

SOLAR ENERGY SOLUTIONS





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www.preformed.asia



power for the future

Compared with electricity generated from fossil fuels, each kilowatt of PV - produced electricity offsets up to 370 kg of oxides of nitrogen, 660 kg of sulfur dioxide, and 1,500 kg of carbon dioxide, every year.

www.blueskyenergy.com.au





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CORPORATE PROFILE

BlueSky Energy's Solar Power products and systems supply Sustainable Energy solutions for the benefit of the planet and our children's future. Our company can also provide expert consultation to ensure you maximise your returns on your investment in renewable energy.

The company has three major operating divisions. BlueSky Energy which offers solar power products and sustainable energy systems. Preformed Line Products which has a range of products for the power distribution, power transmission and communications markets and Rack Technologies which has a range of cabinets and enclosures for the data communication, electronics and security markets.

BlueSky Energy is Australian based and formed and backed by people who are strong in business application and engineering. We are driven to cater for the new age in sustainable energy systems that have previously been "On the Horizon" or "financially not practical".

From supplying the base products for Solar applications or complete systems, to design and integration from start to finish in turnkey solutions, BlueSky Energy is a key component in sustaining your energy future

Through our professional approach and consultation, we can provide 'start to finish' solutions using the highest quality components, making the choice for Solar Energy a key investment.



ECOLOGICAL

BlueSky Energy manufactures and partners with industry leading suppliers to bring the best possible solution to the market. Backed by support from locally qualified engineers, BlueSky Energy can bring a project together in a seamless professional manner on budget and on time. "Applications for Alternative Sustainable Power" are endless. Wherever electrical power is required, a Renewable Energy solution will always exist.

SUSTAINABLE ENERGY SOLUTIONS

BlueSky Energy provides the most up to date components and systems for the requirements of today and future energy demands. Backed by our industry experience and professional approach, BlueSky Energy can deliver off-the-shelf systems or tailor made solutions as required.

Whether it be Solar Photovoltaic systems for commercial or private power generation, BlueSky Energy can build and provide the most comprehensive system and consultation.

ENERGY EFFICIENT SOLUTIONS

- Energy auditing services
- Power system efficiency upgrades
- Consultation on energy reduction



BlueSky Energy offers solar power products and sustainable energy systems.

Ph: (02) 8805 0100 Email: sales@blueskyenergy.com.au www.blueskyenergy.com.au PO Box 626, St Marys NSW 1790



Rack Technologies has a range of cabinets and enclosures for the data communication, electrical and security markets.

Ph: (02) 8805 0050 Email: sales@rack-tech.com www.racktechnologies.com.au PO Box 626, St Marys NSW 1790



PLP has a range of products for the power distribution, power transmission and communications markets.

Ph: (02) 8805 0000 Email: sales@preformed.com.au www.preformed.com.au PO Box 626, St Marys NSW 1790



TECHNOLOGY

Dedication to ongoing application and engineering of Solar technology will drive the future innovations in the power generation industry and provide the way to reduce dependence on fossil fuel economies of today.

With our manufacturing advantage, we are committed to pushing the boundaries and applying solar technology to provide renewable energy solutions at the leading edge.

BlueSky Energy is a market driven company with its resources set in the following areas;

- Residential Grid Connect Solar Systems
- Commercial Solar Power Generation Plants
- Solar technology application
- Design & Engineering for specialised PV systems
- Manufacture of structural solar mounting solutions

BlueSky Energy can provide product selection, design & application solutions via custom manufactured mounting systems, installation and maintenance. We also provide business case cost analysis for commercial and industrial systems where generated power can be used to levy system finance.





ENERGY FACTS

Energy from the sun is converted by the Photovoltaic modules located on top of the roof. The electrical energy developed by the PV modules is DC, like a battery, and therefore needs to be converted for use in the home.

A DC-AC converter, more commonly called an inverter, then transforms the power to 240 Volts to be used by normal electrical appliances.

The inverter system is intelligent and can discover if power is required in the home or, if not, then routing the excess power to the connected outside utility grid. When this happens, the bi-directional meter will record excess energy exported to the utility grid placing you in credit. Later this power can be used, typically this is what happens at night when there isn't any sun for the system to run the home.

ENERGY PRODUCED

There is no real limitation to how much energy can be produced using the power of the sun and solar. All that is needed is enough space for solar modules and plenty of sunlight.

For most systems however, space, budget and your power requirements will provide the answer.

The table below shows Solar system sizes from 1kw to 4kw and how expected power will be generated annually located in Sydney for Low – High Energy households.



Based on radiation data for Sydney, systems are configured with optimal alignment to solar radiation.

FEED IN TARIFF

Feed-in tariffs is the premium rate paid to producers of renewable energy. Feed-in tariffs are a way of subsidising renewable energy and can be implemented in conjunction with mandatory renewable energy targets.

Most Australian States have or are introducing Net feed in tariffs. Excess power produced by your Solar system will receive the feed in tariff. Gross feed in tariff systems pay on all clean energy produced from your solar system.

Contact Bluesky Energy to determine the most suitable system for your home. We can design a system to meet your budget and determine the cut in your power bill and your systems carbon savings.

GREENHOUSE GAS REDUCTION



Based on comparison to energy production by fossil fuel source such as coal with 1kW of coal fired electricity producing between 0.92 - 1.3kg CO₂.



GRID CONNECT SOLAR SYSTEMS

Bluesky Energy Solar Power Systems generate mains compatible, 240V AC electricity for your home







KYOCERA SOLAR MODULES

Kyocera solar modules are a reliable, virtually maintenance free power supply designed to convert sunlight into electricity at the highest possible efficiency. Kyocera began researching photovoltaics in 1975 and has installed thousands of systems throughout the world since 1978.

Kyocera's advanced cell-processing technology and automated production facilities produce highly efficient multi-crystal photovoltaic modules. To protect the cells from the most severe environmental conditions, they are encapsulated between a tempered glass cover and an EVA pottant with a PVF back sheet. The entire laminate is installed in an anodized aluminium frame for structural strength and ease of installation.

