



COMPANY PROFILE



MASTER ENGINEERING TECHNOLOGIES (PVT) LTD

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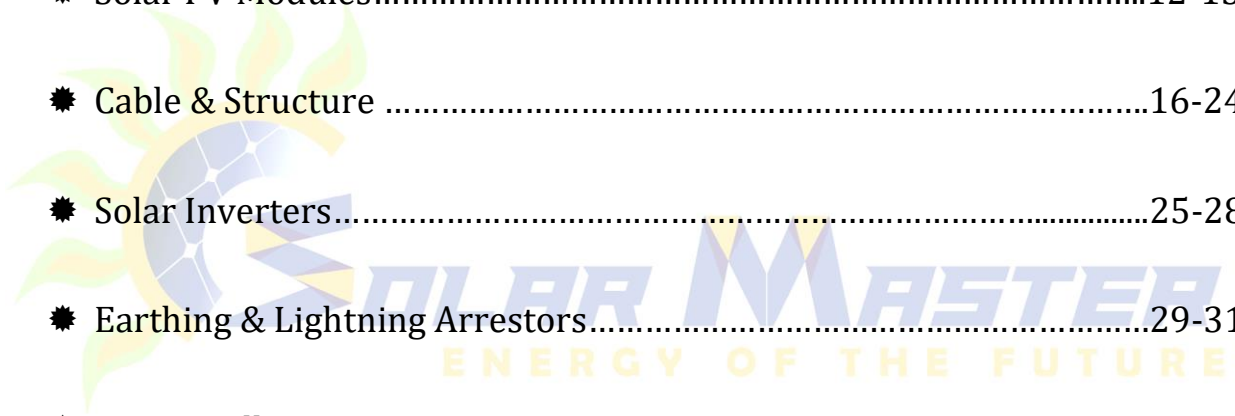
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ABOUT US



MASTER ENGINEERING TECHNOLOGIES (PVT) LTD is a young company backed by professionalism and high ambition for growth through client satisfaction and high quality of work.

SOLAR MASTER is a fast growing company that was founded with purpose of working in the field of renewable energy sources mainly in the implementation of solutions for Photo voltaic Solar Power Systems. The engineering staff in the company is fully trained and possesses all the necessary certificates for quality engineering, supply and performance of solar electric power systems.

SOLAR MASTER is continuously growing company on the domestic market and gradually acting on the market in the country, making the company one of the leading providers of services and solutions in terms of designing and construction of solar electric power systems.

We offer a full-service portfolio for Solar Projects of all scales that includes,

- Advisory
- Procurement
- Engineering
- Project Development
- Finance
- Construction Services

OUR MISSION, VISION & CORE VALUES



MISSION :

To Properly Initiate, Market and Provide Best Service to the Customers, While Considering Customer's Cost Cutting Factor in This Economical Era and Keeping Our Services & Products Affordable, Keeping Customer Requirement In Focus.



CORE VALUES :

Client Focused Services
Professional
Innovation
Value for Money



VISION :

Our Vision Is To Be the Most Professional and Recognized Solar Power Solution Provider in Sri Lanka



OUR AIM



Our aim is to provide the fastest way to overcome the energy shortage through electrification based on solar energy by offering products that would be cost effective in the long run.

WE ARE REGISTERED WITH



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இலங்கை நிலைபெறுதகு வலு அதிகாரசபை
Sri Lanka Sustainable Energy Authority



ලංකා විදුලිබල මණ්ඩලය
இலங்கை மின்சார சபை
CEYLON ELECTRICITY BOARD



සීමාසහිත ලංකා විදුලි (පුද්ගලික) සමාගම
வரையறுக்கப்பட்ட இலங்கை மின்சார (தனியார்) நிறுவனம்
LANKA ELECTRICITY COMPANY (PVT) LTD

PRODUCTS



SERVICES

We Specialize In Providing High Quality, Sustainable And Affordable Solar Energy Systems. We Provide a Complete Range Of Products, And Distribution;

- Grid Connected Solar Photovoltaic Generation Systems
- Off Grid Solar Photovoltaic Generation Systems

Other Services Associated Solar Energy Support Services Like,

- Solar Hot Water Systems
- Solar Water Pumps
- Solar Lighting Systems

(Including Valuation Installation, Repairs and Maintenance & Etc.....)

To All Sectors Including

- Commercial & Residential Projects In Villages
- Individual Residential Homes
- Residential Housing Complexes
- Restaurants
- Bars And Hotels
- Hospitality Industries
- Hospitals
- Supermarkets
- Public & Private Corporate Organizations
- Public Facilities All Over The Country





WHY CHOOSE US

RELAIBILITY

QUALITY PRODUCT

EXPERIENCE

QUICK DELIVERY

GOOD CUSTOMER SERVICE

☀ Introduction

Solar energy is the energy obtained by capturing heat and light from the Sun. Energy from the Sun is referred to as solar energy. Technology has provided a number of ways to utilize this abundant resource. It is considered a green technology because it does not emit greenhouse gases. Solar energy is abundantly available and has been utilized since long both as electricity and as a source of heat.

☀ How Does it Work?

The most common way of harnessing energy from the sun is through photovoltaic (PV) panels – those large, mirror-like panels you’ve likely seen on rooftops, handheld solar devices, and even spacecrafts. These panels operate as conductors, taking in the sun’s rays, heating up, and creating energy (and electricity).

On a larger scale, solar thermal power plants also harness the power of the sun to create energy. These plants utilize the sun’s heat to boil water and, in turn, power steam turbines. These plants can supply power to thousands of people.

☀ Why Solar.....

Solar power is the key to a clean energy future. Every day, the sun gives off far more energy than we need to power everything on earth. That’s why we’re investing heavily in solar plants and why we are now offering solar kits to our customers.



Renewable

Solar panels produce electricity by transforming the continuous flow of energy from the sun to electricity.



CO₂-free

No harmful emissions are released into the air when electricity is produced by solar panels.



Low operating costs

The photovoltaic process that transforms sunlight into electricity doesn’t require any fuel and has no variable costs.

- Limitless solar energy :

The sun provides more than enough energy to meet the whole world’s energy needs, and unlike fossil fuels, it won’t run out anytime soon. As a renewable energy source, the only limitation of solar power is our ability to turn it into electricity in an efficient and cost-effective way.

- Solar energy - a clean source :

No greenhouse gas emissions are released into the atmosphere when you use solar panels to create electricity. And because the sun provides more energy than we’ll ever need, electricity from solar power is a very important energy source in the move to clean energy production.

▪ **No fuel to burn After :**

Solar panels have been installed, operational costs are quite low compared to other forms of power generation. Fuel isn't required, and this means that solar power can create large amounts of electricity without the uncertainty and expense of securing a fuel supply.

▪ **Matching Peak Time Output with Peak Time Demand :**

Solar energy can effectively supplement electricity supply from an electricity transmission grid, such as when electricity demand peaks in the summer

▪ **Modularity and Scalability :**

As the size and generating capacity of a solar system are a function of the number of solar modules installed, applications of solar technology are readily scalable and versatile.

✿ **Roof Top Solar Power Panel installation**

1. What you should consider installing a solar power panel at your home

- Strength of the roof

There are different capacities of solar power panels in the market and the average weight of a Solar Panel of 320 watts is 23 kilograms. Therefore the strength of the roof should be carefully looked at. The amount of light that the roof gets The lights that the roof top gets might reduce due to trees and building around the house. Take steps to reduce such barriers as much as possible.

- Selection of an institution to install solar power plant

A large number of institutions who install solar power plants are exist in Sri Lanka. The norm is the institution to register at Sustainable energy authority. Therefore, it is important to select an institution that is registered with Sustainable Energy Authority

- A Solar Panel

There are variety of solar power panels in the market. Therefore, you must focus on the efficiency and durability of solar panels in selecting a solar panel.

The type "A" solar panel is recognized as the most efficient and durable panel.

2. What do you expect form a domestic solar power plant

There can be two reasons why you need to have a solar power panel at your home.

1. Generate electricity to match your monthly consumption

Ex : *Considering 2kW Solar PV System*

- No of Panels Installed - Jinko Half Cell Module 400W – 05 Nos
- Inverter Capacity - 2 kW Solis Inverter (According to the Solar PV System)
- Monthly Generated Units - 2kW * 120h = 240kWh (+/- 5%)

[120h = 4h Per Day * 30 Days (Considering 10 AM-2PM as most Efficiency Period)]

- Monthly Bill Covered - Rs.6,763/=

- Net Metering –

You can install a solar power plant with the capacity to generate the electricity to match your monthly consumption. This calls the Net Metering concept. However, you won't be able to sell the electricity in this process.

So it is important to decide the capacity of the panel that you install to match the units of electricity you consume per month.

2. Generate solar power with the ambition of getting an income

There are two methods that have been introduced to support this procedure.

The tariff is set at Rs22 per unit (1 kilo Watt hour) for the first seven years and Rs15.50 thereafter.

- Net Accounting

Net Accounting, where a consumer will get paid in money if their solar-generated power is greater than what is consumed from the grid.

You will have to pay the necessary bill if you consume more than you generate.

