

Insulated Panels
UK & Ireland

Protected by



Kingspan PowerPanel KS1000PPP Data Sheet



POWERED BY
QuadCore[®]
TECHNOLOGY


Kingspan[®]

Kingspan PowerPanel KS1000PPP

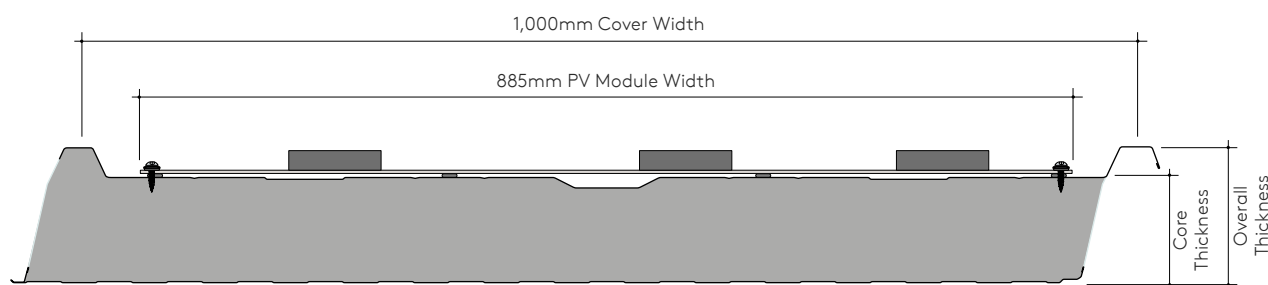
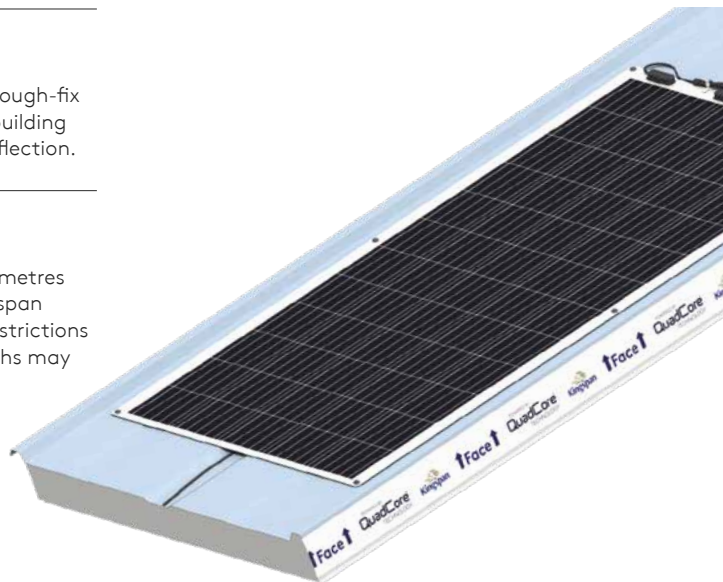
QuadCore®

Applications

KS1000PPP (PowerPanel Pitched) is a metre wide through-fix profiled insulated roof panel which can be used for building applications with roof pitches of 4° or more after deflection.

Available Lengths

KS1000PPP is available in standard lengths from 2.2 metres to 15 metres. For longer lengths please contact Kingspan Technical Services. Additional costs and transport restrictions may apply for non-standard lengths. Available lengths may charge for export (outside of the UK).



Dimensions, Thermal Performance, Output & Weight

Core Thickness (mm)	76	103	153
Overall Thickness (mm)	104	131	181
Cover Width (mm)	1,000		
U-value (W/m²K)	0.25	0.18	0.12
Estimated Weight (kg/m²)	12.5	13.5	14.9
Solar Cell	Monocrystalline Silicon (60 cells)		
Module Power Output	310Wp		
Module Dimension (mm)	2,002 x 885 x 2		
Module Weight (kg)	5		

The KS1000PPP insulated roof panels have a Thermal Transmittance (U-value), calculated using the method required by the Building Regulations Part L2 (England & Wales) and Building Standards Section 6 (Scotland).



Insulation Core

KS1000PPP insulated roof panels are manufactured with an HCFC, CFC and HFC free QuadCore® insulation core.



