



SPIRE DUNEDIN HOSPITAL VICARAGE ROOFING WORKS PLANNING APPLICATION DESIGN STATEMENT

Revision: P1 For Planning Application

Date: 17-03-25
Project No: 5845
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Spire Dunedin Hospital
Vicarage Roofing Works



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Introduction

This statement provides an overview of the design proposal to replace the roof to the Vicarage building at Spire Dunedin Hospital, along with the installation of 20 new PV panels to the south facing side of the roof.

Existing Site

The Vicarage is located within the site of Spire Dunedin Hospital and is accessed from Downshire Square. It consists of a main two-storey building with a pitched roof, and two single-storey areas with a flat roof. The pitched roof has brown clay pantiles, with two brick chimneys, one on each pitched section. The lower sections have a flat standing seam roof which is to be retained.



View of the pitched roof from the south, showing the existing clay tiles and chimney. The fascias to one of the two lower roofs are also visible in the foreground



View from the north east, with the fascias to upper and lower level roofs visible, along with the existing chimney to the north elevation

Proposal

The pitched roof is to be stripped off and reinstated with new felt, battens and interlocking brown clay pantiles, along with 20 PV panels to the south facing side of the ridge. In order to avoid overshadowing of the PV panels two redundant chimneys are to be demolished. The existing timber fascias and soffits to the pitched roof are to be stripped off as part of the works and replaced with new white uPVC fascias and soffits. The existing timber fascias to the 2nd lower roofs are to be retained and receive a white uPVC overlay as the existing fascia cannot be removed while the roof is retained. The existing uPVC gutters and downpipes will be removed and replaced with new black uPVC units. The uPVC items have been selected because of their low maintenance and high level of robustness.

Materials and Features

The new roof finish will be in keeping with existing pitched roof tiles. The proposed tiles are to be Sandtoft Olympus Tuscan clay interlocking pantiles. Ridge and verge tiles will be in finishes to match the main roof tiles. The PV panels are to be Trina Vertex S+ 450w solar panels on GSE inset mounting system.

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Olympus Tuscan Interlocking Pantile



Trina Vertex S+ Dual Glass PV module

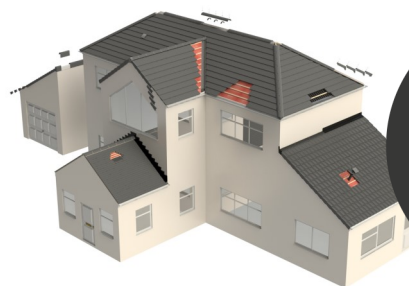
Olympus

Product Technical Information Sheet

Material	Clay
Minimum roof pitch	22.5°
Headlap (minimum)	75 mm
Headlap (maximum)	120 mm
Batten spacing at maximum gauge ¹	333 mm
Batten spacing at minimum gauge ¹	288 mm
Size of tile ¹	408 x 327 mm
Covering capacity	10.2 tiles per m ² at 75mm headlap
Cover width	295 mm
Profile depth	57 mm
Hanging length	382 mm
Weight as laid	35.2 kg per m ² at 75mm headlap
Weight per 1000 (including pallet & packaging)	3.69 tonnes
Weight per tile	3.45 kg
Weight per pallet (including pallet & packaging)	0.776 tonnes
Bond	Straight
Quantity per pallet	210
Quantity per row/band	35
Quantity per mini pack	5
Quantity per layer	105
Mini packs per row	7
Battens per m ²	3.1m at 75mm headlap
Batten size - up to 450 mm rafter centres	38 x 25mm
Batten size - up to 600 mm rafter centres	50 x 25mm
Nail size/type for tiles	65 x 3.75 mm aluminium ring shank clout head
Nail size/type for metal tile clips	55 x 3.35 mm aluminium ring shank clout head



Click to see more available colours



BIM Objects Download



¹Clay tiles are subject to small variations in size because of drying and firing shrinkage in the manufacturing process. Before deciding on the batten gauge and linear coverage, the roof tiler should inspect each batch of tiles to ensure that the correct minimum headlap and sidelap are achieved. Unless otherwise stated, data is based on the tiles laid at minimum headlap.