Ex:

Considering Customer consumption 200kWh per month

- Monthly Generated Units from 2kW - 240kWh (+/- 5%)
- Consumption Units - 200kWh
- Exported Units - 40 kWh
- Payment From CEB (1st Seven Years) - 40*22 = Rs.880/=
- Payment From CEB (Next 13 Years) - 40*15.50= Rs.620/=

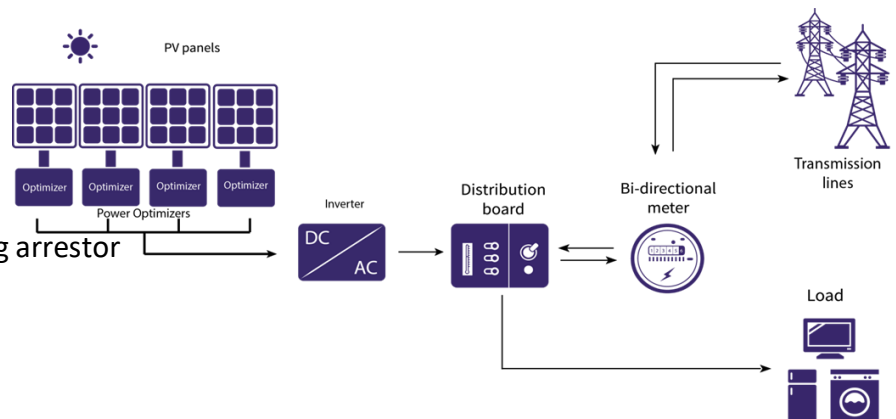
- Net Plus

Net Plus, where there is no link between how much electricity the consumer uses from the grid for which billing will happen and how much solar-generated electricity is supplied to the grid which will be paid in full at the rate of 22 rupees per unit.

✿ System Configuration

Basic components for grid connected system

- Solar PV module
- DC cable
- Structures
- Inverters
- Earthing and Lightning arrestor



☀ Solar PV Module

PV Module or Solar PV Module is an assembly of photovoltaic (PV) cells, also known as solar cells. To achieve a required voltage and current, a group of PV modules (also called PV panels) are wired into large array that called PV array. A PV module is the essential component of any PV system that converts sunlight directly into direct current (DC)



electricity. PV modules can be wired together in series and/or parallel to deliver voltage and current in a particular system requires.

- **Monocrystalline Silicon Solar PV: most efficient**

Generally, monocrystalline silicon solar PV is the best technology to deliver efficiency, as measured by wattage output related to the panel's size. But this efficiency can come with costs.

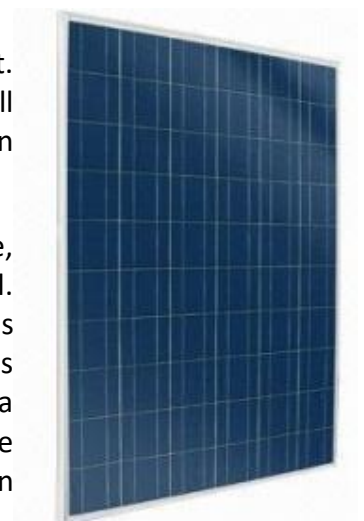
The best value is solar PV technology is polycrystalline silicon, offering efficiency levels close to monocrystalline panels, but at half the costs in some cases. Monocrystalline solar is made by growing a single crystal. Because these crystals are usually an oval shape, monocrystalline panels are cut into the distinctive patterns that give them their recognizable appearance: the sliced silicon cells expose the missing corners in the grid-like structure. The crystal framework in a monocrystalline is even, producing a steady blue color and no grain marks, giving it the best purity and highest efficiency levels.



- **Polycrystalline Silicon Solar PV: best value**

Polycrystalline solar is made by pouring molten silicon into a cast. However, because of this construction method, the crystal structure will form imperfectly, creating boundaries where the crystal formation breaks.




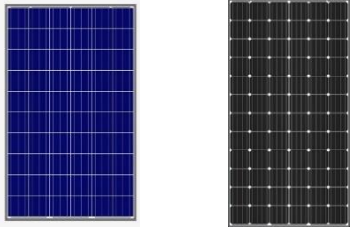

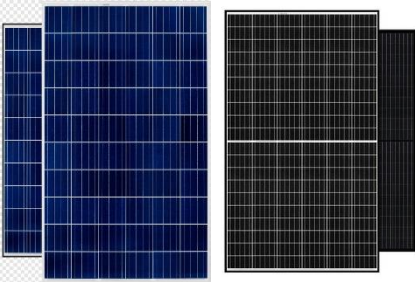
This gives the polycrystalline silicon its distinctive, grainy appearance, as the gemstone type pattern highlights the boundaries in the crystal. Because of these impurities in the crystal, polycrystalline silicon is less efficient when compared with monocrystalline. However, this manufacturing process uses less energy and materials, giving it a significant cost advantage over monocrystalline silicon. (Polycrystalline and multicrystalline are often synonyms, but multicrystalline is often meant to refer to silicon with crystallites larger than 1 mm.)



- Thin-Film Solar PV: portable and light weight

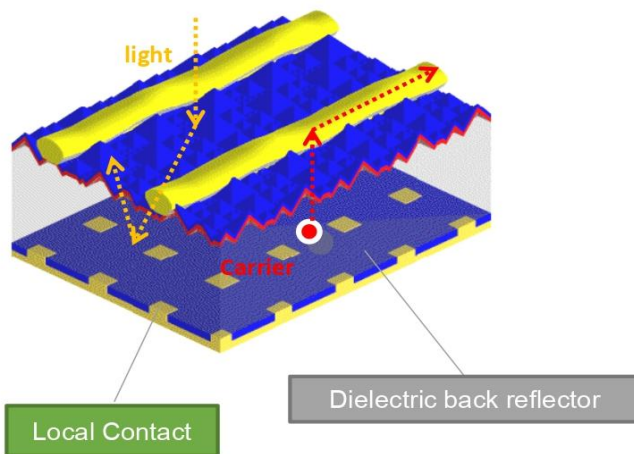
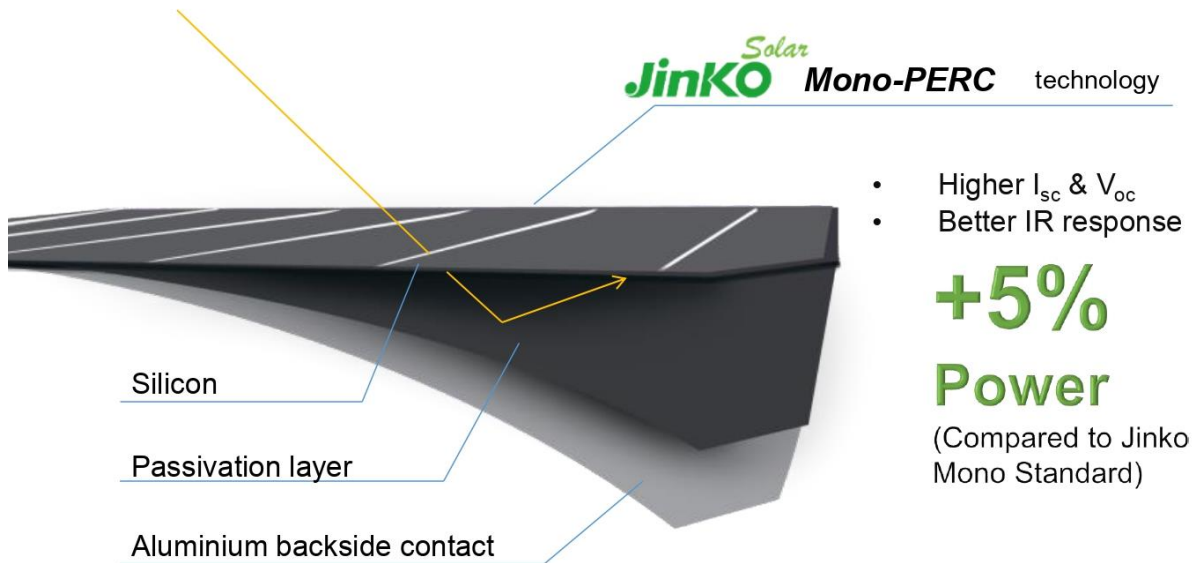
The technology with the lowest market share is thin-film, but while it has several disadvantages, it is a good option for projects with lesser power requirements but needs for light weight and portability. Thin-film technologies have produced a maximum efficiency of 20.3%, with the most common material amorphous silicon at 12.5%. Thin-film panels can be constructed from a variety of materials, with the main options being amorphous silicon (a-Si), the most prevalent type, cadmium telluride (CdTe) and copper indium gallium selenide (CIS/CIGS). As a technology that's still emerging, thin-film cells have the potential to be less expensive.



