# MAPPS Solar Design v12.4

SOLAR ELECTRIC SUPPLY, INC. SINCE 1996

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|---|---|---|
| **Project Name:** SCADA Monitoring | **Photovoltaic System Design Performance Analysis** | Model: MAP-570-530-24-UL |
| **Client Name:** Sample | | **Date:** 5/15/2025 |
| **Company Name:** | | **Design By:** S. Williams |
| **Insolation:** Los Angeles, CA | *Weather Database* | **Site Location:** Los Angeles, CA |
| **Latitude (Deg):** 33.9 | | **System Type:** **Off-grid** |

**Nominal Battery Voltage:** 24 **Average Volts/Cell:** 2.00 **Avg. Battery Voltage:** 24.0

| Qty | Load Description | Current Amps | Voltage Vdc-Vac | Load Wattage | Use Hrs/day | Use Days/Wk | Conversion Eff. % | Total Ahr/day |
|---|---|---|---|---|---|---|---|---|
| 1 | SCADA | 0.5 | 24 | **12.0** | 24 | 7 | 100.0% | **12.0** |
| 2 | Digital I/O | 0.005 | 24 | **0.2** | 12 | 7 | 100.0% | **0.1** |
| 2 | Analog I/O | 0.02 | 24 | **1.0** | 24 | 7 | 100.0% | **1.0** |
| 4 | IDEC relays | 0.033 | 24 | **3.2** | 0.0017 | 7 | 100.0% | **0.0** |
| 1 | Pressure Transmitter | 0.02 | 24 | **0.5** | 24 | 7 | 100.0% | **0.5** |
| 1 | Cabinet Fan | 0.5 | 24 | **12.0** | 14.4 | 7 | 100.0% | **7.2** |
| 1 | N-Tron net. Switch | 0.25 | 24 | **6.0** | 24 | 7 | 100.0% | **6.0** |
| 1 | Lineguard CPU base unit | 0.04 | 24 | **1.0** | 24 | 7 | 100.0% | **1.0** |
| 2 | MLV Solenoid Valve | 0.395 | 24 | **19.0** | 0.0017 | 7 | 100.0% | **0.0** |
| 1 | Radio Transmit | 1.2 | 24 | **28.8** | 6 | 7 | 100.0% | **7.2** |
| 1 | Radio Standby | 0.2 | 24 | **4.8** | 18 | 7 | 100.0% | **3.6** |

## Array Parameters

| | | | |
|---|---|---|---|
| **PV Module Name** | **SES 200J** | | |
| **Nominal Module Voltage** | **24** | 15.2% Eff. | |
| **Module Peak Power Voltage** | **38.0** | | |
| **# Modules in Series** | **1** | | |
| **# Parallel Strings** | 3 | | |
| **Array Derate %** | 15% | | |
| **Array Tilt (Deg):** | 45 | | |
| **Azimuth (Deg):** | 0 | | |

| | |
|---|---|
| **Load Ah/day** | **38.5** |
| **Load Kwhr/day** | **0.925** |
| **Load Amps Max.** | **4.9** |
| **Module Amps Ipmax** | **5.3** |
| **Module Nom. Wattag** | **200** |
| **Array Nom. Kilowatts** | **0.600** |
| **Derated Array Amps** | **13.5** |
| **Total # of Modules** | **3** |

**MPPT** ○ YES ● NO

## Battery Parameters - Model: Deka 8G8D (12SC225) 265AH Gel

| | | | |
|---|---|---|---|
| **Capacity (AH @ 100 hr)** | **265** | **Autonomy (Days)** | **9.9** |
| **Nominal Battery Voltage** | **12** | **# of Batteries** | **4** |
| **# Batteries in Series** | **2** | **Total Rated Ahrs** | **530** |
| **# Batteries in Parallel** | 2 | **Total Derated Ahrs** | **477** |
| **Maximum Depth of Discharge** | 80% | **Suggested Ahrs** | **530** |
| **Min. Avg. Ambient Temp.** | **13.4** °C in January | **Self Discharge % /Month** | 2% |
| **Battery Capacity Derate%** | 10% (Suggested Range: 5% - 10%) | **Self Discharge Ahrs** | **9.5** |
| | 5% (Default) | | |

## Generator Parameters

| | | | |
|---|---|---|---|
| **Selected GenCharger Output (ADC):** | **0** | **Minimum Gen Watts** | **0** |
| **Recommended charger output (ADC):** | **0** | **Battery Charger Eff.** | 80% |
| **Charger min/max (ADC):** | **0** | **Altitude (Ft.)** | 1000 |
| **GEN START @ % SOC:** | 50% | **Gen Altitude Derate** | **0.0%** |
| **GEN STOP @ % SOC:** | 90% | **Gen Annual Run Hrs** | **#DIV/0!** |
| | | **Gen Annual Kwh** | **0** |

## CALCULATED SYSTEM PERFORMANCE

| MONTH | I Horz Kwh/D | I POA Kwh/Day | Load Ahr/day | PV Output Ahr/day | Gen Input Ahr/day | --- LOAD SUPPLIED BY --- % PV | % BAT | % GEN | Array/Load Ratio |
|---|---|---|---|---|---|---|---|---|---|
| **JAN** | **2.81** | **4.41** | **38.8** | **59.7** | **0.0** | **100%** | **0%** | **0%** | **1.54** |
| **FEB** | **3.65** | **4.91** | **38.9** | **66.4** | **0.0** | **100%** | **0%** | **0%** | **1.71** |
| **MAR** | **4.80** | **5.44** | **38.8** | **73.6** | **0.0** | **100%** | **0%** | **0%** | **1.89** |
| **APR** | **6.06** | **5.83** | **38.8** | **78.7** | **0.0** | **100%** | **0%** | **0%** | **2.03** |
| **MAY** | **6.41** | **5.41** | **38.8** | **73.2** | **0.0** | **100%** | **0%** | **0%** | **1.88** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| JUN | 6.61 | 5.28 | 38.8 | 71.3 | 0.0 | 100% | 0% | 0% | 1.84 |
| JUL | 7.14 | 5.80 | 38.8 | 78.3 | 0.0 | 100% | 0% | 0% | 2.02 |
| AUG | 6.54 | 5.94 | 38.8 | 80.3 | 0.0 | 100% | 0% | 0% | 2.07 |
| SEP | 5.30 | 5.63 | 38.8 | 76.1 | 0.0 | 100% | 0% | 0% | 1.96 |
| OCT | 4.19 | 5.38 | 38.8 | 72.8 | 0.0 | 100% | 0% | 0% | 1.87 |
| NOV | 3.16 | 4.84 | 38.8 | 65.4 | 0.0 | 100% | 0% | 0% | 1.68 |
| DEC | 2.62 | 4.35 | 38.8 | 58.7 | 0.0 | 100% | 0% | 0% | 1.51 |
| Annual | 4.94 | 5.27 | 14213 | 26067 | 0 | 100% | | 0% | 1.83 |