

Sol-Gen Systems Overview

All components should be installed as recommended in the manufacturer's installation instructions and in accordance with code and local jurisdiction requirements.

The systems include all of the major components required for standard flush asphalt roof mount. This does not include conduit, AC wires, ground wire or the breaker at the point of AC connection.

Sol-Gen systems include **Professional Solar Roof-Trac** mounting hardware with **3" Efficiency Fast Jacks**, Otey Flashings and the Wiley Electronics Electrical Bonding (**WEEB**) grounding system and components for wire management unless otherwise indicated.

The number of rail splices, mid clips and end clips will vary according to array layout. Work with your Solar Depot Sales Representative to ensure that these items are fine tuned per your requirements.

The systems do not include the breakers at the main panel, electrical conduit or wires for the AC or grounding. Quotes can be customized to include different mounting or grounding systems as requested by the installer or permitting agencies.

AC wires and overcurrent protection (breakers or fuses) should be sized for 1.25 times the maximum inverter current. (This is calculated by dividing the rated wattage of the inverter by the voltage of the inverter x 1.25). For long AC runs, larger wire gauge may be required to keep the AC voltage drop to the recommended 1% maximum.

AC point of connection- In residential systems the sum of all source breakers feeding the bus cannot exceed 120% of the bus rating ie. The sum of the main breaker plus the solar breaker cannot exceed 120% of the panel bus rating. For large systems especially on small service panels, the AC breaker requirement may exceed the maximum allowed as described above. Talk to your Solar Depot Sales Representative or our technical support staff if you need assistance.

Systems with String Inverters:

These systems are designed to work at sites with no significant shading and ambient temperatures between 14 and 114 Deg F. Some designs are available for locations with wider temperature windows. Discuss with your Sales Representative if you are installing in a location with more severe weather extremes.

Modifications in the array designs should not be made unless a qualified system designer has approved the modification. Too high an array voltage in cold conditions could result in a violation of the NEC and destroy the inverter (not covered under warranty). Too low an array voltage in hot conditions could result in unacceptable system performance.

Most Important: With string (high voltage DC) systems, it is mandatory that **ALL THE MODULES IN A SERIES STRING BE IN THE SAME ORIENTATION AND TILT**. Always select the system with the highest voltage that will fit with your design criteria. This allows for a better tolerance to partial shading.

These systems include the array output wires (an estimated length) with specialized connectors on both ends. These wires are designed to be cut to create a positive and a negative output

conductor to run down to the array disconnect / inverter. The ends with the MC connectors connect to the positive and negative ends of each string at the array end. The bare ends are connected to the terminals in the disconnect / inverter. The installer should confirm with the sales representative the required length before the system is ordered for delivery. The wires can be backordered and shipped after the mounting system is installed and the lengths are determined if preferred.

If there is more than one inverter in the system, a small load center with breakers for each inverter will usually be included. This allows the use of a single AC disconnect (if required) and a single solar breaker at the main electrical panel. Specify if you would like the AC disconnect or not.

Systems with Micro-Inverters (Enphase)

The modules in these systems can be installed in different compass orientations and at different tilts. These systems will perform significantly better at sites with partial shade conditions than the systems with string inverters. Any number of modules may be used in these systems.

Up to 12 of the M190-72-240-S11 inverters can be wired into a parallel string. A system output kit is provided for each parallel string. The installer needs to provide a j-box for transition from the specialized Enphase wire to THWN-2 wire and run down in conduit to the AC point of connection. If there are physical gaps in between portions of the array, jumper extensions with specialized connectors are available in several lengths as options from Enphase.

If 10 gauge wire is used, the maximum distance from the j-box on the roof to the AC point of connection is 106'. If 12 gauge wire is used, the distance is reduced to 66'. Each of these circuits needs to be protected by a 15A 2P circuit breaker. When multiple circuits are required a small AC load (source) center and a breaker for each circuit are usually included. This allows the use of a single AC disconnect (when required) and a single solar breaker at the main electrical panel. Specify if you would like an AC disconnect or not.

The Envoy is an indoor mounted device that plugs into a wall socket and a router to provide high resolution web based monitoring with the Enlighten service. The Sol-Gen systems come with 5 years of Enlighten service standard. The inverters send data over the AC power wires and it is decoded at the Envoy.

Resources:

www.solardepot.com Solar Depot Website, Sol-Gen Systems, Component Spec Sheets, Manuals, Warranties and Technical Resources

www.prosolar.com Professional Solar Mounting Hardware: Installation Manuals, Spec Sheets

www.we-llc.com Wiley Electronics: WEEB Documentation