KD SERIES

These new, safer and more stringent safety qualified modules will roll out over the course of the year featuring heavy-duty anodised aluminium frames with box-style walls. Modules in the KD series are suitable for high voltage arrays with multi-contact output cables for ease of installation, typically for grid connect situations.

Module	Power in Watts (Pmax)	Voltage in Volts (Vmp)	Current in Amps (Imp)	Weight (kg)	Dim. (LxWxD) (mm)
KD135	135	17.7	7.63	12.5	1500 x 668 x 46
KD185	180	23.6	7.63	16.5	1338 x 990 x 46
KD210	210	26.6	7.71	18.5	1500 x 990 x 46
KD235	235	29.8	7.89	21	1662 x 990 x 46

The depth dimension relates to the module frame. For total depth refer to the individual specification sheet for exact dimension.





SOLARWORLD SOLAR MODULES

As a leading global specialist in solar power technology and components, SolarWorld offer you a complete series of products which are manufactured to the highest quality control standards.

The Sunmodule heralds an innovative new module concept from SolarWorld. The fully automated production process at the SolarWorld factories creates a module quality that is consistently high, which in turn will ensure high yields for the long term.

SUNMODULE

Under the Sunmodule brand, we offer superior quality, high performance solar modules designed in a wide variety of applications. All products have an industry leading power tolerance of +/- 3%, backed by a 25 year performance warranty. The high performance poly crystalline cells used in the Sunmodule are sealed in transparent EVA (ethylene-vinyl-acetate) between impact resistant tempered glass and a durable TPT (tedlarpolyester-tedlar) backsheet. The innovative module design incorporates new audible locking, IP65 protection rated, quick connectors for fast, reliable installation wiring. New double-insulated cables approved for use in ungrounded source circuit systems.

The glass is set deep into the module frame and they are firmly attached to each other by silicone that is applied with continuous precision. This guarantees exceptional rigidity for the entire module and stops any possible loosening of the frame as a result of strong outward forces in cases such as sliding of heavy snow. Tests carried out in accordance with IEC 61215, applying loads up to 5.4 kN/m2, confirm that the module can withstand high loads such as heavy accumulations of snow and ice.

Module	Dimension L x W x D (mm)	Weight (kg)
SW185	1605 x 805 x 34	13.5
SW220	1675 x 1001 x 34	22



🔇 KYOCERA



Kyocera is a world leader in polycrystalline silicon photovoltaic (PV) cells and modules, with a comprehensive product line ranging from modules and components to fully integrated, turn-key systems.



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SolarWorld Asia Pacific is part of the SolarWorld Group, one of the largest solar companies worldwide. Active at all levels of the solar industry's value chain from silicon as a raw material to complete solar power plants, the SolarWorld Group is solely focused on the successful commercialisation of solar as a viable alternative source of energy.

SYSTEM GUARANTEE

QUALITY ASSURANCE

- Thermal cycling test
- Thermal shock test
- Electrical isolation test
- Hail impact test
- Mechanical and wind test
- > Thermal/freezing and high humidity cycling test

INSTALLATION

- Frames are installed independently of the solar modules
- All electrical connections on the roof are made via multi-contact connectors
- Easily installed on all common roof types; includes tile, tin and cliplok.

WARRANTY

- > 25 years limited warranty on solar module output
- > Up to 10 years on all other major components



SYSTEM COMPONENTS

Bluesky Energy's Solar Power Systems generate mains compatible, 240V AC electricity for the home.

Quality PV solar modules are used from Kyocera and Solar World. These solar modules are the most efficient of their type in the world and renowned for their quality and reliability.

Systems include all the components required to power the home or office with clean solar energy.

Power-Fab Mounting System

Anodised aluminium and marine grade stainless steel to prevent corrosion. Allows quick and easy installation to reduce labour costs. Designed and engineered in Australia by BlueSky Energy.



Isolation & Enclosures

Weather protected enclosure to house DC isolation and switch gear. Rated to IP65 will house double pole 500 volt certified circuit breakers.



(Optional for kits)

Multi-Contact Lead

Fly lead interconnects for patching and extending module leads.



Warning Labels

Australian standard label set for solar installation.



Grid Connect Inverter

Converts DC power from the solar modules to grid compatible 240V AC power. Automatically connects and disconnects to the grid approved to AS4777.





SolarWorld



- 8 x Sunmodule 185 watt Mono Crystalline PV Panels
- Total system wattage: 1485w
- System surface area: 12sqm
- Panel dimensions: 1605 x 805 x 34mm
- Panel weight: 13.5kg
- Includes SMA 1.7kW inverter
- Power-Fab aluminium anodised mounting system
- 2m & 8m cables
- Warning label kit

🔇 KYOCERA

50LARWORLDWOODULES



- 11 x Kyocera 135 watt Poly Crystalline PV Panels
- Total system wattage: 1480w
- System surface area: 12.5sqm
- Panel dimensions: 1500 x 668 x 46mm
- Panel weight: 13kg
- Includes SMA 1.7kW inverter
- Power-Fab aluminium anodised mounting system
- > 2m & 8m cables
- Warning label kit

1.5kW KIT INCLUSIONS

SMA 1700 Watt Inverter IP65 Rated Made In Germany 5 Year Replacement Warranty



AC/DC Isolation & Enclosures (Optional Extra)



Power-Fab Universal Mounting 4300mm Aluminium Anodised Mounting Rails End Clamps Mid Clamps



Warning Labels Set of Australian Standards Labels



10





SolarWorld



11 x Sunmodule 185 watt Mono Crystalline PV Panels

- Total system wattage: 2035w
- System surface area: 16sqm
- Panel dimensions: 1605 x 805 x 34mm
- Panel weight: 13.5kg
- Includes Aurora 2kW inverter
- Power-Fab aluminium anodised mounting system
- 2m & 12m cables
- Warning label kit