Manufacture	Solar PV Module	Features
	 <p>MONO Half Cell / MONO POLY Panel</p>	<p>High Voltage High Efficiency PID Resistance Low Light Performance Durability Against Extreme Weather Condition</p>
	 <p>POLY Panel MONO Panel</p>	<p>High Module Conversion Efficiency Low Degradation & Excellent Performance High Reliability Against Extreme Weather Condition</p>
	 <p>POLY Panel MONO Panel</p>	<p>More Power Output per m² Improved per performance in shaded condition 100% PID Free Reduces Balance of System Cost</p>

MONO-PERC Half Cell

Benefits of JinkoSolar Mono-PERC



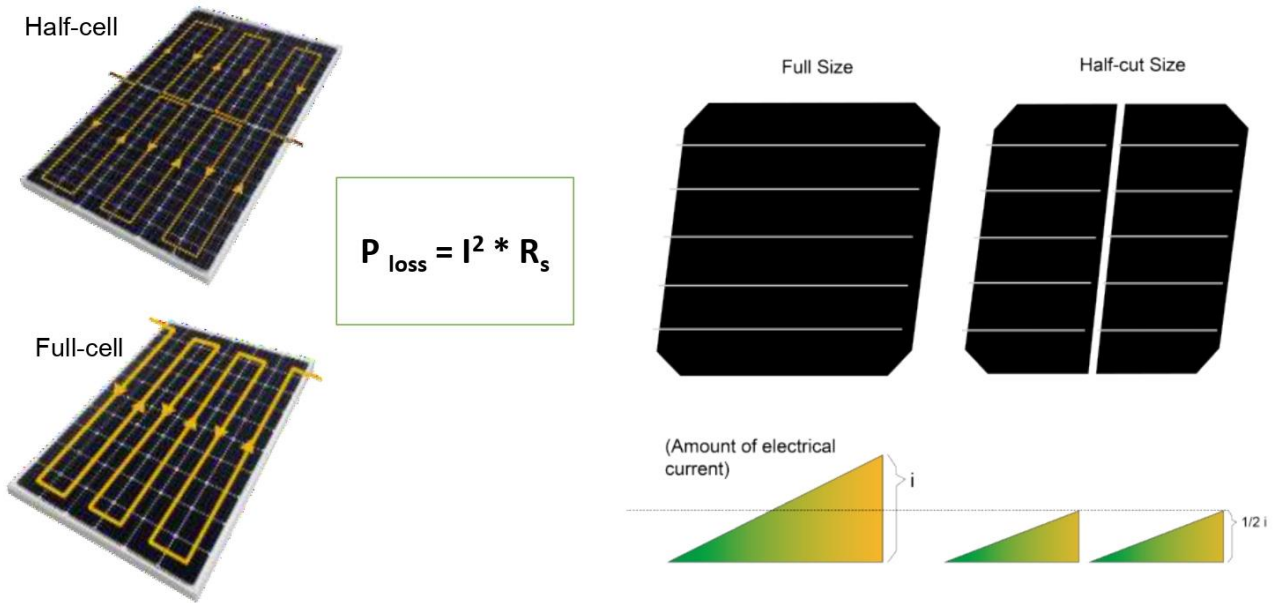
PERC cell Features

- Enhanced internal backside reflectance to capture more long-wavelength light
- Decreased rear current carrier losses by reducing the rear side recombination
- Higher Quantum Efficiency than conventional cells

Main Advantages:

- The most cost-effective C-Si high-eff. leading technology
- Available at multi-gigawatt scale industrial production
- Mature technology and long track record
- Long-term established QA protocols during whole production
- High potential for further cell efficiency increase

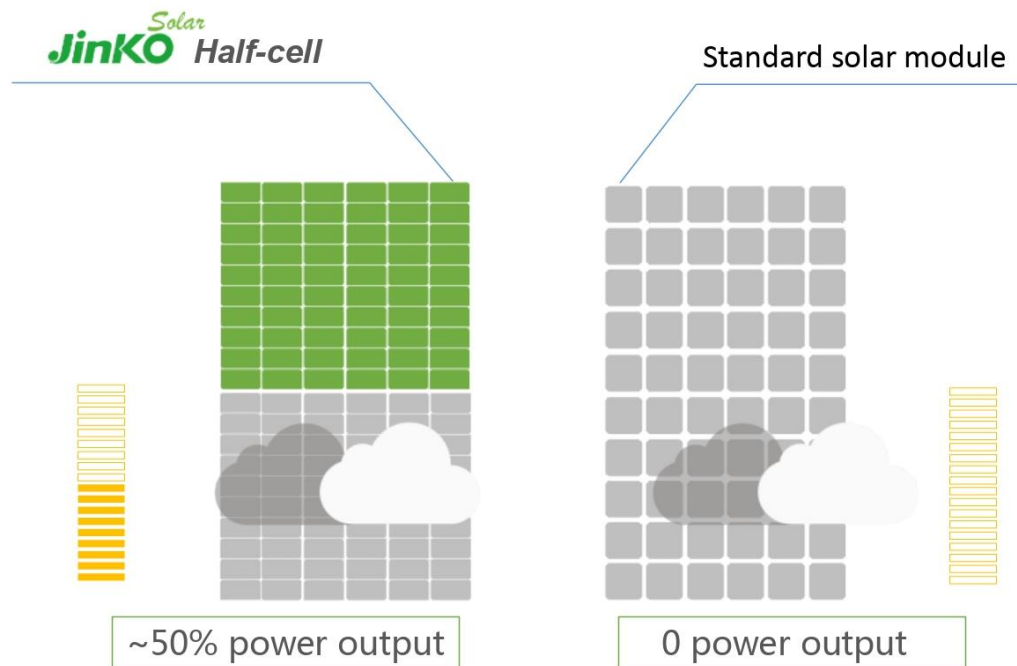
Half Cell: Technology



Electrical current (i) flowing on busbar is halved

Resistive losses in a HC module is $1/4$ of a full-sized cell

Better Mismatch & Shading Mitigation



Lower shading losses of HC compared to normal module, in certain shading conditions

☀ Cables

The unique capability of wire harness of connecting parallel strings eliminates the use of array junction box. It provides a more simpler and safer solution. 2 wire harness are used in each array one for connecting all the positive terminals at one side and negative terminals at the other side. The multi-strand Copper/Aluminum cables will be used for

- Interconnection of electrical components like PV Modules
- Junction boxes
- Distribution Boards & Inverter



All the cabling will be carried out as per the standards. The size and length of the cable will be selected such that there will be minimum voltage drop and the effect of temperature is minimum. The size of cables will be selected considering the short circuit current that can flow through the cables. Cables will be housed inside PVC conduit pipe for unarmored cables and all cables will be underground cabling with the cable trench at a minimum depth of 80 CM.



AC Cables

Kelani Cables

Singapore based Sri Lanka Opportunity Fund claims strategic stake in Sri Lanka's Kelani Cables PLC



DC Cables

LAPP KABEL

LAPP GROUP

☀ Structure

Solar Photovoltaic panels connected in series and in parallel giving a DC output out based on incident irradiance. Intensity of the sunlight will be maximum utilized when incident irradiation is

perpendicular to PV module, hence Orientation and

parameters, as well as shading from surrounding obstructions. Structures will be made of galvanized mild steel/ aluminum based on site soil and wind load parameters. Suitable number of Array frames will be provided based on the design and site requirements. The array frames proposed for the site would typically utilize maximum sunlight with a different tilt angle capability and these array frames will be corrosion free. The array frames are designed for simplicity, low cost and ease of installation at site. The Structure consists of a set of components that can be managed and mounted in the place where the installation is going to be realized. These structures are designed to survive adverse weather conditions with minimum maintenance. The structure will be supplied with all members to be compatible allowing easy installation at the site.



Alumex Mounting Rail	T Clamp	Angle Clamp	Connector Clamp	Serrated Angle Clamp
 <p>Profile Number Length (mm) Alu-523 6100 Alu-523 4200</p>	 <p>T Clamp Types Bolt Size (mm) T Clamp Set 40mm bolt-45mm 45 T Clamp Set 40mm bolt-50mm 50 T Clamp Set 40mm bolt-55mm 55 T Clamp Set 40mm bolt-60mm 60</p>	 <p>Angle Clamp Types Angle Clamp Set-H 33mm Angle Clamp Set-H 40mm Angle Clamp Set-H 45mm</p>		 <p>Serrated Clamp Types Hole Diameter (mm) Serrated Clamp Set 40mm (D10) 10mm Serrated Clamp Set 40mm (D06) 6mm</p>
Serrated Clamp with Hanger Bolt	Amano Roof Mounting base	Asbestos Roof Mounting base	Adjustable tile hook	Height Adjustable Plate
	 <p>Amano Roof Mounting Base Types Wave width Amano Roof Mounting Base 60mm 60mm Amano Roof Mounting Base 100mm 100mm</p>			
Trapezoid Roof Base	Extended Serrated Angle	Trapezoid Serrated Angle	Roof Base Bracket	Cable Trunking Box
 <p>Trapezoid Roof Base Types Wave width Trapezoid Roof Base 60mm 60mm Trapezoid Roof Base 150mm 150mm</p>				 <p>Cable Trunking Types Width of the Trunk Cable Trunking -76mm 76mm Cable Trunking-100mm 100mm</p>
Top Hat System	Solar Accessories - Lock Nut/Aluminium Nut			
	 <p>ALUMINIUM NUT</p>	 <p>LOCK NUT</p>		

Alumex Mounting Rail



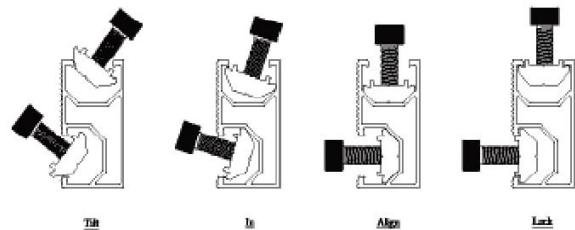
Alumex Mounting Rail (Alus-23)

Alumex Solar Mounting is designed for tile roof and tin roof. It comes with high quality, high strength and low cost.

