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Solar Panel Guide

Specification Data Sheet

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KANEKA

KANEKA HYBRID PV

Thin-film silicon hybrid solar panel

U-SA type

U-SA100/105/110



Decades of research and development have created HYBRID — the Next Generation innovation from Kaneka.

Kaneka's HYBRID solar panel has a tandem structure that absorbs both the blue and red ends of the light spectrum allowing it to convert even more of the sun's light into energy. This latest HYBRID innovation can deliver high power generation, kWh/kWp, and is environmentally friendly.

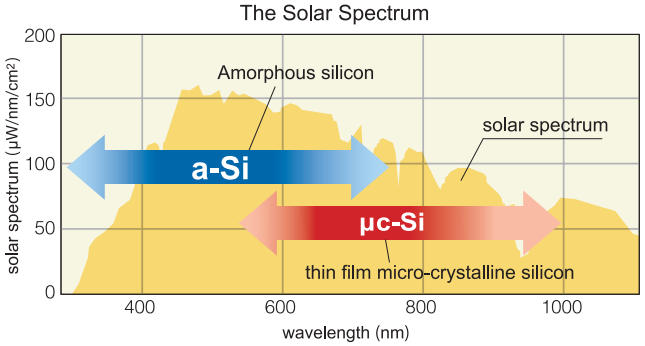


The Hybrid PV module comes with a 25 year warranty on power output.

Kaneka's HYBRID technology combines the features of both amorphous silicon and micro-crystalline silicon to create higher energy production.

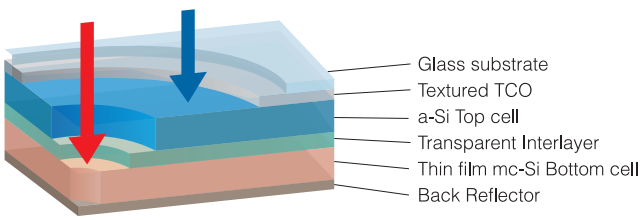
The words "solar panel" are often associated with crystalline solar panels, but Kaneka's HYBRID solar module offers some unique features over traditional crystalline. Its dual-layer structure of microcrystalline and amorphous silicon can capture both short and long wavelengths of the light spectrum, allowing the HYBRID to convert even more sunlight into electricity.
This enhances the efficiency of power generation, and produces up to 30% higher power output than conventional thin-film amorphous silicon panels. The HYBRID delivers greater performance capabilities and offers a lower open circuit voltage for enhanced design flexibility. Kaneka's HYBRID panel is the future of solar power.

The Solar Spectrum

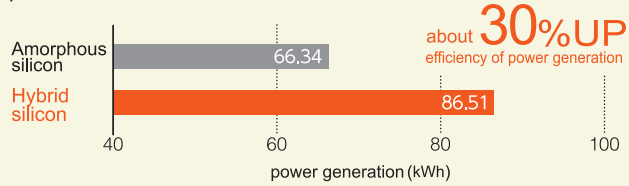


*The yellow area shows the typical solar spectrum. The amorphous silicon and micro-crystalline silicon arrows represent the spectrum band that solar panels use to turn light into electricity

HYBRID absorbs both ultraviolet (short) rays and infrared (long) rays.



Comparison: forecast of annual electricity generation per installation area (m²) (alternating current)



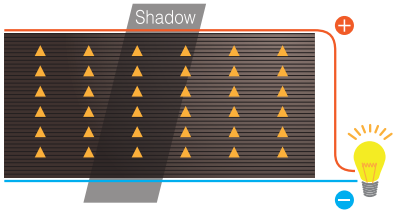
*Osaka-city. A case of low angle (5 degrees) installation, due south. Based on Kaneka's power generation forecast

U-SA type

The HYBRID cell structure is shadow tolerant.

The HYBRID panel measures 1,210x1,008 mm. Unlike traditional crystalline panels, the HYBRID cells allow it to perform even if part of the panel is shaded*.

*the cell configuration allows it to prevent power output deterioration under shadow dropped conditions like picture below.



For example, if 20% of one cell becomes shady, remaining 80% of the cell can generate power normally.

HYBRID provides design flexibility for various applications

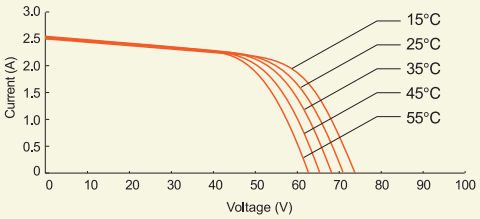
The HYBRID panel's versatile design can be used for various applications. It's aesthetically pleasing and can be easily integrated into the building envelope.