🔇 KYOCERA



2kW KIT INCLUSIONS

Aurora 2000 Watt Inverter or Outdoor Attractive Appearance Suits any Indoor Location Easy to Understand Graphics Energy Display Built in Communications Port for PC Connection



AC/DC Isolation & Enclosures (Optional Extra)



Power-Fab Universal Mounting 4300mm Aluminium Anodised Mounting Rails End Clamps Mid Clamps





11

Warning Labels Set of Australian Standards Labels



3_{KW}



SolarWorld



- 16 x Sunmodule 185 watt Mono Crystalline PV Panels
- Total system wattage: 2960w
- System surface area: 24sqm
- Panel dimensions: 1605 x 805 x 34mm
- Panel weight: 13.5kg
- Includes SMA 3kW inverter
- Power-Fab aluminium anodised mounting system
- 3m & 2m cables
- Warning label kit

🔇 KYOCERA



- Includes 14 x Kyocera 210 watt Poly Crystalline PV Panels
- Total system wattage: 2940w
- System surface area: 23sqm
- Panel dimensions: 1500 x 990 x 46mm
- Panel weight: 18.6kg
- Includes SMA 3kW inverter
- Power FAB aluminium anodised mounting system
- 3m & 2m cables
- Warning label kit

3kW KIT INCLUSIONS

SAM 3000 Watt Inverter

IP65 Rated Made in Germany 5 Year Replacement Warranty (additional 5 year warranty optional)



AC/DC Isolation & Enclosures (Optional Extra)



Power-Fab Universal Mounting 4300mm Aluminium anodised mounting rails End Clamps Mid Clamps



Warning Labels Set of Australian Standards Labels





SolarWorld



22 x Sunmodule 185 watt Mono Crystalline PV Panels

50LARWORLD WOODULES

- Total system wattage: 4070w
- System surface area: 32sqm
- Panel dimensions: 1605 x 805 x 34mm
- Panel weight: 13.5kg
- Includes SMA 4kW inverter
- Power-Fab aluminium anodised mounting system
- 3m & 2m cables
- Warning label kit

🔇 KYOCERa



4kW KIT INCLUSIONS

SMA 4000 Watt Inverter IP65 Rated Made In Germany 5 Year Replacement Warranty (Additional 5 year warranty optional)



AC/DC Isolation & Enclosures (Optional Extra)



Power-Fab Universal Mounting 4300mm Aluminium anodised mounting rails Stainless Steel Cable Clips End Clamps Mid Clamps





Warning Labels Set of Australian Standards Labels



5kw

SolarWorld



29 x Sunmodule 185 watt Mono Crystalline PV Panels

501.ARINORID NODULES

- Total system wattage: 5075w
- System surface area: 38sqm
- Panel dimensions: 1605 x 805 x 34mm
- Panel weight: 15kg
- Includes SMA 13.5kW inverter
- Power FAB aluminium anodised mounting system
- 3m & 2m cables
- Warning label kit

🔇 KYOCERA



- 24 x Kyocera 210 watt Poly Crystalline PV Panels
- > Total system wattage: 5040w
- System surface area: 36sqm
- Panel dimensions: 1500 x 990 x 46mm
- Panel weight: 18.5kg
- Includes SMA 5kW inverter
- Power-Fab aluminium anodised mounting system
- 3m & 2m cables
- Warning label kit

5kW KIT INCLUSIONS

SMA 5000 Watt Inverter IP65 Rated Made In Germany 5 Year Replacement Warranty (Additional 5 year warranty optional)



AC/DC Isolation & Enclosures (Optional Extra)



Power-Fab Universal Mounting 4300mm Aluminium anodised mounting rails End Clamps Mid Clamps



Warning Labels Set of Australian Standards Labels



6KW

SolarWorld



▶ 33 x Sun Module 185 watt Mono Crystalline PV Panels

501 ARWORLD WODULES

- Total system wattage: 6105wSystem surface area: 45sqm
- Panel dimensions:
- 1605 x 805 x 34mm Panel weight: 13.5kg
- Includes Aurora 6kW inverter
- Power FAB aluminium anodised mounting system
- > 3m x 12m & 3m x 2m cables
- Warning label kit

🔇 KYOCERA



6kW KIT INCLUSIONS

Aurora 6000 Watt Inverter

Grid-Connected Operation Certified to Intl Standards Models Available with 90 to 530 Volt Operating Windows Rugged Designs Provide a 25-year MTBF Unmatched Applications Flexibility



AC/DC Isolation & Enclosures (Optional Extra)



Power-Fab Universal Mounting 4300mm Aluminium anodised mounting rails End Clamps Mid Clamps







Warning Labels Set of Australian Standards Labels







For any systems required above 6kW in size, please contact the Bluesky Energy Sales Office on 02 8805-0100 or email to sales@blueskyenergy.com.au

Bluesky Energy can evaluate your requirements on an individual basis, and design and install a system to meet your energy needs. Through our Accredited team of Engineers and Installers, you can be assured your project will be completed in a smooth and professional manner, on time and within your budget requirements.

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ARRAY LAYOUTS

All Blue Sky Energy kits are supplied with enough mounting hardware for a standard array layout. The mounting rails are supplied in 4.3 metre lengths with end clamps and mid clamps to set out the array. In some difficult installation circumstances, it may be necessary to cut the rails into shorter lengths to avoid skylights or shading issues. In these circumstances it would be necessary to order extra end clamps and rail joiners to cater for the array layout change.

For further information, please contact Blue Sky Energy on 02 8805 0100.



Further mounting hardware may be required for non standard array layout.



INDIVIDUAL COMPONENTS

SOLAR MODULES

Kyocera

- Highly reliable and efficient
- Virtually maintenance free
- Heavy-duty anodised aluminium frames
- KD Series suitable for high voltage arrays, typically for grid connect situations.