Features

1. High quality anodized Aluminium
2. Material – Aluminium Alloy 6063, Temper T5 & Bolt SUS 304 A2-70

Profile Number	Length (mm)
Alu-S23	6100
Alu-S23	4200



T Clamp



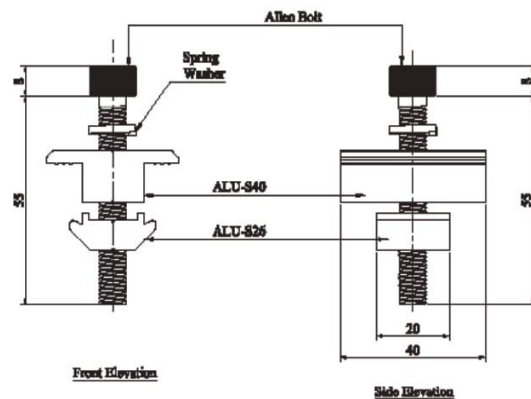
T Clamp Kit for Framed Modules

1. Fit between two panels
2. Fastened with a 6mm Allen key
3. Standard pre-assembly for the usual panels with thickness 30, 35, 40, 46, 50, 57mm

Features

1. Accommodate different types of PV solar panels
2. Material – Aluminium Alloy 6082, Temper T6 & Bolt SUS 304 A2-70
3. Easy and fast installation

T Clamp Types	Bolt Size (mm)
T Clamp Set 40mm bolt-45-mm	45
T Clamp Set 40mm bolt-50mm	50
T Clamp Set 40mm bolt-55mm	55
T Clamp Set 40mm bolt-60mm	60



Serrated Angle Clamp



Serrated Clamps have been widely used on universal corrugated metal sheets, Asbestos roofs. It also can fix to the roof rafter directly. Plus, it can be applied with all kinds of hanger bolt and roof Clamps.

Features

1. Simple and cost-effective installation
2. Material: Aluminum Alloy 6082 & SUS 304
3. Waterproof rubber gasket integrated
4. Apply for many kinds of metal roof

Serrated Clamp with Hanger Bolt



Hanger Bolt apply to install on both wooden rafter and steel purlin. Both types can be applied with Serrated angle to extend the height. We use M10x200mm Hanger bolt.

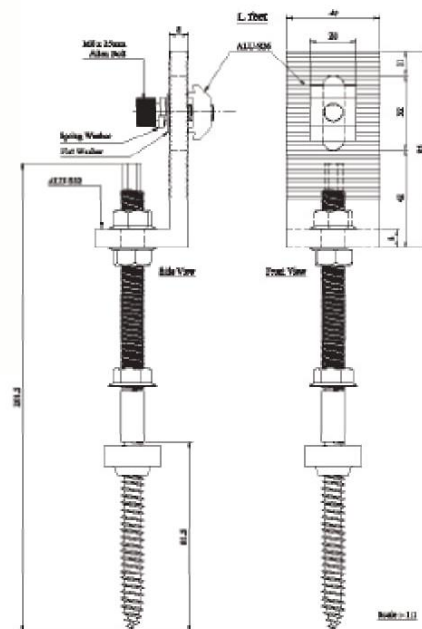
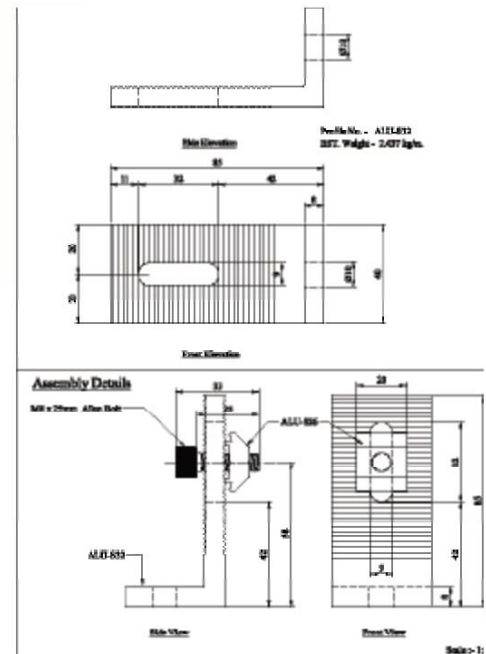
Features

1. Fast and simple installation
2. Material: Aluminum Alloy 6082 & SUS 304
3. Highly corrosion resistant surface treatment
4. Waterproof EPDM rubber integrated
5. Wooden rafter and steel purlin options

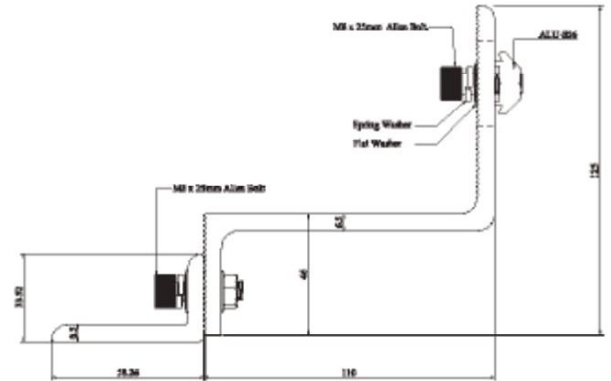
Serrated Clamp Types

Serrated Clamp Set 40mm (D10)
Serrated Clamp Set 40mm (D06)

Hole Diameter (mm)
10mm
6mm



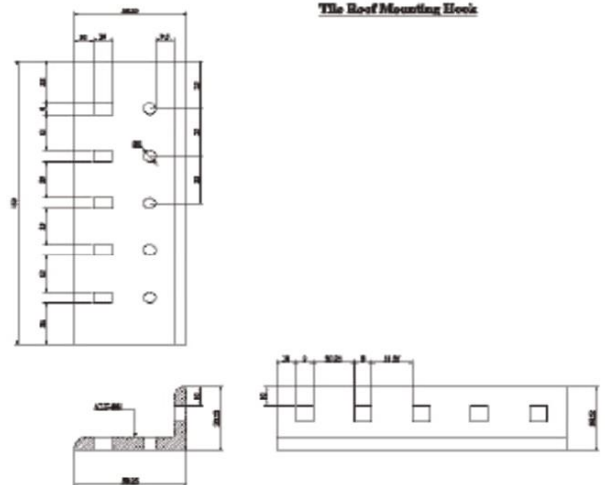
Adjustable tile hook



Adjustable Tile Hook can be adjusted horizontally and vertically, which extend the chance where regular tile hook can't be used.

Features

1. Accommodate different types of PV solar panels
2. Custom-made tile hooks based on tile specifications
3. Material – Aluminium Alloy 6082, Temper T6 & Bolt SUS 304 A2-70
4. Easy and fast installation
5. No need to drill into tile
6. Slotted for easy adjustment



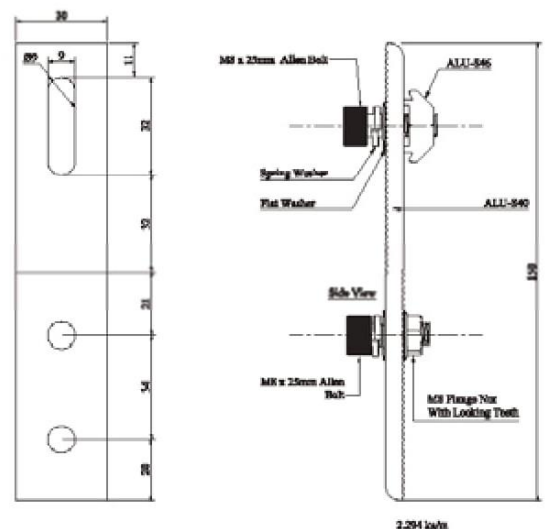
Height Adjustable Plate



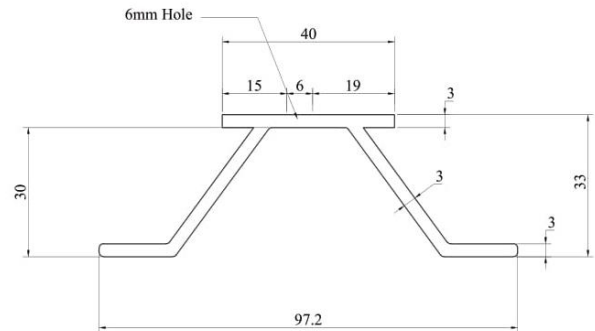
Height Adjustable plate is using to extend the height by simply fixing the plate to the Serrated angle clamp or Adjustable tile hook.

