

# **SUPERDAYA**

## **THE ELAROS® PHOTOVOLTAIC MOUNTING STRUCTURE**

### **INTRODUCTION**

“SuperDaya ELAROS® Mounting Structure” supplied by Sunrise Prima Sdn Bhd combines tradition with innovation solution for photovoltaic installation in Malaysia. We are professional provider in mounting structure system which built to withstand harsh conditions and are widely used in residential, commercial and remote districts. The mounting structure systems can be adapted to by almost all solar panels on the market today.

We are committed to the tradition of skilled manual craftsmanship as it is to the constant search for new materials, innovative methods and advanced solutions. Our ELAROS® technology is unique throughout the world – sophisticated and well thought out down to the finest detail – and reflects the unparalleled depth of experience that we offer you. It’s no surprise then, the “SuperDaya ELAROS® Mounting Structure” system consistently improves to meet the highest requirements for technology, aesthetics and quality.

### **READY-MADE SOLUTIONS**

“SuperDaya ELAROS® Mounting Structure” provides solutions for every type of roof, whether it is a mounting system for a flat roof or pitched roof that is required, or an on-roof or in-roof assembly, our product spectrum can provide a solution. “SuperDaya ELAROS® Mounting Structure” products range from pre-assembled to partly pre-fit mounting systems to user specific solutions which we develop in close coordination with our partners.

### **6-STRONG REASONS TO SPECIFY**

“SuperDaya ELAROS® Mounting Structure” is so commonly specified and used in Malaysia and South East Asia. Our SuperDaya ELAROS® product is easy to install, great flexibility, compatibility, adaptability and high accuracy.

1. Easy to Install. The Standard aluminium conveyor rail and our SuperDaya ELAROS® clamps have greatly simplified the installation of PV modules. These rails and clamps can be installed with a single Hexagon Key and standard tool kit.
2. Fast Installation. The SuperDaya ELAROS® system is aided by a very high level of pre-assembly allow greatly reduced installation times.
3. Versatile and Flexible. With the SuperDaya ELAROS® products, framed Crystalline photovoltaic modules and un-framed Thin Film photovoltaic modules from all the popular

manufacturers can be easily mounted on pitched roofs. The SuperDaya ELAROS® system has mounting accessories designed for use on almost every roof cladding available.

4. Accuracy. Our design team will assist on sizing up the mounting system, thus eliminate the need for onsite cutting, the use of our unique SuperDaya ELAROS® products allow the system to be installed with millimetre accuracy.

5. Engineered Structure. As roof trusses have varies strength, material and specification, our design team can assist to inspect and to ascertain if the existing structure has adequate strength to support the additional PV array. “SuperDaya ELAROS® Mounting Structure” supplied by Sunrise Prima Sdn Bhd are engineered to highest standard, safety and strong. The SuperDaya ELAROS® products are designed to comply with ANZ 1170.

6. Durable. All SuperDaya ELAROS® components are made of quality extruded aluminium and stainless steel. The high corrosion resistance guarantees the maximum possible lifespan and is also completely recyclable.

### **10-YEAR WARRANTY**

Each “SuperDaya ELAROS® Mounting Structure” is warranted to be free from defects in materials and workmanship for ten years from the date of first purchase when installed properly and used for the purpose for which it is designed. The warranty covers the replacement cost of parts to repair the product to proper working condition. Transportation and incidental costs associated with warranty items are not reimbursable. The warranty does not cover normal wear, or damage resulting from misuse, abuse, improper installation, negligence, or accident. Furthermore, it does not cover units that have been altered, modified or repaired without written authorization from the manufacturer or its authorized representative, or units used in a manner or for a purpose other than that specified by the manufacturer.

### **UNMATCH SUPPORT**

Our design team and installation team is just as professional and reliable as the SuperDaya ELAROS® products. Your customer’s investment is well protected, thanks to the experience and expertise our engineering development team, even when the projects are complex and demanding.

### **IMPORTANT KNOWLEDGE OF PV MODULE SITTING**

Sitting is most important, in order to get the most power, photovoltaic modules need maximum exposure to direct sunlight for the longest time - any shading will reduce module output considerably. Potential shading at different times of the day and year must be considered.

Some other factors to consider are: ease of installation & maintenance; potential power losses are due to long cable runs; location of other system components - batteries, inverter and load.

PV's work best at lower temperatures, consequently they should be installed at a distance from hot roof's etc. to allow ventilation behind the PV array must be provided for in the roof design. In hot climates use of the higher voltage modules is preferable to offset the voltage reduction due to temperature.