Part Number	Panel	Multi Crystaline
KD135	Kyocera	135W
KD185	Kyocera	180W
KD210	Kyocera	210W
KD235	Kyocera	235W

Panel

Solarworld Mono

Solarworld Poly

Poly

Crystaline

185W

220W

Part

Number

SW185

SW220

🔇 КЧОСЕРА

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- Superior quality and high performance
- Designed for a wide variety of applications
- Impact resistant tempered glass
- Audible locking, IP65 protection rated, quick connectors for fast and reliable installation wiring.

COTO CONNECT INVEDTEDC
GRID CONNECT INVERTERS

Sunny Boy

The Sunny Boy inverters are used in the most diverse AC grids thanks to their galvanic isolation. In addition, the devices are suitable for the simple grounding of the generator. Their integrated ESS DC load-disconnection switch simplifies installation and reduces its cost at the same time. Equipped with the OptiTrac MPP tracking process, it will always find the optimal working point, even under dynamic weather conditions. In this way, it reliably converts solar energy into solar earnings.

- Galvanic isolation
- Extended temperature range
- For outdoor and indoor installation
- Worldwide SMA Service including Service Line
- Comprehensive SMA warranty program
- Efficiency up to 95.6 %





Part Number	Description Max. AC Power
SMA SB1200	1200w
SMA SB1700	1700w
SMA SB2500	2500w
SMA SB3000TL	3000w
SMA SB4000TL	3800w
SMA SMC5000A	5000w
SMA SMC6000A	6000w
SMA SMC10000TL	10000w

MULTI CONTACT LEADS

Our Multi Contact leads are manufactured with 4mm high UV stabilised cable that is made to last the lifetime of a solar system.

Available in MC3 & MC4 varieties in lengths from 2 to 15 metres.

MC3 Part No.	MC4 Part No.	Description
MC3-2M	MC4-2M	2m Male/Female
MC3-8M	MC4-8M	8m Male/Female
MC3-12M	MC4-12M	12m Male/Female
MC3-15M	MC4-15M	15m Male/Female



- 110 degree C rated
- Oxygen Free Tinned Copper conductor.
- 0.9/1.5 kV DC rated
- ► Low Smoke Halogen Free
- Australian Made.



WARNING	WARNING LABELS		
Part Number	Description		
BSLABELKIT Set of Warning Labels to Australian Standard			
- Hannahar			
	- California - Cal		
	/		

ACCESSORIES

Y Adaptors	Pigtails
2F - 1M	F 400mm
2M - 1F	M 400mm







Sunny Webbox

System monitoring, remote diagnostics, data storage and visualization, the Sunny WebBox is the communication center for your solar power station. Continuously gathering all data from the inverters and thereby allows you to remain constantly informed of your system's status at any given time. It also offers a wide range of possibilities for displaying, archiving and further processing the system data.

Part Number

WEBBOX

- > 24-hour monitoring of the PV system
- Radio-based plant monitoring with Bluetooth
- Early detection of operational failures
- Logging of energy yields
- Diagnosis and system configuration using any PC (Windows, Linux & Mac OS)



REGULATORS

Part Number	Description
BS34931	Sunguard SG4 - 4Amp 12Volt Regulator
BS34963	SS6/12L - Sunsaver 6Amp 12Volt Regulator with LVD
BS34966	SS10/12L - Sunsaver 10Amp 12Volt Regulator with LVD
BS34942	SS10/24L - Sunsaver 10Amp 24Volt Regulator with LVD
BS34935	SS20/12L - Sunsaver 20Amp 12Volt Regulator with LVD
BS34936	SS20/24L - Sunsaver 20Amp 124Volt Regulator with LVD
BS35013	SSD-25/12 - Sunsaver Duo 25Amp 12 Volt with Remote Meter
BS35015	Sunsaver MPPT Trakstar - 12Volt 200Watt / 24Volt 400Watt
BS35002	Suresine Inverter - SI-300-220VAC - Input 12VDC
BSPL20	Plasmatronics Controller, 20AMP 12/24/48 Volt Programmable
BSPL40	Plasmatronics Controller, 40AMP 12/24/48 Volt Programmable
BSPL60	Plasmatronics Controller, 60AMP 12/24/48 Volt Programmable

Blue Sky Energy has a variety of regulators available to suit your stand-alone application. With brands including Plasmatronics and Morningstar, we can offer a device to suit most applications.





STAND ALONE INVERTERS

Sunny Island

The Sunny Island battery inverters are particularly suited for use in small-scale and medium-sized stand-alone stytems. The devices guarantee a reliable, high quality power supply, with extremely quiet operation. Due to their excellent overload characteristics and their design for high ambient temperatures, they are suitable for use under extreme climatic conditions.

- For systems from 2 to 5 kW
- AC and DC coupling
- Easy installation

- High efficiency
- Extreme overload capability
- 5 year warranty

Part Number	Description Max. AC Power
SI2012	2000w
SI2224	2200w
SI3324	3300w
SI4248	4200w
SI5048	5000w



BATTERIES

Sungel

Designed to survive conditions which spelt early failure by previous standards providing long, reliable service without the need for frequent attention. An Ideal solution for all sites including remote regions which are difficult to access.

Energel

Provides an economical 'whole of life' solutions to the need for long term, low maintenance reliability. When the unexpected happens and you need dependable support, Energel range of batteries will be working for you.

- ▶ Highest quality standards ISO 9001 acc.
- Corrosion resistant alloys
- High performance and long life
- Excellent revovery from deep discharge
- 100% cell testing to ensure reliable performance
- Highest quality standards ISO 9001 acc.
- Corrosion resistant alloys
- High performance and long life
- Excellent revovery from deep discharge







POWER-FAB MOUNTING SYSTEM

The rails are engineered to allow greater spans between supports, thus minimising roof penetrations, reducing installation time and lowering overall cost







POWER-FAB MOUNTING KITS

High Strength and Durable Design:

- Engineered rail profile for maximum strength to weight ratio
- High strength 6000 Series structural aluminium rail construction
- All fastening hardware is made of durable 304 stainless steel

Reduced Installation Time and Costs:

- Top-Clamping System design for fast installation and easier access
- Up to 4.3m rail lengths eliminate costly rail splices
- Tighter module spacing offers higher density
- Greater span lengths reduce roof penetrations and mounting components
- Power-Fab offer all hardware components in a single part number

The Power-Fab Rail top-clamping PV mounting system is designed with the professional PV solar installer in mind. The rails are engineered to allow greater spans between supports, thus minimizing roof penetrations, reducing installation time, and lowering overall costs.