Features

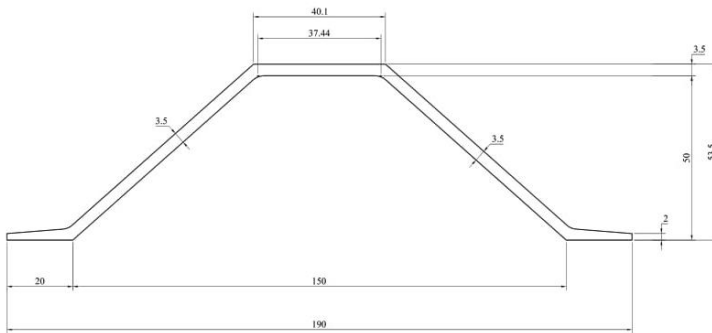
1. Accommodate different types of Solar components
2. Enable simple fast cost effective installation
3. Material: Al6082 & SUS 304
4. Easy and fast installation



Trapezoid Roof Base 60mm



Trapezoid Roof Base 150mm



Trapezoid Roof Base supplies the best solution to lay the rail horizontally and vertically to the trapezoid metal roof. This fixed to the roof purlin directly, supplying a strong solution.

Features

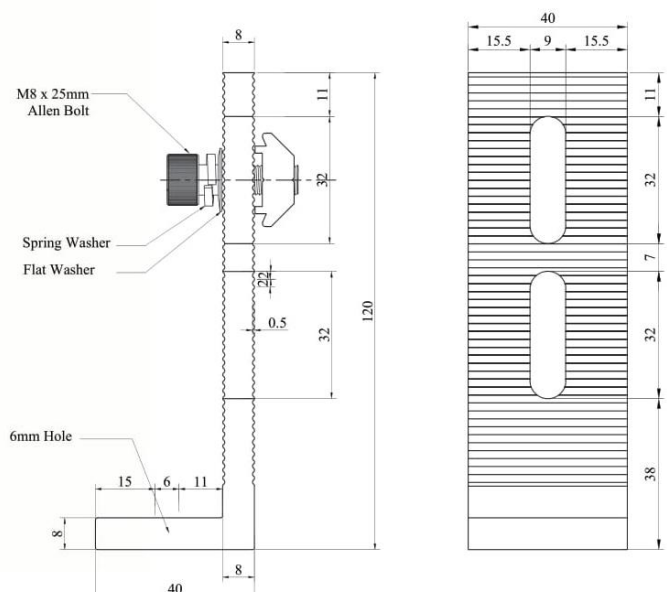
1. Al6082, High Classed anodized Aluminium
2. Enables simple, fast and cost effective installation.
3. Total Solution Available for any type of Amano roofs.

Extended Serrated Angle

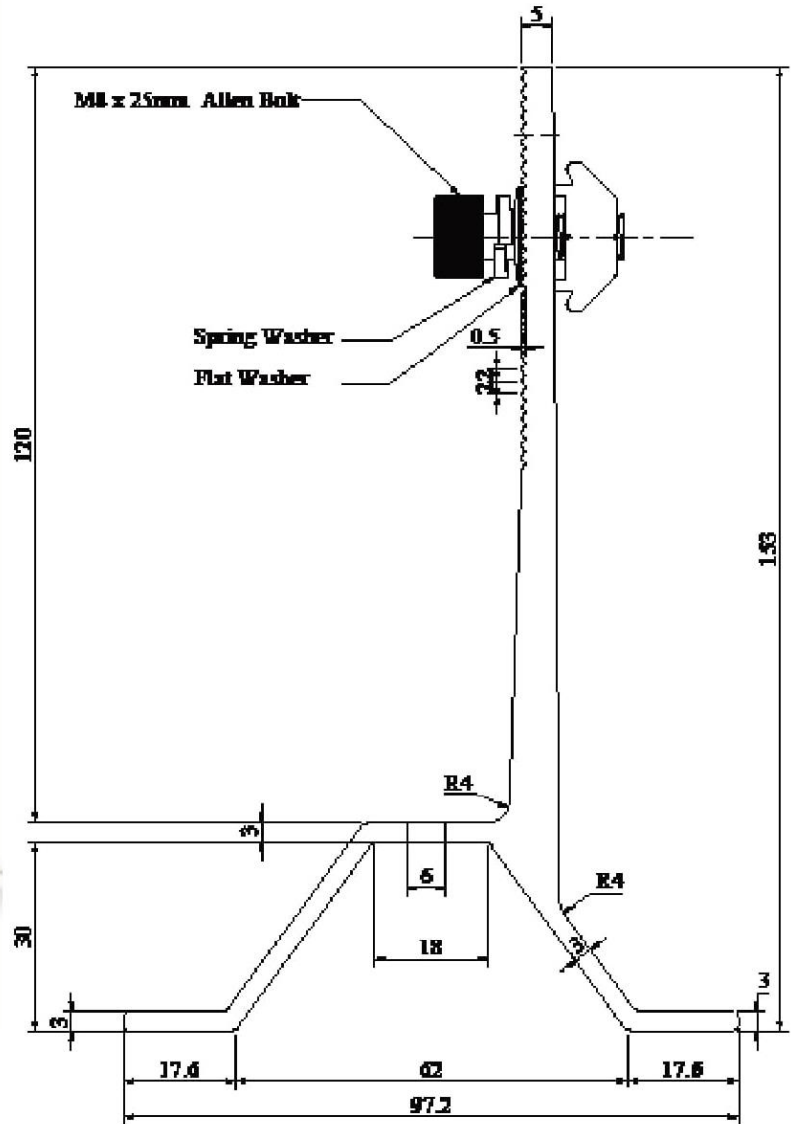
Extended Serrated Angle have been widely used on universal corrugated metal sheet, Asbestos roofs. It also can fix to the roof rafter directly. Plus, it can be applied with all kinds of hanger bolt and roof Clamps. It is an ideal solution to increase the ventilation between roof and the panels.

Features

1. Simple and cost-effective in stallation
2. Material: Aluminum Alloy 6082 & SUS 304
3. Waterproof rubber gasket integrated
4. Apply for many kinds of metal roof



Trapezoid Serrated Angle



Trapezoid Serrated Angle

Trapezoid Serrated Angle supplies the best solution to lay the rail vertically to the trapezoid metal roof. This fixed to the roof purlin directly, supplying a strong solution.

Features

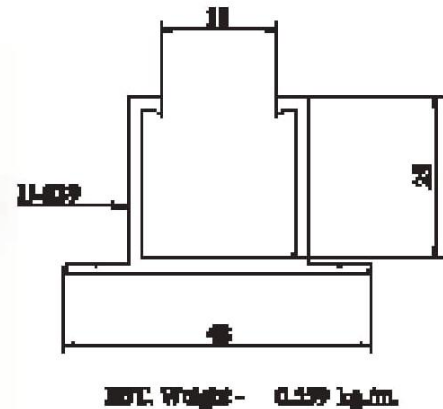
1. Al6082, High Classed anodized Aluminium
2. Enables simple, fast and cost effective installation.
3. Total Solution Available for any type of Amano roofs.

Roof Base Bracket

Alumex Solar roof base bracket design for any type of trapezoid and corrugated metal sheet roofs.

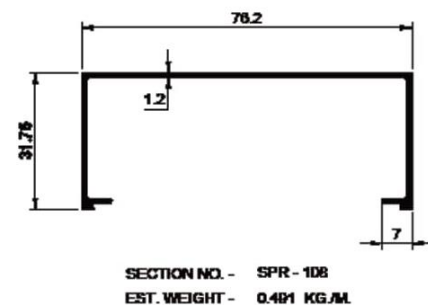
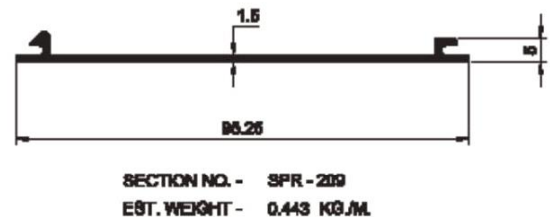
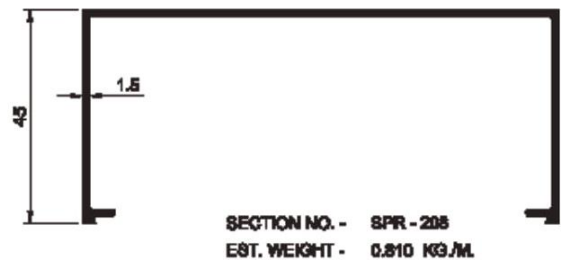
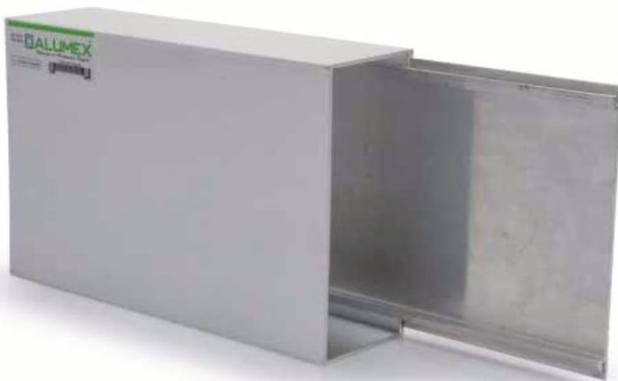
Features

1. Enable simple fast cost effective installation
2. Al6082 High class anodized Aluminium
3. No need extra rail
4. Rail free, cost effective



Cable Trunking Box

Cable Trunking Types	Width of the Trunk
Cable Trunking -76mm	76mm
Cable Trunking-100mm	100mm



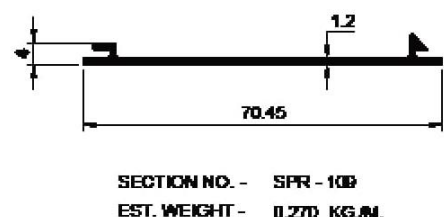
Alumex Solar cable trunking series is Single compartment aluminium trunking combines an elegant design with practical functionality - the ultimate in prestigious installations.