Certification

KS1000PPP is a new product and will undergo a series of testing and certifications. Please consult Kingspan Technical Services or your local Kingspan Commercial Representative regarding the latest testing and accreditation the product has achieved.

Fire

KS1000PPP will be subjected to the following tests:

Reaction to Fire*

- Classified B-s1,d0 according to the European Reaction to Fire classification system (Euroclasses) BS EN 13501-1: 2007+A1: 2009 when tested on the internal liner. Please contact Technical Services for information relating to the external face.
- BROOF(t4) to BS EN 13501-5: 2016.

* Certification pending.

Environmental

Kingspan Insulated Panels produced in the UK are certified to BES 6001 (Framework Standard for the Responsible Sourcing of Construction Products) 'Very Good'. QuadCore® insulated panel systems' Environmental Product Declaration is in accordance with the requirements of EN 15804: 2012+A1: 2013.

All Kingspan manufacturing facilities across the UK and Ireland are powered by 100% renewable energy. Kingspan Insulated Panels directly contribute to BREEAM® / LEED® credits.

Air Leakage

An air leakage rate of 3m³/hr/m² at 50Pa or less can be achieved when using Kingspan insulated roof panels.

Acoustic

Sound Reduction Index (SRI)

Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
SRI (dB)	20	18	20	24	20	29	39	47

The KS1000PPP insulated roof panel has a single figure weighted sound reduction $R_w = 25\text{dB}$.

Biological

Kingspan panels are normally immune to attack from mould, fungi, mildew and vermin. No urea formaldehyde is used in the construction, and the panels are not considered deleterious.

Materials

Coatings - External Weather Sheet

- Kingspan XL Forté: Consists of a multi-layer organic coating, embossed with a traditional leather-grain finish.*

Coatings - Internal Liner Sheet

- Kingspan CLEANsafe 15: The coating has been developed for use as the internal lining of insulated panels. Standard colour is 'Bright White' with an easily cleaned surface.*

* Certification pending.

Kingspan PowerPanel KS1000PPP

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Panel End Cut Back

Standard Cut Back Eaves	75mm
Class A End Lap	75mm

Product Tolerance

Cut to Length	±5mm
Cover Width	±2mm
Thickness	±2mm
End Square	±3mm

Handling

The KS1000PPP insulated roof panel can be manufactured in both left to right handed (LH) and right to left handed (RH).

Quality & Durability

KS1000PPP insulated roof panels are manufactured from the highest quality materials, using state of the art production equipment to rigorous quality control standards, complying with BS EN ISO 9001 standard, ensuring long term reliability and service life. The panels are also being manufactured under Environmental Management System Certification BS EN ISO 14001. Compliant to BS OHSAS 18001 Occupational Health and Safety.

Warranty

Full system protected by a 25 year Kingspan Warranty which includes PV performance and thermal, structural and coating performance of insulated panel.

Packing

KS1000PPP insulated roof panels are stacked with the top sheet facing up to protect the PV module. The top, bottom, sides and ends are protected with foam and timber packing and the entire pack is wrapped in plastic.

Core Thickness (mm)	76	103	153
No. Panels per Pack	11	7	6

Note: Applies to UK pack sizes. Please contact Kingspan Technical Services for export information.

Sea Freight

Fully timber crated packs are available on projects requiring delivery by sea freight shipping, at additional costs. Alternatively, steel containers can be used. Special loading charges apply.

Delivery

All deliveries (unless indicated otherwise) are by road transport to project site. Off-loading is the responsibility of the client.

Site Installation Procedure

Site assembly instructions are available from Kingspan Technical Services.