Power-Fab Rail is available in lengths up to 4.3m allowing for fewer field splices and longer span lengths. The end result is fewer hardware components and reduced assembly thus saving the installer both valuable time and money.

KIT COMPONENTS

Power-Fab Rail Extrusion Power Rail is an engineered profile extrusion made from Series 6000 structural aluminium.



L Bracket

L Bracket are fabricated from high strength 3/16" aluminium and include a vertical slot for adjusting to irregular surfaces.

Mid Clamp

Aluminium for strength and durability with 304 stainless steel fastening hardware. The low profile design and slim 3/8" gap between modules provide a professional appearance and higher density.

End Clamp

Aluminium for strength and durability with 304 stainless steel fastening hardware. Universal patent pending design allows any solar module to be mounted securely. This allows a single kit component list to cater for any project. End locking bolt provides installation preset positioning of module alignment and can handle panels from 34mm to 52mm in thickness.







TIN KIT



2x 4300mm Power-Fab Rail Extrusions

10x Mounting

ORB



5x Cable Clips



10x Stainless

Steel Washer



10x 75mm Galv Tek Screw



10x L Brackets with stainless steel nuts & bolts

TILE KIT



6x Tile Brackets

12x Galvanised Hex Drive

20x ORB

Washers



M10 Screw T-Bolts/Nuts



4

1x Cliplok

ORB PFORBT Pack of 20



Corrugated Roof ORB Mounting Set



ORB Washers



6

10x Universal Black

L BRACKET

Suits Power-Fab 4300 Rail



20x L Brackets with stainless steel nuts & bolts END CLAMP PFENDKT Inlcudes Stainless steel fittings



4x Universal Black End Clamp





2x Rail Joiner

FIXED TILT LEG

PFTILT300 300mm

PFTILT500 500mm

PFTILT700 700mm PowerFAB fixed tilt legs are designed for raking of the array to the optimal angle to ensure maximum yield.

The tilt legs are manufactured from the same aluminium anodised rail used on the PowerFAB PV panel mounting system, therefore ensuring a uniform installation.





SOLAR ACCREDITATION

For more information on solar accreditation, please call the Clean Energy Council.

DISTRIBUTORS

Available From Leading Electrical Wholesalers And Solar Distributors



For your closest distributor, please call David Bryant on Ph: 66 (0) 2 739 4026 or email davidb@preformed.asia

www.preformed.asia





SOLAR GLOSSARY OF TERMS TERMS AND CONDITIONS

Commited to expanding the application of Solar Power Systems into everyday use, by keeping abreast of the latest technologies in renewable energy





SOLAR GLOSSARY OF TERMS

(AC) Alternating Current: Current flow is reversed at various intervals.

(AMP) Ampere: A unit of electrical current.

Battery: The device used to store the electricity coming from the PV arrays. Grouped together with each other in order to produce the desired voltage or current level.

Battery Capacity: The total electrical charge available to use from a fully charged battery, expressed in ampere hours(Ah).

Charge Controller: Controls the flow of the current to and from the batteries. It also protects the batteries from over charging and from over discharging.

(DC) Direct Current: Current flowing in one direction.

Fixed Tilt Array: A photovoltaic array set at a fixed angle with respect to horizontal.

(**GW**) **Gigawatt:** A unit of power equal to 1 billion watts, 1 million kilowatts or 1000 megawatts.

Grid Connected System: A solar electric or photovoltaic (PV) system in which the PV array acts like a central generating plant, supplying power to the grid. Also referred to as "On-Grid."

Grid Lines: Metallic contacts fused to the surface of the solar cell to provide a low resistance path for electrons to flow out to the cell interconnect wires.

High Voltage Disconnect: The voltage at which a charge controller will disconnect the photovoltaic array from the batteries to prevent overcharging.

Hybrid System: A solar electric or photovoltaic system that includes other sources of electricity generation, such as wind or diesel generators.

Input Voltage: This is determined by the total power required by the alternating current loads and the voltage of any direct current loads. Generally, the larger the load, the higher the inverter input voltage. This keeps the current at levels where switches and other components are readily available.

SOLAR GLOSSARY OF TERMS

Insolation: The solar power density incident on a surface of stated area and orientation, usually expressed as Watts per square meter or Btu per square foot per hour.

Junction Box: A photovoltaic (PV) generator junction box is an enclosure on the module where PV strings are electrically connected and where protection devices can be located, if necessary.

Inverter: DC to AC Inverter: Converts DC power to AC power.

(Kw) Kilowatt: A standard unit of electrical power equal to 1000 watts, or to the energy consumption at a rate of 1000 joules per second.

(Kwh) Kilowatt-Hour: 1,000 thousand watts acting over a period of 1 hour. The kwh is a unit of energy. 1 kwh=3600 kJ.

Life-Cycle Cost: The estimated cost of owning and operating a photovoltaic system for the period of its useful life.

Load: The demand on an energy producing system; the energy consumption or requirement of a piece or group of equipment. Usually expressed in terms of amperes or watts in reference to electricity.

Load Current (A): The current required by the electrical device.

Low Voltage Cutoff (LVC): The voltage level at which a charge controller will disconnect the load from the battery.

Low Voltage Disconnect: The voltage at which a charge controller will disconnect the load from the batteries to prevent over-discharging.

(MW) Megawatt: 1,000 kilowatts, or 1 million watts is standard measure of electric power plant generating capacity.

