



## Clarity™ Monitor

Attached to each panel in a PV array, the Clarity Monitor continually measures real time panel performance, providing insight into large scale solar arrays with an unprecedented level of accuracy and detail. These low-cost devices pinpoint impairments that impact energy production. The information gathered is precise and comprehensive, including voltage, current and power.



### Unprecedented Insight

Each monitor continually measures real time panel performance, providing unprecedented insight into the real time operation of large scale solar arrays. This information can then be used by the Intelligent Array™ site management system to detect and identify panel, string and area impairments affecting energy production.

### Cost Effective Maintenance

Site owners and maintenance teams have direct insight into panel damage, wiring faults, fuse problems and the effects of soiling and aging on energy production. This information is automatically converted into precise O&M recommendations.

### Simple Integration

The small, easy-to-deploy units, organize themselves into a dynamic wireless mesh network, passing real-time array performance information to a central collection point. The units are compatible with all makes of inverters. Their 'non-intrusive' design ensures energy production will not be interrupted in the event of inadvertent electrical damage or failure of the units.

### Unlimited Scalability

There is no practical limit to scaling the Clarity monitor system. The innovative proprietary mesh network will scale to the largest utility scale arrays, while the Intelligent Array software tools will reduce the vast amounts of monitored data into valuable actionable O&M recommendations.

## Deployment Flexibility

For maximum insight a monitor is deployed on every PV module in an array. The resulting data granularity provides the Clarity™ Intelligent Array™ software suite with the detail necessary to provide a precise O&M action plan for array maintenance. This includes a plan for cleaning, based on performance thresholds, as well as degradation and warranty performance analysis on every PV panel in the array.

In very large scale arrays, it is possible to trade off detailed insight for cost, by selectively deploying monitors across the array. If at least one panel in each string is fitted with a Clarity Monitor, the entire array is enabled with a very cost effective string monitoring system, with the added benefit of statistical panel degradation analysis as well as array and sub-array soiling monitoring.

Two voltage variants of the Clarity monitor enable compatibility with most types of PV panel including crystalline silicon, CdTe, CIGS, amorphous silicon thin film and CPV. There are also alternatives to monitor across groups of panels in series or parallel, providing further monitoring options.

Each monitor can be equipped with a remote DC disconnect switch feature, which is triggered over the wireless mesh network from any authorized user. This optional feature enables an enhanced level of site safety for maintenance and emergency shutdown at the panel, string, sub-array or array level. It can also be triggered automatically by the activation of site specific hardware for ground fault or arc fault detection.

## Monitoring Features

- **Voltage, current and power measured to an accuracy of 0.5% or better**
- **Self-powered from the array, consuming less than 0.1% of the system power in typical conditions**
- **Compatible with any array wiring topology and inverter**
- **Wireless mesh network self-configuring and self-healing, with no new wires required**
- **Optional DC disconnect feature for emergency panel, string or array shutdown**

Technical Specification for the Clarity Monitor					
		SPM80V12A		SPM125V8A	
		Standard	Switch Option	Standard	Switch Option
Input / Output Electrical Characteristics					
	Input DC Voltage (Voc max)	80 V		125 V	
	Input/String Current (Isc max)	12A		8 A	
	Measurement Accuracy (% error max)	0.5%		0.5%	
	Power Consumption (typ @ 50% Isc max)	288mW	504mW	144mW	288mW
Mechanical and Other					
	Dimensions	140mm x 88mm x 19mm			
	Weight	Approx 6 oz			
	Mechanical I/O	Integrated MC4 input and output			
	Temperature – Ambient	-30 °C to 70 °C			
	Cooling	Natural Convection (sealed)			
	Compliance	UL60950-1, CSA22.2# 60950-1, IEC 60950 FCC Part 15.247 & Class B, EN 300328/301489			
	Environmental Sealing	IP65			