Tile Fixing - Sandtoft roof tiles must be laid and fixed to comply with BS 5534: the British Standard Code of practice for slating and tiling, and BS 8000: Part 6: the British Standard Code of practice for workmanship on building sites. To ensure compliance with these Standards we strongly recommend that a calculated fixing specification be obtained from Sandtoft Technical Support or using Sandtoft's online tool at www.all4roof.co.uk

Product specification is subject to change and will be updated accordingly. Date of this data sheet publication; 29/09/2022



1000+ products to choose from



Expert help and advice



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450 W

MAXIMUM POWER OUTPUT

0/+5 W

POSITIVE POWER TOLERANCE

22.5 %

MAXIMUM EFFICIENCY



Small in size, bigger on power

- Generates up to 450 W, 22.5 % module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping, lower series resistance, improved current collection and enhanced reliability
- Reduces installation cost with higher power bin and efficiency



Dual-glass Design, High Reliability

- Excellent fire rating and resistance to harsh environmental conditions
- 5,400 Pa snow load and 4,000 Pa wind load (test loads)



Maximize Energy Harvest

- Up to 25 years product warranty and 30 years power warranty
- 1 % first-year degradation and 0.4 % annual degradation enabled by N-type technology



Universal solution for residential and C&I rooftops

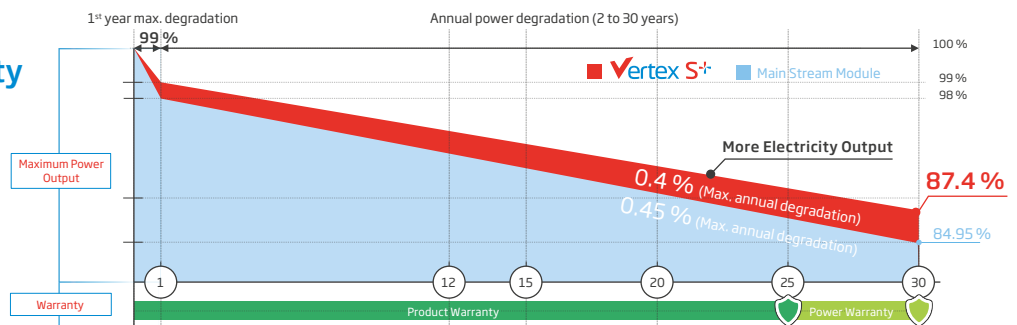
- Designed for compatibility with existing mainstream inverters, optimizers and mounting systems
- Perfect size and low weight for easy handling. Optimized transportation cost
- Flexible installation solutions for system deployment

Extended Vertex S⁺ Warranty

1 %
1st year max. degradation

0.4 %
Max. annual degradation from year 2 to 30

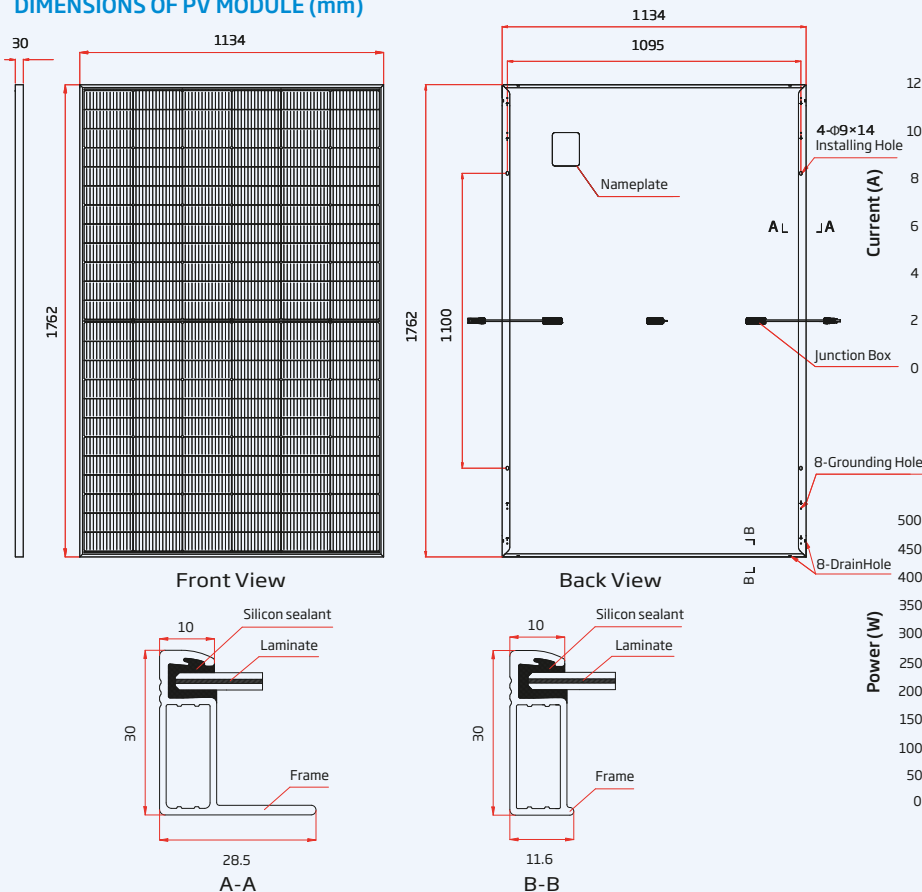
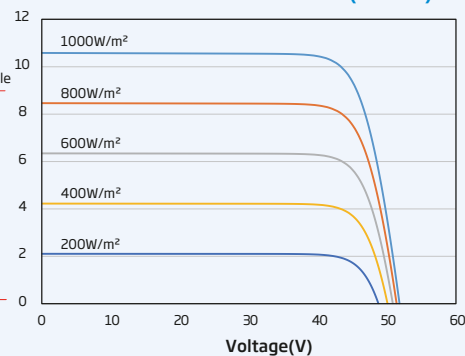
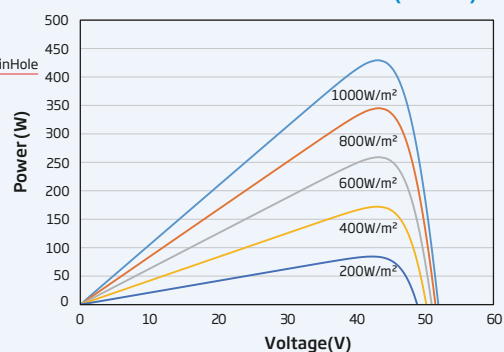
25 Years
Product Workmanship Warranty