Megawatt-Hour: 1,000 kilowatt-hours or 1 million watt-hours.

Monocrystalline Silicon Cells: Solar cells made from very pure monocrystalline silicon. The silicon has a single and continuous crystal lattice structure with almost no defects or impurities. The principle advantage of monocrystalline cells are their high efficiencies, typically around 15%, although the manufacturing process required to produce monocrystalline silicon is complicated, resulting in slightly higher costs than other technologies.

SOLAR GLOSSARY OF TERMS

MRET: Mandatory Renewable Energy Target.

Multicrystalline Silicon Cells: Multicrystalline cells are produced using numerous grains of monocrystalline silicon. In the manufacturing process, molten polycrystalline silicon is cast into ingots, these ingots are then cut into very thin wafers and assembled into complete cells. Multicrystalline cells are cheaper to produce than monocrystalline ones, due to the simpler manufacturing process. However, they tend to be slightly less efficient, with average efficiencies of around 12%.

Multi-Stage Controller: A charging controller unit that allows different charging currents as the battery nears full state of charge.

Nominal Voltage: A reference voltage used to describe batteries, modules, or systems (i.e., a 12-volt or 24-volt battery, module, or system).

Orientation: Placement with respect to the cardinal directions, N, S, E, W; azimuth is the measure of orientation from north.

Parallel Connection: A way of joining solar cells or photovoltaic modules by connecting positive leads together and negative leads together; such a configuration increases the current, but not the voltage.

Peak Demand/Load: The maximum energy demand or load in a specified time period.

Peak Power Current: Amperes produced by a photovoltaic module or array operating at the voltage of the I-V curve that will produce maximum power from the module.

Peak Sun Hours: The equivalent number of hours per day when solar irradiance averages 1,000 w/m2. For example, six peak sun hours means that the energy received during total daylight hours equals the energy that would have been received had the irradiance for six hours been 1,000 w/m2.

Peak Watt: A unit used to rate the performance of solar cells, modules, or arrays; the maximum nominal output of a photovoltaic device, in watts (Wp) under standardised test conditions, usually 1,000 watts per square meter of sunlight with other conditions, such as temperature specified.

Photon: A particle of light that acts as an individual unit of energy.

SOLAR GLOSSARY OF TERMS

Polycrystalline Silicon: A material used to make photovoltaic cells, which consist of many crystals unlike single-crystal silicon.

Power Conditioning: The process of modifying the characteristics of electrical power (for e.g., inverting direct current to alternating current).

Power Conditioning Equipment: Electrical equipment, or power electronics, used to convert power from a photovoltaic array into a form suitable for subsequent use. A collective term for inverter, converter, battery charge regulator and blocking diode.

Power Conversion Efficiency: The ratio of output power to input power of the inverter.

(PV) Photovoltaics: Solar energy technology that converts light into electricity utilising solar cells and arrays.

PV Array: Groups of PV solar panels grouped together into one frame to produce a desired amount of electricity.

PV Efficiency: The ratio of output power to input power of a PV solar cell.

PV Solar Cells: Wafers of silicon cells that convert sunlight into (DC) Direct Current electricity.

PV Solar Panel: Groups of PV modules connected together into one single frame.

Rated Power: Rated power of the inverter. However, some units can not produce rated power continuously.

REC's: Renewable Energy Certificate.

Rectifier: A device that converts alternating current to direct current. See inverter.

Regulator: Prevents overcharging of batteries by controlling charge cycle-usually adjustable to conform to specific battery needs.

Series Connection: A way of joining photovoltaic cells by connecting positive leads to negative leads; such a configuration increases the voltage.

Series Controller: A charge controller that interrupts the charging current by open-circuiting the photovoltaic (PV) array. The control element is in series with the PV array and battery.

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SOLAR GLOSSARY OF TERMS

Series Regulator: Type of battery charge regulator where the charging current is controlled by a switch connected in series with the photovoltaic module or array.

Silicon: A semi-metallic element used in solar cells as a semiconductor.

Single-Stage Controller: A charge controller that redirects all charging current as the battery nears full state-of-charge.

SGU's: Small Generation Units

Stand-Alone System: An autonomous or hybrid photovoltaic system not connected to a grid. May or may not have storage, but most stand-alone systems require batteries or some other form of storage.

Stand-Off Mounting: Technique for mounting a photovoltaic array on a sloped roof, which involves mounting the modules a short distance above the pitched roof and tilting them to the optimum angle.

String: A number of photovoltaic modules or panels interconnected electrically in series to produce the operating voltage required by the load.

Thin Film Photovoltaic: A photovoltaic module constructed with sequential layers of thin film semiconductor materials. A number of other promising materials such as cadmium telluride (CdTe) and copper indium diselenide (CIS) are now being used for PV modules. The attraction of these technologies is that they can be manufactured by relatively inexpensive industrial processes, certainly in comparison to crystalline silicon technologies yet they typically offer higher module efficiencies than amorphous silicon.

Total AC Load Demand: The sum of the alternating current loads. This value is important when selecting an inverter.

Utility-Interactive Inverter: An inverter that can function only when tied to the utility grid, and uses the prevailing line-voltage frequency on the utility line as a control parameter to ensure that the photovoltaic system's output is fully synchronized with the utility power.

Volt (V): A unit of electrical force equal to that amount of electromotive force that will cause a steady current of one ampere to flow through a resistance of one ohm.

SOLAR GLOSSARY OF TERMS

Voltage at Maximum Power (Vmp): The voltage at which maximum power is available from a photovoltaic module.

Voltage Protection: Many inverters have sensing circuits that will disconnect the unit from the battery if input voltage limits are exceeded.

Wafer: A thin sheet of semiconductor (photovoltaic material) made by cutting it from a single crystal or ingot.

Watt: The rate of energy transfer equivalent to one ampere under an electrical pressure of one volt. One watt equals 1/746 horsepower, or one joule per second. It is the product of voltage and current (amperage).