Features

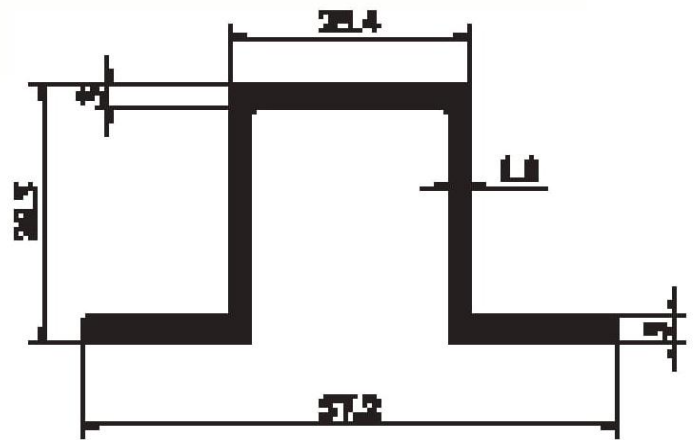
All Trunking Assemblies comprise of body and lid.

Features

1. Attractive, aesthetically pleasing trunking profile
2. Ease of installation
3. Vast selection of colours
4. Al6063, T5



Top Hat System



Features

1. Fast and simple installation
2. High quality anodized Aluminium
3. Material – Aluminium Alloy 6082,T6
& Bolt SUS 304 A2-70

DESIGNER: MET - 2014
 BEST. PRESSURE - 2.721 MPA

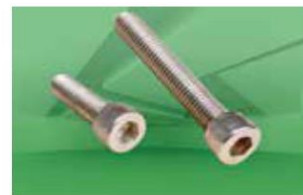
Solar Accessories - Lock Nut/Aluminium Nut



ALUMINIUM NUT



HANGER BRACKET



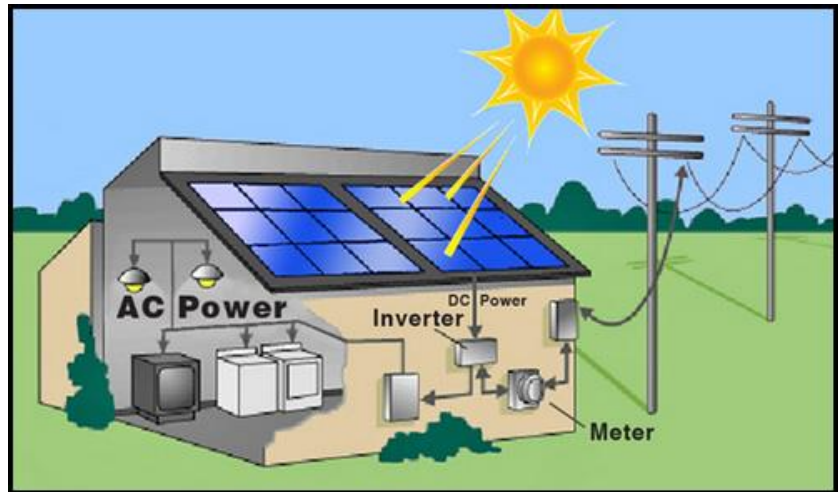
SOCKET HEAD SCREW



LOCK NUT

☀ Solar Inverters

A Solar inverter is similar to a normal electric inverter but uses the energy of the Sun. A solar inverter helps in converting the direct current into alternate current with the help of solar power. Direct power is that power which runs in one direction inside the circuit and helps in supplying current when there



is no electricity. Solar inverters are also called as photovoltaic solar inverters. Solar panels produce direct electricity with the help of electrons that are moving from negative to positive direction. Most of the appliances that we use at home work on alternative current. This AC is created by the constant back and forth of the electrons from negative to positive. In AC electricity the voltage can be adjusted according to the use of the appliance. As solar panels only produce Direct current the solar inverter is used to convert the DC to AC.

The Solar Inverter is an essential device in any solar power system. Its basic function of the inverter is to change the variable Direct Current output of the solar panels into Alternating Current. The various electrical and electronic components connected in the circuit help in the conversion.

The converted Alternating Current power is used for running your appliances like the TV, Refrigerator, Microwave, etc. For some particular applications, we can directly use the Direct Current power from the solar panel such as LED night lights, a cell phone charger. Generally, the power of a home solar power system is used for power AC loads.



Solis Inverters

SMA Inverters

Solis Inverter Range



Solis PV Inverter Range 0.7-30kW



Solis Mini

Solis 1ph Inverter

Solis 3ph Inverter

NEW Solis 3ph Inverter



Solis MINI Inverter



Solis MINI

- Solis Mini - 0.7kW, 1kW, 1.5kW, 2kW
- NEW – 2.5kW (July 2015)
- New Compact and lightweight design –
 - 44% Smaller
 - 47% lighter - 5.2 – 5.6kgs
- Ultra low startup voltage – MPPT from 50v – 2 panel installation. Commercial installations
- G83/2 certified
- IP65 certified for external installations
- Solis Wifi compatible



Solis Single Phase Inverter



Solis Single Phase-2G

- 2.5kW Upwards - All include dual MPPT trackers as standard
- Range - 2.5kW, 3kW, 3.6kW, 4kW, 5kW
- Single MPPT options – 3K + 3.6K
- Wide voltage range enables flexible string configurations – i.e. 4/12 panel configurations
- Compact and lightweight – 14kg
- G83/2 Certified
- Solis Wifi compatible

Solis Three Phase Inverter



Solis Three Phase

- Range - 6kW, 10kW, 15kW
- Dual MPPT - with Dual DC Inputs/MPPT
- 10 Year Warranty Included as Standard
- G59/3 Certified
- G83/2 +1 available for 6/10kW
- Compact and lightweight – only 27kg
- Solis Wifi compatible