## DESIGN CRITERIA OF MODULE MOUNTING METHODS

Modules may be mounted on a pole, a ground support, a wall of a building, a building or vehicle roof, or on a boat deck. The main considerations are daylong access to unobstructed sunlight and wire lengths to batteries. Appearance and ease of access for any cleaning etc. should also be considered.

Ideally panels should be placed so that they are perpendicular to the noon day sun, i.e. due south and at an angle of inclination approximately equal to the angle of latitude, although they will function when mounted flat (in fact on overcast days this can be better since the light is diffuse and reflected). A steeper angle of inclination will enhance output during winter months when the sun is lower in the sky, at the expense of some reduced output in summer, (a fixed amount would have an angle of latitude plus 15 °). A simple system where the angle can be changed manually twice a year (in Spring & Autumn) is best and does not involve much cost or effort.

Mounting frames can easily be fabricated one - to avoid electrolytic corrosion aluminium angle and plated or stainless steel nuts & bolts should be used, also mounts should be strong and capable of withstanding wind. Alternatively a range of high quality standard kits are available. These are pre-drilled to accept modules and include stainless steel fasteners. We can also fabricate suitable custom built support structures to suit individual requirements.

Sometimes when choosing an array mount it's useful to leave room for a system to grow. Usually the extra cost for a frame to take extra modules will be small and then any future expansion will be straightforward. CAUTION! Never leave a module unsupported or unsecured. If a module should fall, the glass can break. A module with broken glass cannot be repaired.

Advantages of Different Mounting Methods	
Rooftop Mounting	Helps to avoid shadows from trees, but access for seasonal adjustment & installation can be difficult.
South Wall Mounting	Works if there is enough wall space.
Ground Mounts	Easy access & installation but take up space.

Pole Mounts	Can be easy to set up & adjust.
Tracking Mounts	Can add several extra morning & afternoon hours of full power production.

## COMMON PV ARRAY MOUNTING METHODS

### 1. BUILDING INTEGRATED PHOTOVOLTAIC MOUNTING

Integrated or Retrofitted mounting, in which the modules are integrated into the roofing or exterior of the building itself. In BIPV, modules serve double duty as both PV generation and roofing or exterior building skin. BIPV is most commonly found in residential as well as commercial grid-tied applications in which the modules are incorporated from the initial building design stage or later stage.

### 2. STAND-OFF MOUNTING

Standoff mounting referred to by some as flush mounting, in which standoffs attached to the roof's structural members support rails to which the PV modules are attached. For flat roofs, standoff mounting may be used for small arrays. Large-scale flat roof commercial projects are often accomplished with fully engineered and certified systems. Some have no roof penetrations, using ballasted racks to resist wind loads. The most common mounting method on a sloped roof is the standoff mounting method, as this method adapt well to most existing roofs. It also provides for air circulation behind the modules to reduce the PV module operating temperature. For standoff mounting, a spacing of between three and five inches between the modules and the roof is recommended to provide adequate ventilation for the modules.

### 3. GROUND MOUNTING

Ground mounting, in which the PV is rack-mounted at ground level. This method is often used on large commercial or utility-scale arrays where fencing or other means of protection from vandalism is possible, and contact with the array by other than qualified service personnel is limited.

### 4. POLE MOUNTING

Pole mounting, in which an array is mounted on a manufactured rack which sits atop or attaches to the side of a steel pole. Pole-top arrays are common for off-grid residential PV systems, as the weight of the array is balanced over the pole, allowing easy seasonal adjustment. Side-of-pole mounts are most common in small industrial applications, in which an entire system dedicated to a particular purpose, such as remote telemetry, is mounted on a single pole.

### 5. TRACKING SYSTEMS

Tracking is a ground- mounting variation, in which an array is able to move during the day to continually face the sun. By following the sun's path, tracking increases daily power production by effectively lengthening the solar day. Tracking may increase summer gain by 30% or more, but winter gain may be 15% or less. This is because the summer sun follows a long daily arc, which a tracked array can follow. Some applications fall under multiple mounting methods. For example, a "solar carport" uses PV modules to create a roof under which cars may be parked. As the modules are the roof, this may be considered integral mounting, or it may be considered ground mounting with the array well above the ground. The roof location protects the modules, and the overall approach provides both shade and power on space otherwise dedicated only to vehicle parking.

## **COMPONENTS**

See attached...