TERMS & CONDITIONS

APPLICATION

These Terms and Conditions of Sale ("Terms") apply to all goods sold by BlueSky Energy Pty Limited ("the Company"). "Goods" means all goods sold and/or delivered by the Company to the Customer from time to time. No amendment, alteration, waiver or cancellation of any of these Terms is binding on the Company unless confirmed by the Company in writing. The Customer acknowledges that no employee or agent of the Company has any right to make any representation, warranty or promise in relation of the Goods or the sale of the Goods other than as contained in these Terms.

TERMS OF PAYMENT

MS OF PAYMENT Prices quoted are subject to change without notice if the quantities on which the quotation has been based are varied. Prices quoted are strictly ex the Company's premises at Glendenning, and do not included costs for packaging, delivery, freight, customs, duties, levies and/or insurance and are fixed for a period of thirty (30) days from the date of the quotation. Payments are to be made direct to the Company, strictly net, without any deduction or discount other than as stated hereino or in the relevant invoice or statement. Payments are to be made within thirty (30) days of the date of the Company's statement or invoice. Interest is payable on all overdue accounts calculated on a daily basis at the rate of2% per month as from the due date for payment until payment is received by the Company.

PROPERTY IN GOODS

Legal and beneficial ownership of Goods supplied by the Company will not pass to the Customer until such time as the Goods so supplied and all other goods supplied by the Company to the Customer from time to time, have been paid in full in cash or cleared funds.

RE-SALE OF GOODS

- SALE OF GOODS
 Should the Customer be a re-seller then, subject to sub-clause 4.2.4, the Customer has the right to sell the Goods in its own name at full market value and in the ordinary course of business.
 Until the amount payable to the Company in respect of the Goods, and in respect of all other goods previously supplied by the Company to the Customer, has been paid in full in cash or cleared funds:

 the Goods must be stored in such manner that they are readily distinguishable from other goods owned by the Customer romer has been paid by the Customer romer by the Customer nust indemnify the Company from and so as to clearly show that they are the property of the Company;
 the Coustomer must indemnify the Company from and against any claim, action, proceeding, damage, loss, cost, expense or liability incurred or suffered by the Company arising out of the possession, use or disposal of the Goods by the Customer or repossession or attempted repossession of them by the Company;
 - sion, use or disposal of the Goods by the Customer or repossession or attempted repossession them by the Company; and any sale of the Goods under clause 4.1 will only be effected by the Customer as trustee for the Customer arising from such sale will be held on trust for the Company. The said proceeds must be held in a separate account or otherwise clearly identified in the books and records of the Customer.
 - -If the Customer resells any Goods then, unless the Goods are clearly identifiable by serial num-bers or other distinguishing marks, the Customer is deemed to have disposed of the Goods in the chronological order of supply by the Company to the Customer (oldest to most recent).

DEFAULT

If: the Goods are not paid for in accordance with these Terms or any other written agreement between the Company and the Customer; or the Company receives notice of, or reasonably believes that a third party may attempt to levy execution

- against or attach the Goods: or
- against or attach the Goods; or any other event occurs which is likely to adversely affect the Customer's ability to pay for the Goods (including but not limited to the appointment of a receiver, receiver and manager, administrator, controller, liquidator, provisional liquidator, trustee or similar person (each an "insolvency representative") to the Customer's undertaking), then the Company may at any time thereafter, without notice to the Customer and without prejudice to any other rights which it may have against the Customer, terminate any contract relating to the Goods and the bailment referred to in clause 4.2.

RIGHT TO ENTER PREMISES

IT TO ENTER PREMISES In any of the circumstances referred to in the preceding clause, the Customer: authorises the Company by itself, its agents or representatives at all reasonable times, without notice, to enter onto (with force if reasonably necessary)and at all necessary time/s), to remain in and on any premises where the Goods are located in order to collect the Goods, without being guilty of any manner of trespass; and assigns to the Company all the Customer's rights to enter onto and remain in and on such premises until all the Goods have been collected.

ADMINISTRATION, RECEIVERSHIP ETC. In any of the circumstances referred to in clause 5.3, neither the Customer nor its insolvency representative or any other person acting for the Customer and/or its creditors is entitled to sell, charge, remove, dispose of, use or otherwise deal with the Goods in any way inconsistent with the Company's ownership of the Goods, without the Company's prior written approval. The Customer, its insolvency representative or any other person acting for or on behalf of the Customer and/or its creditors is obliged to re-deliver the Goods to the Company immediately or immediately on his appointment at its or his expense. If the Goods are returned to or collected by the Company, the Company will within 28 days, account to the Customer or its legal representative for all monies received for the Goods from the Customer less the Company's reasonable administration charges, expenses incurred and loss of profits involved.

involved.

CUSTOMER AS TRUSTEE

TOMER AS TRUSTEE If the Customer carries on business as trustee of a trust then the Customer warrants that: the Customer enters into the contract as trustee of a trust; the Customer has all requisite powers to enter into the contract; the beneficiary of the trust approves the purchase of the Goods on the terms of the contract; and the assets of the trust are available to the Company in satisfaction of any debt incurred by the Customer

SALES TAX AND GOODS AND SERVICES TAX

ES TAX AND GOODS AND SERVICES TAX Sales tax and Goods and Services tax ["GST"] are not included in the quoted price. Unless the Customer produces a Sales Tax Exemption Certificate applicable to the Goods and quotes its Sales Tax Exemption Number, the Customer must pay all sales tax payable for the Goods at the date of invoice. If GST is imposed on the Company in respect of the Goods then the Customer must pay to the Company the amount of such GST in addition to the quoted price. The Company must give the Customer written notice of the amount of any GST payable under this clause and provide a tax invoice showing the amount of GST payable showing the amount of GST payable.

CUSTOMS DUTIES, TARIFFS AND LEVIES All applicable customs duties, tariffs and levies are payable by the Customer unless the order, order confirmation, invoice or other writing indicates otherwise.

