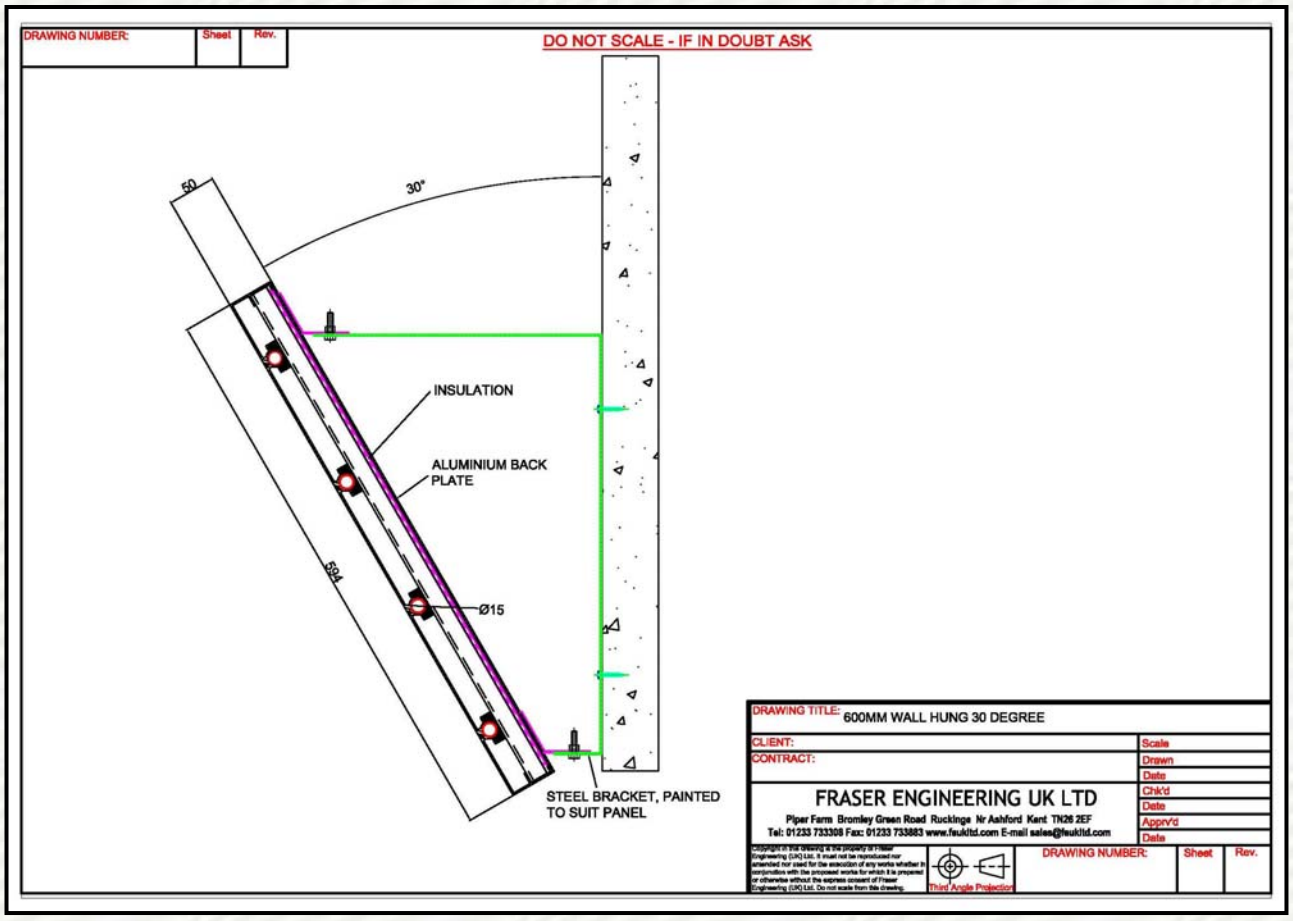
5) SURFACE MOUNT

This installation method is generally utilised when there is insufficient ceiling void, or the void is inaccessible. Panels are supplied with colour matched end caps to close the ends of the runs. Mounting is achieved by first securing the supplied steel brackets to the structural ceiling. The panel is then offered up to the bracket and secured with suitable screws.



6) WALL MOUNT

Mainly used where there is insufficient availability for ceiling installation. Generally set at a standard 30° (although any angle is possible), the panels are supplied with an aluminium back plate and colour matched wall brackets and end caps. If the end of the run needs closing off between the panel and the wall, an optional infill piece can be supplied.



OUTPUTS

The Association of European Manufacturers of Ceiling Panels (EMCP), of which we are a member, has agreed that all member companies should test their panels to the most recent European standard.
The latest standard of testing of radiant panels is EN14037. The EMCP advises that clients should only trust the outputs of panels tested to this standard.
Not all radiant panel manufacturers wish to conform to these standards and so care should be taken when specifying panels without supporting EN14037 test reports from an accredited test facility. At present, only HLK, Stuttgart or WSPLab, Stuttgart are equipped to perform this test.

PREMIER PANEL						
NOMINAL WIDTH (MM)	ΔT	NOMINAL LENGTH (MM)				
		600	1200	1800	2400	3000
300	50	87	174	261	348	435
	55	**99**	**198**	**298**	**397**	**496**
	56.5	103	206	310	413	516
450	50	131	261	392	522	653
	55	**149**	**298**	**446**	**595**	**744**
	56.5	155	310	465	619	774
600	50	174	348	522	696	870
	55	**198**	**397**	**595**	**794**	**992**
	56.5	206	413	619	826	1032
750	50	218	435	653	870	1088
	55	**248**	**496**	**744**	**992**	**1240**
	56.5	258	516	774	1032	1290
900	50	261	522	783	1044	1305
	55	**298**	**595**	**893**	**1191**	**1488**
	56.5	310	619	929	1239	1549
1050	50	305	609	914	1218	1523
	55	**347**	**695**	**1042**	**1389**	**1736**
	56.5	361	723	1084	1445	1807
1200	50	348	696	1044	1392	1740
	55	**397**	**794**	**1191**	**1587**	**1984**
	56.5	413	826	1239	1652	2065

SQUARE METRE OUTPUTS	
ΔT	WATTS
50	483
55	551
56.5	573

All outputs based on HLK Stuttgart testing.
Report number: DF08 D12.2619

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