Concentrator Photovoltaic (CPV) Array

16.2 kW_{DC} Large Commercial and Utility Scale Solar Power System

TimesOne ™
The Energy Efficiency Company

Electrical

- Each 16.2 kW CPV array contains its own power management electronics
- NEC compliant component and wiring architecture conforming to IEC 62108
- Cell and string-level diode protection
- Sub-array circuit breaker protection
- Modular sub-array and cell string-level connec tion flexibility to match inverter design

Mechanical

- Total Width: 382 cm (12.5 ft)
- Total Height: 395 cm (13 ft)
- Total Collecting Area: 58 m^2
- Total Weight: 5,500 kg
- 10 upright support posts
- 1000X Frenel lens optics
- 36 arrays, each 450 Watts
- Modular design allows for rapid assembly and installation
- "Tilt-and-roll" 2-axis tracking system
- Environmentally tested and designed to withstand up to 145 km/h wind (90 mph)

System

- EMCORE Management & Control Software for unattended operation and remote monitoring
- Unique Aspect Ratio minimizing footprint and land shadow

Features and Characteristics

The EMCORE CPV array (patent pending) is designed to deliver 16.2kW peak DC power for unattended operation in either grid-tied or off-grid applications. The heart of the system is the EMCORE manufactured ultra high efficiency Multi-Junction (MJ) solar cell, leveraged from our leading Spacecraft Power technology. The system is designed for 1000X concentration, using Fresnel optics and a secondary optical reflector.

The EMCORE CPV array is configured with thirty six (36) modular 450 W sub-arrays, each containing 15 multi-junction solar cell receivers. A reliable structure provides safe operation in all conditions, and an extremely accurate 2-axis tracking element maintains focus on the sun, allowing for maximum power output. The array was designed for ease of assembly, installation and maintenance.

Specifications	Standard Test Conditions	Standard Operating Conditions	PVUSA Test Conditions
Peak Power Output (kWDC)	16.9	16.2	13.8
DNI (W/m^2)	1000	1000	850
Cell Temperature (°C)	25	-	-
Ambient Temperature (°C)	25	20	20
Wind Speed (m/s)	n/a	3	1
Imp (A)	33.5	33.5	28.5
Vmp (V)	505	484	486
Isc (A)	37.6	37.6	32.0
Voc (V)	567	543	546

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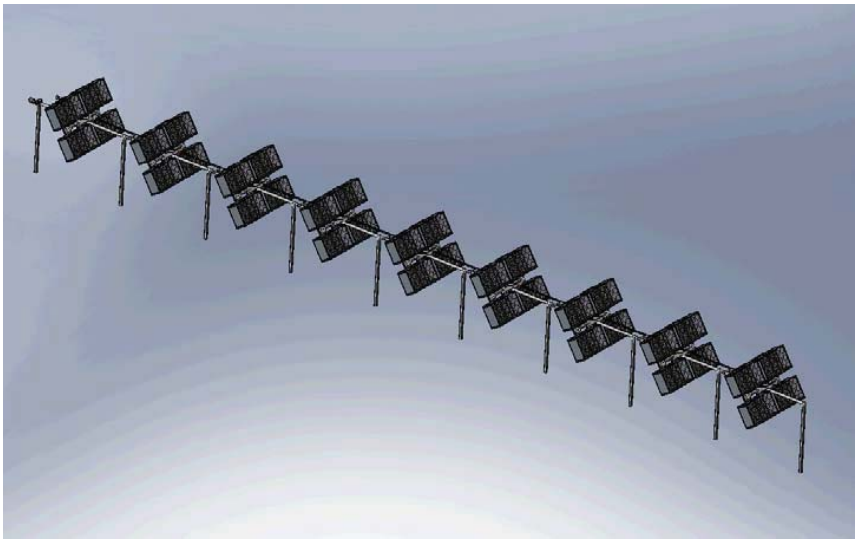
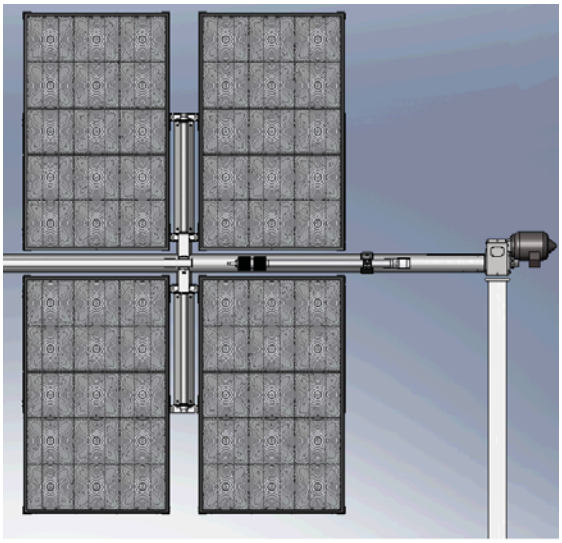
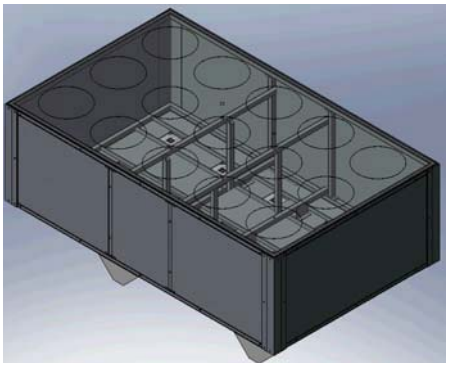
Mechanical Diagrams







Absolute Maximum Ratings

Operating Temperature (min to max, °F/°C)	-40 to +122 °F -40 to 50 °C
Storage Temperature (min to max, °F/°C)	-40 to +140 °F -10 to 60 °C

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