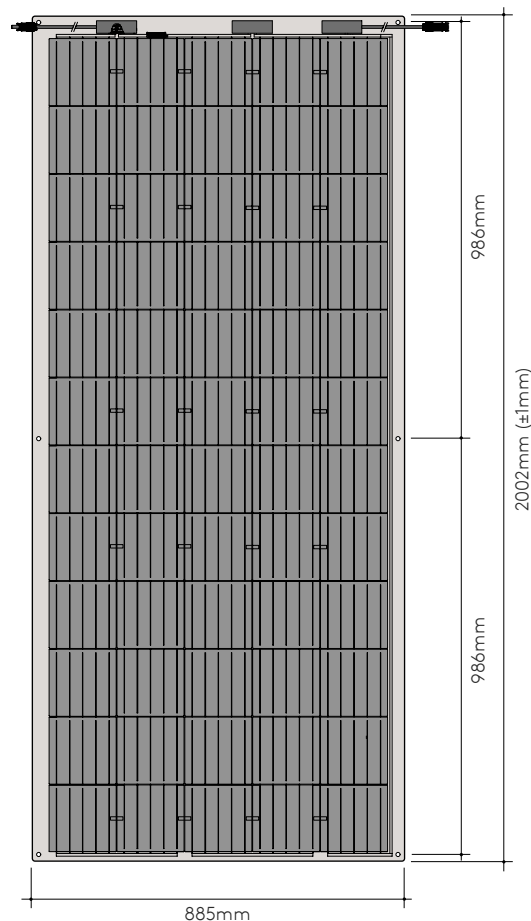
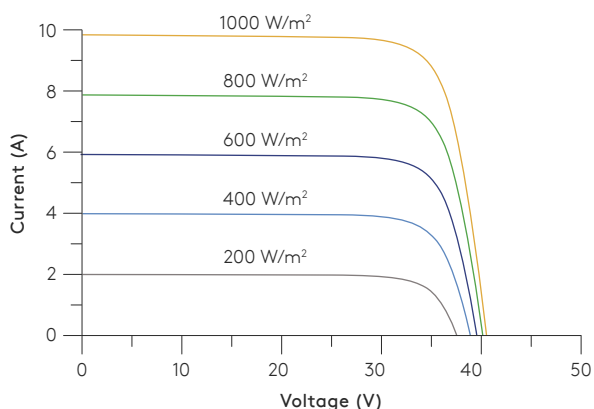
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PV Module

60 Cell Monocrystalline Module

- **Super lightweight:** Weighs only 5kg – 74% lighter than conventional glass modules.
- **Aesthetic:** Low profile allows seamless integration with underlying installation surface.
- **Durable:** The first glass-free module to pass the same durability tests as conventional glass modules, including IEC 61215: 2016, IEC 61730: 2016 and UL1703 (USA). Additionally, the module has passed PID, salt mist and ammonia corrosion tests.
- **Power tolerance:** 0-5W.
- **Warranty:** 12 year product warranty and 25 year PV performance warranty.

I-V Curve



Electrical Characteristics

STC	SMF310M-5X12UW
Maximum Power (P_{max})	310
Maximum Power Voltage (V_{mp})	33.3
Maximum Power Current (I_{mp})	9.31
Open-circuit Voltage (V_{oc})	40.5
Short-circuit current (I_{sc})	9.81
Module Efficiency	17.6%
Operating Temperature	-40°C - 85°C
Maximum System Voltage	1000 V DC (IEC)
Maximum Series Fuse Rating	20 A
Application Class	Class A
Power Tolerance	0-5W
NMOT	SMF310M-5X12UW
Maximum Power (P_{max})	233
Maximum Power Voltage (V_{mp})	30.7
Maximum Power Current (I_{mp})	7.59
Open-circuit Voltage (V_{oc})	37.6
Short-circuit current (I_{sc})	8.04

STC / NMOT: Irradiance 800 W/m², Ambient Temp. 20°C, AM = 1.5, Wind Speed 1m/s.

Temperature Characteristics

Nominal Module Operating Temperature (NMOT)	41°C (±2°C)
Temperature Coefficient of P_{max}	-0.38% / °C
Temperature Coefficient of V_{oc}	-0.28% / °C
Temperature Coefficient of I_{sc}	0.020% / °C

Mechanical Characteristics

Solar Cell	Monocrystalline Silicon (158.75mm)
No. Cells	60 (5x12)
Module Dimensions (mm)	2,002 x 885 x 2
Weight (kg)	5
Backsheet	White
J-box	IP68 Rated
Output Cables	Photovoltaic Technology Cable 4mm x2 (+)150mm / (-)450mm
Connector	MC4 Compatible

Kingspan PowerPanel KS1000PPP

Load / Span Tables

Structural Tables

KS1000PPP DP Roof Panel with 0.03kN/m² permanent loading.