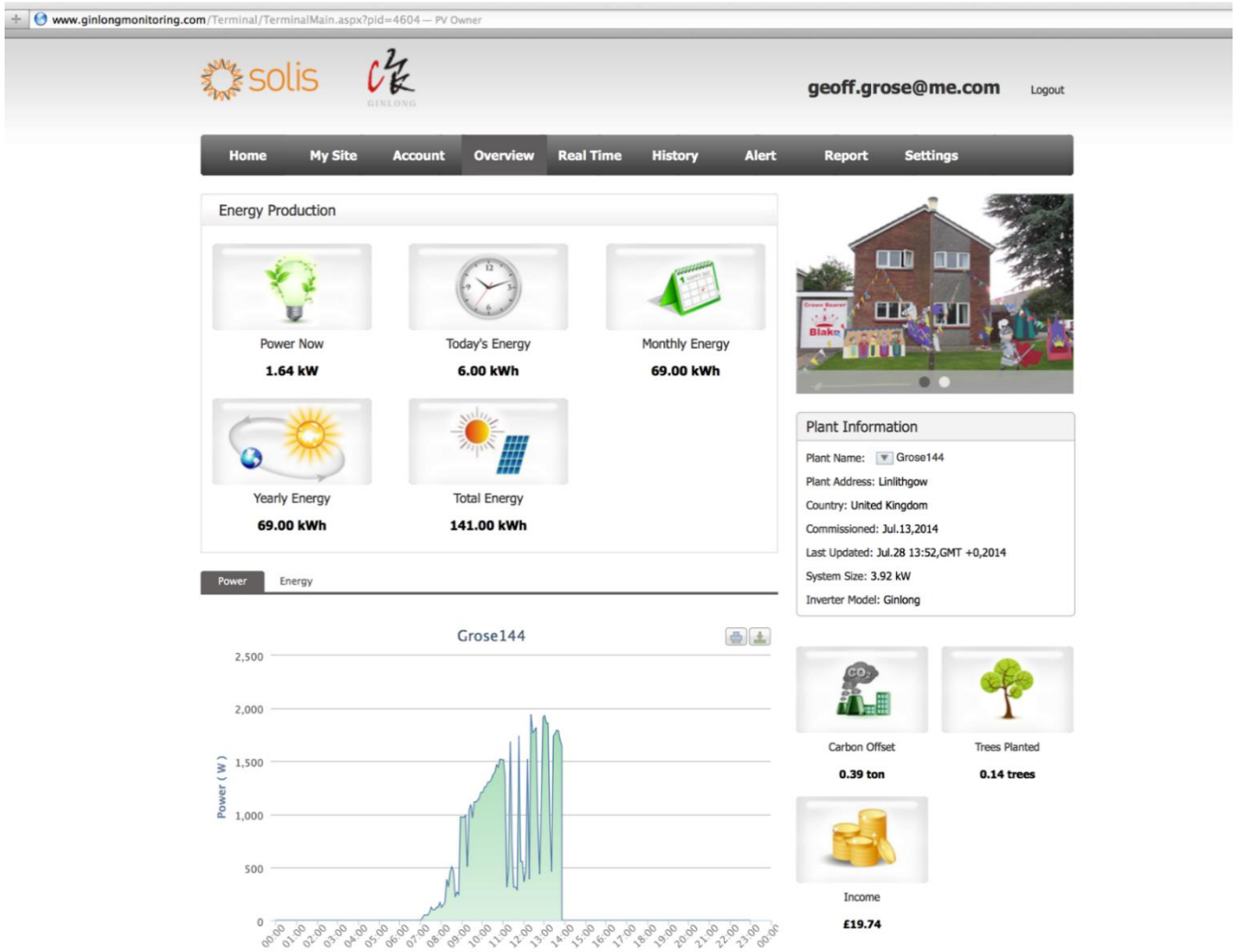
Solis New-Three Phase Inverter



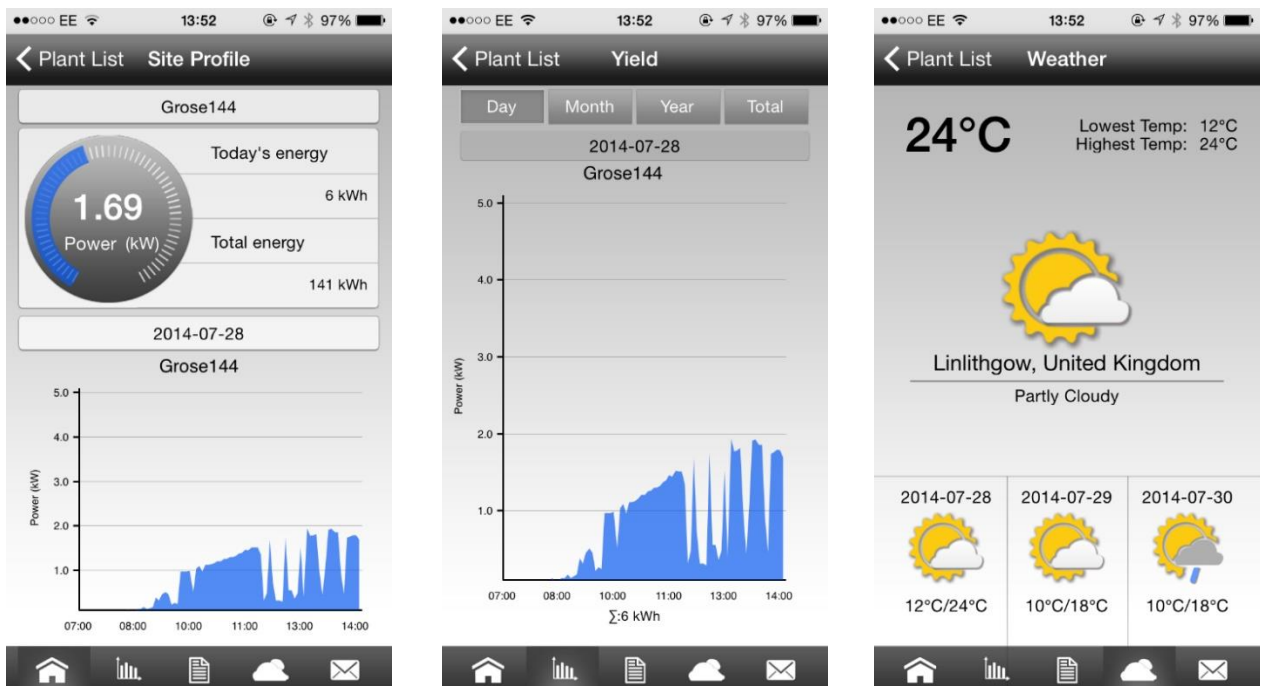
NEW Solis Three Phase

- Range - 20kW, 25kW, 30kW
- 4 MPPT with Dual DC Inputs/MPPT
- 7" Display
- Compact and lightweight – **only 50kg!**
- 10 Year Warranty Included as Standard
- Most cost effective Solis inverters
- G59/3 Certified - G83/2 +1 available for 6/10kW

Monitoring – Web Interface

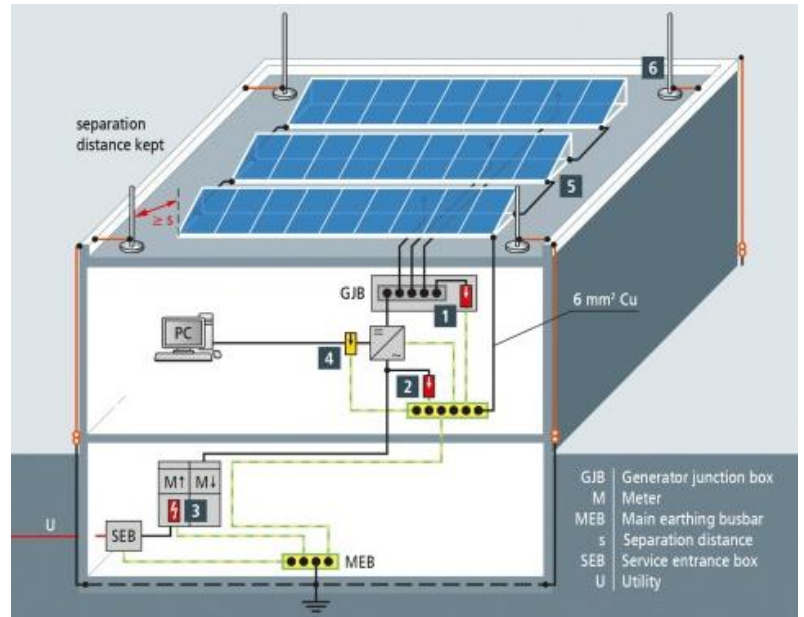


Monitoring – APP Interface



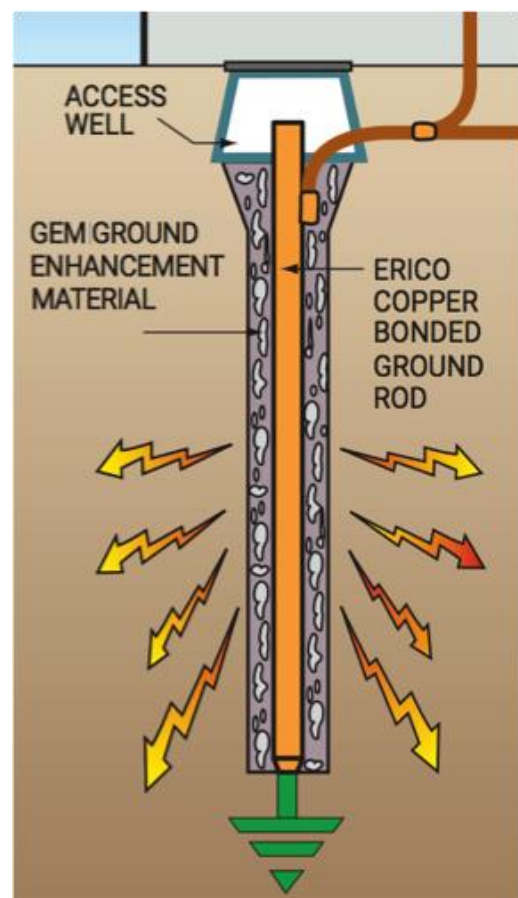
☀ Earthing & Lightning Arrestors

In general, bonding a piece of equipment means connecting it to an equipment grounding conductor (EGC) that is bonded to the overall grounding electrode system. The goal is to take all of the metal in a system that could become energized during a fault (besides the current-carrying conductors) and connect them together so they are effectively one piece of metal. That “one” piece of metal is then connected, by EGCs, back to the source of power, completing a circuit for any fault current. Bonding prevents a host of possible risks and dangers.



❖ Equipment Earthing

- The frames of all electrical equipment & structural work will be earthed by connection to the earth grid by branches of same cross sectional area of earth grid



❖ Lighting Protection

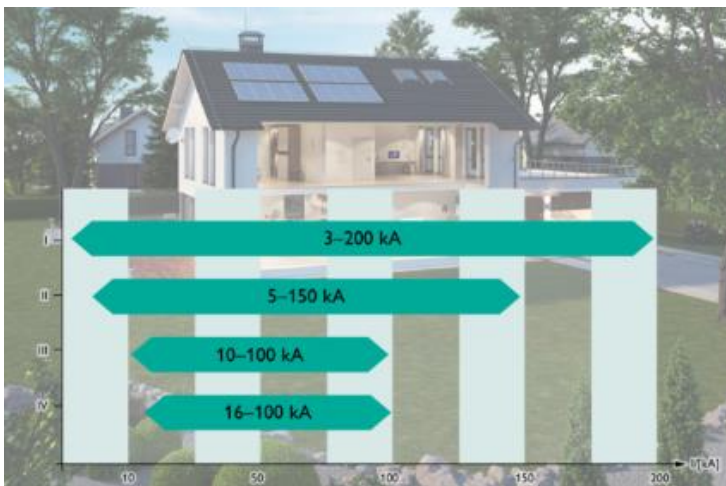
Lightning is a common cause of failures in photovoltaic (PV) and wind-electric systems. A damaging surge can occur from lightning that strikes a long distance from the system, or even between clouds. But most lightning damage is preventable. Here are some of the most cost-effective techniques that are generally accepted by power system installers, based on decades of experience. Follow this advice, and you have a very good chance of avoiding lightning damage to your renewable energy (RE) system.