DELIVERY

Availability dates are estimates only, but the Company will use its best endeavours to maintain these estimates. At the Customer's request, the Company will arrange for the delivery of the Goods into the Customer's store at the Company's expense.

DELIVERY BY INSTALLMENTS

The Company reserves the right to deliver the Goods in whole or by installments, as well as to deliver prior to the date for delivery and in such event the Customer must not refuse to take delivery of the Goods.

Where the Goods are delivered by installments, each installment is sold under a separate contract. Any failure on the part of the Company to deliver installments within any specified time does not entitled the Customer to repudiate the contract with regard to the balance remaining undelivered.

The Goods are entirely at the risk of the Customer from the moment the Goods leave the Company's premises.

INSPECTION

Unless the Customer has inspected the Goods and given written notice to the Company within seven (7) days after collection or delivery that the Goods do not comply with the relevant specifications or descriptions, the Goods are deemed to have been accepted in good order and condition.

CANCELLATION OF ORDER AND RETURN OF GOODS

- Goods which are imported especially for the Customer or non-standard equipment made to special order: and

special order; and - Goods marked on the Company's invoices as "NOT RETURNABLE". - All charges for outward and inward freight, packing and delivery have been paid by the Customer hereby allowed: Goods which cannot be returned include are: - Imported especially for the Customer or non-standard equipment made to special order; and Goods marked on the Company's invoices as "NOT RETURNABLE" cannot be returned. Goods warked on the Company's invoices as "NOT RETURNABLE" cannot be returned. Goods marked on the Company's invoices as "NOT RETURNABLE" cannot be returned.

COMPANY'S LIABILITY LIMITED These Terms do not affect the rights, entitlements and remedies conferred by the Trade Practices Act (1974). The Company is not subject to, and the Customer releases the Company from any liability (including but not limited to consequential loss or damage, removal costs or re-installation costs or liability for loss of use or profit) because of any delay in delivery or fault or defect in the Goods. The Customer acknowledges that the Company is not responsible if the Goods do not comply with any applicable safety standard(s) or similar regulation(s), and that the Company is not liable for any claim, cost, damage or demand resulting from such non-compliance.

regulation(s), and that the Company is not navie for any stand, the statute (s) apply to the Agreement If any statutory provisions under the Trade Practices Act 1974 or any other statute/s) apply to the Agreement then, to the extent to which the Company is entitled to do so, the Company's liability under the statutory provisions is limited, at the Company's option, to: - replacement or repair of the Goods or the supply of equivalent Goods; or payment of the cost of replacing or repairing the Goods or of acquiring equivalent goods, and in either case, the Company will not be liable for any consequential or other direct or indirect loss or damage.

WARRANTY

RANTY The Company warrants to the Customer that the Goods will be supplied in an undamaged condition. On discovery of any defect in the Goods, the Customer must notify the Company in writing of such defect. All warranty claims must be received by the Company within thirty (30) days of the day of delivery. The Customer must not carry out any remedial work to alleged defective Goods without first obtaining the written consent of the Company to do so. The Customer's failure to provide written notice to the Company within the required time of any alleged breach of the above warranty will release and discharge the Company from any obligation or liability for that breach of warranty. The above warranty extends only to the Customer and to no other person. The provisions of any act or law (including but not limited to the Trade Practices Act 1974) implying terms conditions and warranties, or any other terms, and without so and warranties which might otherwise

The provisions of any act of law (including but not infinite to the fractices Act 1974) implying terms, conditions and warranties, or any other terms, conditions and warranties which might otherwise apply to or arise out of the agreement between the Company and the Customer in relation to the Goods (the "Agreement") are hereby expressly negatived and excluded to the full extent permitted by law. The Customer expressly acknowledges and agrees that it has not relied upon, and the Company is not liable for any advice given by the Company, its servants, agents, representatives or employees in relation to the suitability for any purposes of the Goods.

CATALOGUES

Particulars in leaflets, catalogues, drawings, brochures and other printed material are illustrations only, and form no part of the contract between the Company and the Customer, and are not binding on the Company.

SAMPLES

Any sample inspected by the Customer is solely for the Customer's convenience and does not constitute a sale by sample. All samples remain the property of the Company.

SPECIFICATIONS

CHICATIONS
Unless otherwise agreed in writing, the Goods are supplied subject to any specification as to weight, quantity, size, dimensions, finishes, chemical composition and physical properties as may be published generally by the Company or as may be set out in any specification issued by the Company in relation to the Goods, or, if no such specification has been published or set out, subject to such specification as is normally regarded as being commercially acceptable.
Where any specification for the Goods are to be supplied by the Customer, they must be supplied in a reasonable time to enable the Company to complete delivery by the date for delivery.

CONTRACT

The terms of contract between the parties are wholly contained in these Terms and any other writing signed by both parties. The contract is deemed to have been made at the Company's place of business in Sydney and any cause of action is deemed to have arisen there. The provisions of the United Nations Convention on contracts for the International Sale of Goods adopted at Vienna, Austria on 10 April 1980 do not apply to any Goods supplied by the Company to the Custome

FORCE MAJEURE

The Company will not be liable for any breach of contract due to any matter or thing beyond the Compa-ny's control (including but not limited to transport stoppages, transport breakdown, fire, flood, earthquake, acts of God, strikes, lock-outs, work stoppages, wars, riots or civil commotion, intervention of public authority, explosion or accident).

WAIVER OF BREACH

No failure by the Company to insist on strict performances of any of the terms in these Terms is a waiver of any right or remedy which the Company may have, and is not a waiver of any subsequent breach or default by the Customer.

NO ASSIGNMENT

Neither the Agreement nor any rights arising under the Agreement may be assigned by the Customer without the prior written consent of the Company which is at the Company's absolute discretion.

SEVERABILITY

If any provision contained in these Conditions of Sale is held by a court to be unlawful, invalid or unenforceable, the validity and enforceability of the remaining provisions are not affected



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