Comprehensive Products and System Certificates



IEC61215/IEC61730/IEC61701/IEC62716
 ISO 9001: Quality Management System
 ISO 14001: Environmental Management System
 ISO14064: Greenhouse Gases Emissions Verification
 ISO45001: Occupational Health and Safety Management System

DIMENSIONS OF PV MODULE (mm)

I-V CURVES OF PV MODULE (440 W)

P-V CURVES OF PV MODULE (440 W)

ELECTRICAL DATA (STC)

	TSM-425 NEG9R.28	TSM-430 NEG9R.28	TSM-435 NEG9R.28	TSM-440 NEG9R.28	TSM-445 NEG9R.28	TSM-450 NEG9R.28
Peak Power Watts-P _{MAX} (Wp)*	425	430	435	440	445	450
Power Tolerance-P _{MAX} (W)	0/+5					
Maximum Power Voltage-V _{MPP} (V)	42.9	43.2	43.6	44.0	44.3	44.6
Maximum Power Current-I _{MPP} (A)	9.92	9.96	9.99	10.01	10.05	10.09
Open Circuit Voltage-V _{OC} (V)	50.9	51.4	51.8	52.2	52.6	52.9
Short Circuit Current-I _{SC} (A)	10.56	10.59	10.64	10.67	10.71	10.74
Module Efficiency η _m (%)	21.3	21.5	21.8	22.0	22.3	22.5

STC: Irradiance 1000 W/m², Cell Temperature 25 °C, Air Mass AM 1.5. *Measuring tolerance: ±3 %.

ELECTRICAL DATA (NOCT)

	TSM-425 NEG9R.28	TSM-430 NEG9R.28	TSM-435 NEG9R.28	TSM-440 NEG9R.28	TSM-445 NEG9R.28	TSM-450 NEG9R.28
Maximum Power-P _{MAX} (Wp)	324	328	332	335	339	343
Maximum Power Voltage-V _{MPP} (V)	40.0	40.4	40.7	41.0	41.3	41.6
Maximum Power Current-I _{MPP} (A)	8.09	8.11	8.15	8.17	8.20	8.24
Open Circuit Voltage-V _{OC} (V)	48.2	48.7	49.1	49.4	49.8	50.1
Short Circuit Current-I _{SC} (A)	8.51	8.53	8.57	8.60	8.63	8.65

NOCT: Irradiance at 800 W/m², Ambient Temperature 20 °C, Wind Speed 1 m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	144 cells
Module Dimensions	1762×1134×30 mm
Weight	21.0 kg
Front Glass	1.6 mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	POE/EVA
Back Glass	1.6 mm, Heat Strengthened Glass
Frame	30 mm Anodized Aluminium Alloy, Black
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0 mm² Landscape: 1100/1100 mm Portrait: 280/350 mm*
Connector	TS4 / MC4 EV02*

*Special order only

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43 °C (±2 K)
Temperature Coefficient of P _{MAX}	-0.30 %/ K
Temperature Coefficient of V _{OC}	-0.24 %/ K
Temperature Coefficient of I _{SC}	0.04 %/ K

MAXIMUM RATINGS

Operational Temperature	-40 to +85 °C
Maximum System Voltage	1500 V DC (IEC)
Max Series Fuse Rating	20 A

WARRANTY

25 year Product Workmanship Warranty
30 year Power Warranty
1 % first year degradation
0.4 % Annual Power Attenuation

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box:	36 pieces
Modules per 40' container:	936 pieces