

## System Design to Protect Your Solar Investment

Since solar electric systems are typically installed at outdoor, remote locations, SunWize engineers consider many design issues to protect your investment and build in features to address these issues.

### Protection from the Elements

There are many natural occurrences that may affect the performance of your system.

#### High Winds

Geography plays a role in how the wind affects your system. Open terrain is the most severe, as there is little to shed or block the wind. System mounts and enclosures are designed to allow multiple means of attachment to your pole. This includes steel banding or U-bolts. Mounts are sized for a specific range of pole sizes, optimizing the fit to the pole. The combination of these components allows the array to shed the wind safely.

#### UV and Weather Exposure

The sun, while providing power to your system, is also attacking the materials holding the system together. Snow, rain and hail have detrimental effects on equipment, too. SunWize system enclosures are aluminum and coated with white UV polyester based powder-coat paint and mounts are mill-finish aluminum or zinc-plated steel, painted with gray UV polyester based powder-coat paint. Both finishes provide corrosion resistance. The highly reflective color, in conjunction with the unique ventilation system, keeps inside temperatures as low as possible while minimizing water ingress. All hardware is high quality, corrosion resistant stainless or hot-dip galvanized steel.

#### Lightning Protection

Indirect and direct lightning strikes can damage or destroy one or many components of a solar system. SunWize systems are assembled with ease of earth bonding in mind. Modules are attached to rails using biting washers to insure good electrical contact. Enclosures are equipped with grounding lugs, simplifying the bonding to ground. MOV arrestors provide surge protection, limiting the levels of voltage transient, and sacrifice themselves to protect load equipment. In conjunction with circuit breakers and fuses, surge arrestors protect and isolate your equipment from the source of the problem.



Corrosion resistant SunWize white powder-coated aluminum enclosure.

#### Birds

Birds and their droppings can damage solar equipment. Droppings block the sun from the face of solar modules and the acidity can attack the system finish making maintenance

difficult for service technicians. Optional bird deterrent devices consisting of strips of flexible metal spikes can easily be added to module arrays. The spikes discourage birds from perching or nesting on the system.

### Protection from Vandalism and Theft

Security of equipment installed in a remote location is always a concern. System design has to be flexible to allow owners to meet the level of protection they require.

#### Enclosure Tampering

The equipment enclosure is typically mounted for ease of service and installation. The battery, control equipment and sometimes the customer's equipment can be located inside. To deter theft, all enclosures come with either a key lock or pad lock hasp. The enclosures mount to the pole or wall using a bracket that can only be removed from the inside of the enclosure. For more critical applications, where wireless communication is available, a remote monitoring system can be incorporated. This package includes system state of health monitoring, as well as the ability to add external sensors for door ajar, proximity or motion detection alarms. The sensors can be tied to a central dispatch to allow response to vandalism or attempted theft.

#### Solar Module Damage

Solar modules are typically mounted out of reach but can be prone to vandalism from ground level. Thrown rocks can damage modules and snag wiring. All SunWize industrial systems include wire encased in conduit, reducing wire exposure and potential damage.

Since modules closer to ground level are prone to theft, optional metal shields added to the rear of modules protect from rock throwing. Modules have a glass face that is impact resistant to hail sized objects up to 1" in diameter to minimize damage.

For systems requiring theft deterrence, optional special hardware is available. This special hardware uses an uncommon tool for attachment, deterring theft by making removal difficult.

While the examples above are typical issues SunWize engineers deal with, sometimes they also must consider extremes such as hurricanes, tropical rainforests, snow, corrosive salt air and temperatures ranging from Antarctic cold to desert heat.



Wind resistant SunWize u-bolt mount.

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