Load / span tables (to be compared against calculated characteristic (i.e. unfactored) wind load values.

Single Span

Core Thickness (mm)	Load Type	Span (m)														
		Uniformly distributed imposed load (kN/m ²)														
		0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4
76	Pressure	8.31	6.20	5.11	4.39	3.86	3.42	3.05	2.72	2.27	1.89	1.58	1.33	1.12	0.94	0.80
	Suction	9.41	7.05	5.84	5.06	4.47	4.00	3.59	3.24	2.92	2.65	2.40	2.19	1.99	1.83	1.67
103	Pressure	9.58	7.55	6.46	5.72	5.13	4.63	4.19	3.79	3.43	2.93	2.51	2.16	1.87	1.62	1.40
	Suction	11.41	9.03	7.77	6.92	6.25	5.67	5.15	4.69	4.26	3.89	3.55	3.24	2.90	2.55	2.26
153	Pressure	12.33	10.23	9.09	8.10	6.92	6.03	5.35	4.80	4.35	3.97	3.65	3.38	3.11	2.76	2.46
	Suction	14.09	11.75	10.03	8.38	7.20	6.31	5.63	5.08	4.63	4.25	3.93	3.66	3.43	3.22	3.04

Double Span

Core Thickness (mm)	Load Type	Span (m)														
		Uniformly distributed imposed load (kN/m ²)														
		0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4
76	Pressure	8.31	5.54	3.83	2.84	2.20	1.77	1.45	1.22	1.04	0.89	0.78	0.68	0.60	0.53	0.48
	Suction	8.60	5.23	3.60	2.68	2.10	1.71	1.44	1.24	1.08	0.97	0.87	0.80	0.73	0.68	0.63
103	Pressure	8.94	6.15	4.34	3.27	2.57	2.08	1.72	1.45	1.24	1.08	0.94	0.83	0.74	0.66	0.59
	Suction	8.82	5.55	3.90	2.94	2.32	1.90	1.60	1.37	1.20	1.07	0.97	0.88	0.81	0.75	0.70
153	Pressure	9.08	6.80	4.97	3.81	3.03	2.48	2.07	1.75	1.51	1.31	1.15	1.01	0.90	0.81	0.73
	Suction	9.04	6.67	4.82	3.71	2.98	2.46	2.08	1.80	1.58	1.40	1.26	1.15	1.05	0.97	0.91

Triple Span

Core Thickness (mm)	Load Type	Span (m)														
		Uniformly distributed imposed load (kN/m ²)														
		0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4
76	Pressure	8.31	6.20	4.41	3.28	2.57	2.08	1.74	1.48	1.27	1.11	0.98	0.87	0.78	0.70	0.63
	Suction	9.41	6.28	4.33	3.26	2.59	2.15	1.83	1.60	1.42	1.28	1.16	1.06	0.98	0.91	0.85
103	Pressure	9.58	6.98	4.88	3.68	2.91	2.38	2.00	1.71	1.48	1.30	1.15	1.03	0.93	0.84	0.76
	Suction	9.69	6.86	4.81	3.66	2.93	2.44	2.09	1.83	1.63	1.47	1.34	1.23	1.14	1.06	0.99
153	Pressure	9.88	7.37	5.47	4.17	3.32	2.73	2.30	1.97	1.72	1.51	1.34	1.20	1.08	0.98	0.89
	Suction	9.86	7.38	5.47	4.21	3.39	2.84	2.43	2.13	1.90	1.71	1.56	1.43	1.33	1.24	1.16

- Values have been calculated using the method described in BS EN 14509: 2013, for dark coloured panels.
- The following deflection limits have been used:
 - Short Term Pressure loading $L/200$.
 - Short Term Suction loading $L/150$.
 - Long Term loading $L/100$.
- All panel thicknesses have been calculated with a minimum support width of 50mm and intermediate support width of 50mm. Larger support widths are possible.
- The actual wind suction resisted by the panel is dependent upon the number of fasteners and the material of the supporting element.
- The fastener calculation should be carried out in accordance with the appropriate standards.
- For intermediate values linear interpolation may be used.
- The allowable steelwork tolerance between bearing planes of adjacent supports is +/- 5mm.

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