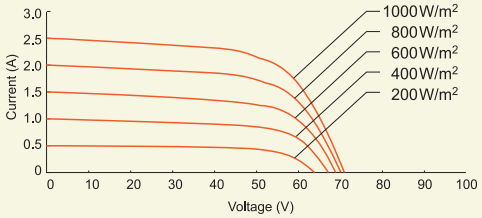
seam jointed folded-plate roof/rib-seal jointed folded plate roof | flat roof | slope roof | installation for face of a wall | installation for ground

Electrical characteristics
U-SA110 type

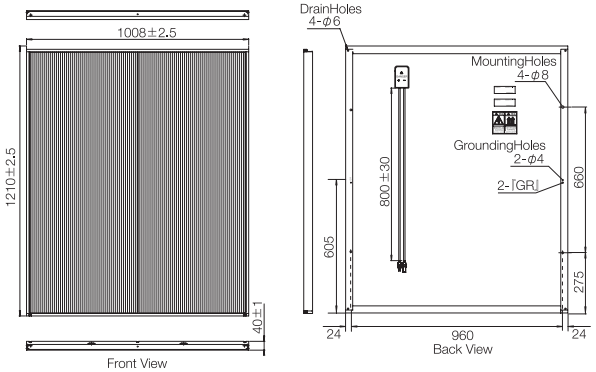
Current-Voltage characteristics at various cell temperature



Current-Voltage characteristics at various irradiance levels



U-SA100/U-SA105/U-SA110



Products			U-SA100	U-SA105	U-SA110
Electrical Data (Standard Test Condition)*1	Maximum Power (Pmax)	[W]	100	105	110
	Tolerance		-5%/+10%	-5%/+10%	-5%/+10%
	Minimum value of Pmax	[W]	95.0	99.75	104.5
	Open circuit voltage (Voc)	[V]	71	71	71
	Short circuit current (Isc)	[A]	2.25	2.40	2.50
	Voltage at Pmax (Vmpp)	[V]	54.0	53.5	53.5
	Current at Pmax (Impp)	[A]	1.87	1.96	2.04
	Module Efficiency (η)	[%]	8.2	8.6	9.0
	Efficiency reduction at 200W/m²		<5%	<5%	<5%
Data at normal operating cell temperature (NOCT)*2	Temperature (TNOCT)		45	45	45
	Maximum Power (Pmax)	[W]	74.4	78.1	81.8
	Open circuit voltage (Voc)	[V]	65.5	65.5	65.5
	Short circuit current (Isc)	[A]	1.82	1.94	2.02
	Voltage at Pmax (Vmpp)	[V]	48.8	48.8	49.2
	Current at Pmax (Impp)	[A]	1.53	1.60	1.66
Temperature coefficients	Power	[%/K]	-0.35		
	Open circuit voltage	[%/K]	-0.39		
	Short circuit current	[%/K]	0.056		
Mechanical characteristic Data	Cell Type		Thin film (amorphous Si / thin film micro crystalline Si)		
	No. of cells		106 (53 in series / 2 in parallel)		
	Dimension	[mm]	W1,210 × L1,008 × T40 (W47.6 × L39.7 × T1.6 in.)		
	Weight	[kg]	18.3 (40.3 lbs)		
	Junction box (Dimension)	[mm]	W73 × L86 × T15.5 (W2.9 × L3.4 × T0.6 in.)		
	Output cable		14 AWG cable with Multi-Contact PV-KST and KBT 4/6 Ⅱ-UR connectors		
	Front panel		low iron glass with 5.0mm thickness		
	Frame material		anodised alminum		
Limits and Others	Maximum system voltage	[V]	600		
	Limiting reverse current	[A]	5.0		
	Fuse rating	[A]	5.0		
	Operating module temperuture	[℃]	-20...+80 (module temperature)		
	Maximum load	[Pa]	2400 (50.2lb/ft²)		
	UL fire classification		Class C		

*1 Irradiance 1000 W/m², spectrum Air Mass 1.5 and cell temperature 25℃
*2 Irradiance 800 W/m², wind speed 1m/s and air temperature 20℃

c UL us LISTED UL 1703 CEC Registered

Certification : UL 1703, ULC/ORD-C-1703-01 Manufactured in ISO 9001 certificated factories.

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