Lightning (surge) arrestors are designed to absorb voltage spikes caused by electrical storms (or out-of-spec utility power), and effectively allow the surge to bypass power wiring and your equipment. Surge protectors should be installed at both ends of any long wire run that is connected to any part of your system, including AC lines from an inverter. Arrestors are made for various voltages for both AC and DC. Be sure to use the appropriate arrestors for your application. Many system installers routinely use Delta surge arrestors, which are inexpensive and offer some protection where the threat of lightning is moderate, but these units are no longer UL listed.

- Lightning protection will be as per IS Standards and IE rules.
- Suitable for Solidly Earthed system neutral system and 10kA rating.
- The arrestor shall be capable of spark over on server switching surges and multiple strokes.
- The lightning arrestor shall be capable of discharging over voltage occurring during switching of unloaded transformer.
- Surge counters with insulating base for connection, supporting insulator and necessary hardware shall be provided

Surge Protective Devices



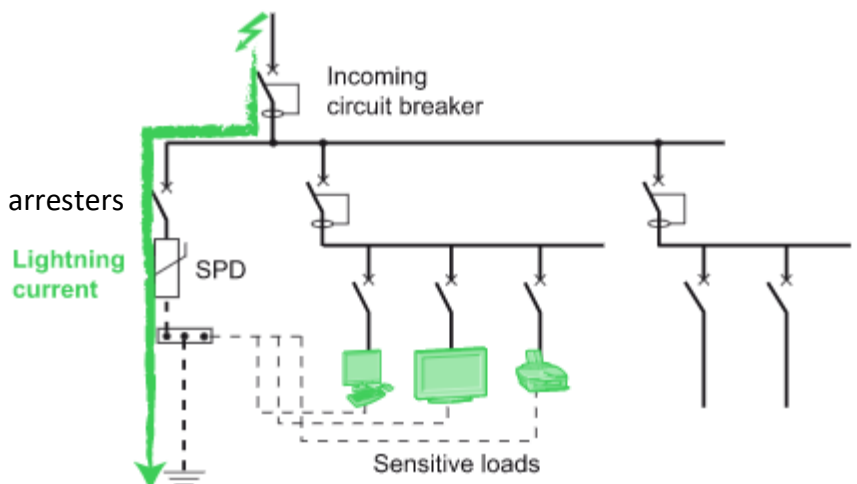
Lightning Protection Level By





Your advantages –DC & AC

- Optimum capabilities of up to 1500 V DC
- Independently tested safety through KEMA approval
- High operational reliability, thanks to a short-circuit current rating up to 2000 A
- Can be used up to 6000 m according to EN 50539-11
- With or without floating remote indication contact
- Optical, mechanical status indication for the individual arresters
- Disconnect device on each individual plug
- Mechanical coding of all slots
- Multi-channel type 2 arresters
- Type 2 consistent plug-in surge arresters



☀ **Our Installation Site – Solar Electricity – On Grid Tied Systems**

- ❖ 8kW System – Mr.Sabry (Business Man) @ Peters Lane,Negombo



**Panel Installation
Jinko Mono Half Cell
Module -20 Nos**



**Inverter Installation Solis
Three Phase 8kW**

- ❖ 4.8kW System – Mr.Chandana (DFCC Bank Manager-Pettah)
@Uyankele, Panadura



**Panel Installation Jinko Mono
Half Cell Module -12 Nos**



**Inverter Installation
Solis Single Phase 5kW**

- ❖ 4.8kW System – Mr.Ranjith Peiris @ Wattaranthenna, Kandy



**Panel Installation Jinko Mono
Half Cell Module -12 Nos**



**Inverter Installation
Solis Single Phase 5kW**

❖ 4.8kW System - Mrs.Gamage (Bakery Owner)
@ Negombo - Kimbulapiiya



**Panel Installation Jinko Mono
 Half Cell Module -12 Nos**



**Inverter Installation
 Solis Single Phase 5kW**

❖ 3.35kW System - Mr.Rodney @ Nivandama – Ja Ela



**Panel Installation Yingli Poly
 Crystalline Module - 10 Nos**



**Inverter Installation
 Solis Single Phase 3kW**

❖ 2.4kW System - Mr.Halpe (CEB Retired Chartered Engineer)
@ Hendala – Wattala



**Panel Installation Jinko Mono
 Half Cell Module -06 Nos**



**Inverter Installation
 Solis Single Phase 3kW**

❖ 3.36kW System - Mr.W.T.G.L.Perera (Army Captain)
@ Kularathna Mawatha – Negombo



**Panel Installation Amerisolar Poly
 Cell Module -09 Nos**



**Inverter Installation
 Solis Single Phase 3kW**

❖ 4.8kW System Mrs.Edirisinghe (Lawyer)@ Prime City – Athurugiriya



**Panel Installation REC Mono
 Cell Module -12 Nos**

**Inverter
 Installation Solis
 Single Phase 5kW**



❖ 10.4kW System Mrs.Watapotha (Banker-NDB)@ Prime City – Athurugiriya



**Panel Installation
 REC Mono Cell Module -26 Nos**



**Inverter Installation
 Solis Three Phase 10kW**

❖ 20kW System – Mr.Canicius (Engineer) @ Thudella – Ja Ela



Panel Installation
Jinko Mono Half Cell
Module -43 Nos



Inverter Installation
Solis Three Phase 20kW

❖ 3.2kW System – Mr.Chaminda Manchanayake (Accountant)
@ Balawala, Badalgama



Panel Installation
REC Mono Cell Module -8 Nos



Inverter Installation
Solis Single Phase 3kW

❖ 16kW System – Mr.Dariju (Hasini Auto Trades)
@ Kurana, Negombo



Panel Installation
Jinko Mono Half Cell
Module -30 Nos

Inverter Installation
Solis Three Phase 20kW



❖ 40kW System – Mr.Newton Peiris (M J R Peiris & Sons)
@ Katugasthota, Kandy



Panel Installation Jinko Mono Half Cell Module -89 Nos



***Inverter Installation
Solis Three Phase 40kW***

❖ 5.6kW System – Mr. W A G De Silva (Banker)
@ Prime City, Athurugiriya



❖ 4.8kW System – Mr. H Yahathugoda @ Yatiyana, Minuwangoda



❖ 5.52kW System – Mr. W K L E Walallavita @ Rukmale, Pannipitiya



❖ 11.04kW System – Mr. D N Y Ambrose @ Gangodawila, Nugegoda



❖ 4.8kW System – Mr. H W Tharanga Hashan @ Palugasdamana (North), Polonnaruwa



❖ 3.2kW System – Mr. B D M M Thilakarathne @ Galgamuwa, Veyangoda



❖ 3.255kW System – Mr. J P Wijayarathne @ Walauwatta Road, Gangodawila



❖ 5.115kW System – Mr. B M Dayawansa @ Vijithapura Mw, Walpola



❖ 8.37kW System – Mr. W K C Wimaladharma @ Thalawathugoda Road, Kotte



❖ 4.8kW System – Mr. E H D Nalinda @ Dehiwala Road, Boralesgamuwa



❖ 40kW System – Mrs. M R Rajapaksha (Laba Kade) @ Main Street, Negombo



☀ **Our Installation Site – Solar Electricity – Off Grid System**

❖ 5.5kW System – Mr. Herath @ Hanthane with 5.2kWh LiFePO4 Battery Backup



❖ 5.5kW System – Dr.Warnakula @ Katubedda with 4.8kWh LeadAcid Battery Backup



❖ 3.5kW System – Mr.Sameera @ Kadana with 4.8kWh LeadAcid Battery Backup



❖ 5.5kW System – Dr.Lakkumara @ Negombo with 4.8kWh LiFePO4 Battery Backup



❖ 5.5kW System – Mr. Dissanayake (Chief Engineer-CEB) @ Makola with 4.8kWh LiFePO4 Battery Backup



❖ 3.5kW System – Mr. Hamthoon
@ Dehiwala with 2.4kWh Lead Acid
Battery Backup

❖ 5.5kW System – Mr. Hasitha
@ Kaduwela with 4.8kWh Lead Acid
Battery Backup



❖ 5.5kW System – Mr. Kavirathne @ Ja Ela with 7.2kWh Lead Acid Battery Backup

❖ 3.5kW System – Mr. Sanath @ Madawala with 4.8kWh Lead Acid Battery Backup



SOLAR HOTWATER SYSTEMS

- ❖ 450L HOT WATER SYSTEM WITH 450L TANK & 3 SOLAR PANELS
- ❖ CUSTOMER : Mr. LAKSHMAN
- ❖ LOCATION : MEEPE, PADUKKA



- ❖ 150L HOT WATER SYSTEM WITH 150L TANK & 1 SOLAR PANELS
- ❖ CUSTOMER : Mr. JAMES RODNEY
- ❖ LOCATION : NIVANDAMA, JA ELA



- ❖ 150L HOT WATER SYSTEM WITH 150L TANK & 1 SOLAR PANELS
- ❖ CUSTOMER : Mr. JOSEPH
- ❖ LOCATION : KURANA, NEGOMBO



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(PVT) LTD**

