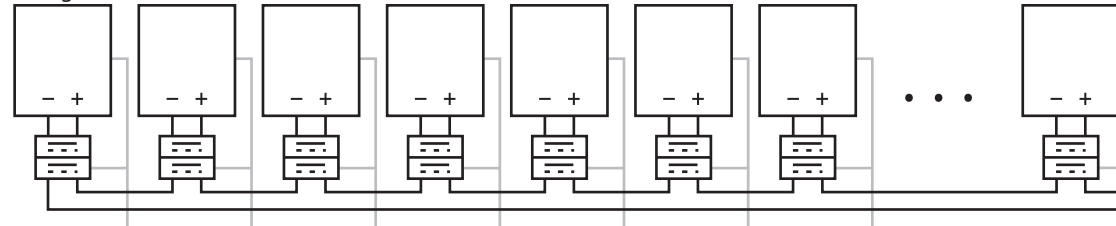


# One Line Diagram | 6kW Grid-Tie Solar PV

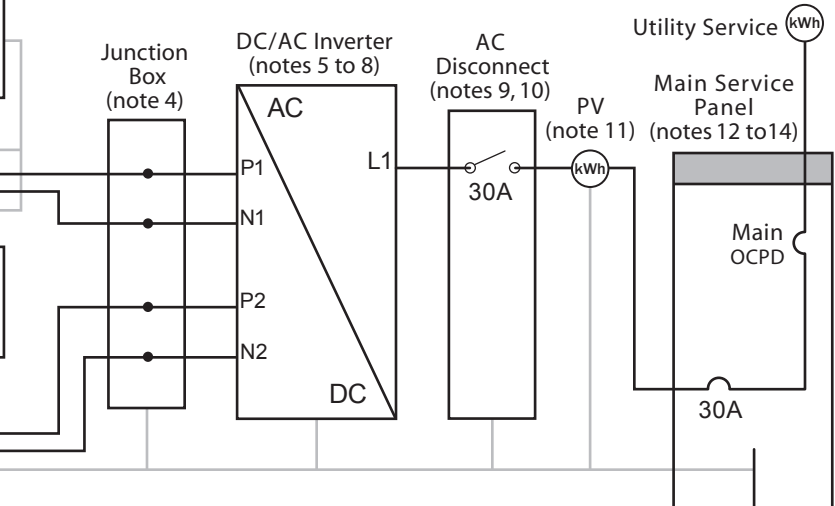
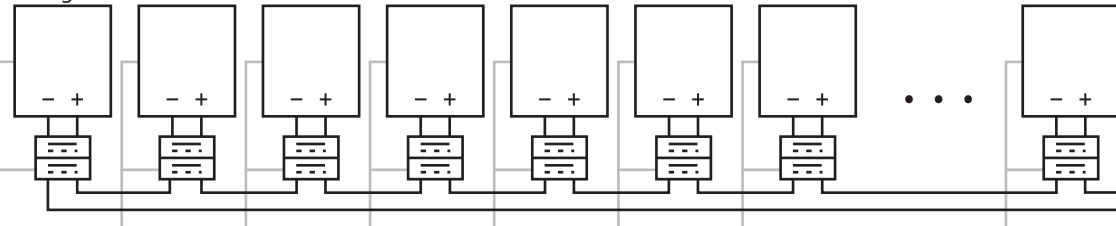


Solar Array 24 - 250W PV Modules  
2 series strings of variable length (notes 1 to 3)

String 1 - min.8 max.16 modules



String 2 - min.8 max.16 modules



**Notes:**

**1) PV Module: Hyundai HiS-M250MG**

$P_{max}=250W, V_{mp}=30.9V, V_{oc}=38.2V$   
 $V_{oc,temp\ corr}=41.9V$  per mfg. guidelines  
 $I_{mp}=8.1A, I_{sc}=8.6A, I_{max}=10.8A$  per NEC 690.8 @ 125% of short circuit

PV Module specs matched to SolarEdge DC to DC Converter (Optimizer).  
 SolarEdge Optimizer and Inverter control PV Module output eliminating need for PV source and output circuit calculations per 690.6.

PV Array (24 - 250W Modules)  
 SolarEdge Optimizers wired in series strings of variable length with min. 8 and max. 16 Optimizers per string per mfg. guidelines.

$P_{max}=6000W$  (24 Modules)

**2) DC/DC Converter: SolarEdge Power Optimizer OP250-LV**

Rated DC Input: 250W; Max Voltage (Voc): 55VDC  
 Mppt Range: 5 - 55VDC; Max Current (Isc): 10A  
 Max Output Current: 15A; Operating Voltage: 5 - 60VDC  
 Max String Voltage: 500VDC (Controlled by Inverter)  
 Max Power Per String: 5250W  
 IP65/NEMA 4 rated for outdoor use.

**3) PV Array racking, Modules and SolarEdge Optimizers grounded with #6 AWG Bare Copper.**

Listed grounding clips and star washers may be utilized to bond PV module frames and SolarEdge Optimizers to racking.  
 Equipment grounding conductors sized per NEC 690.45 and 250.122.

**4) NEMA 3R Junction Box: Serves as transition from array wiring to conduit wiring including equipment ground.**

Conductors: 4 - #10 AWG THHN Copper meets NEC derating guidelines  
 Equipment Ground: #10 AWG THHN Copper; Conduit: 1/2" EMT min.  
 Voltage Drop to Inverter: 1.1% @ 350VDC, Max 200 ft. RTD

- 5) PV/Optimizer Circuits are ungrounded and conform to 690.35
- 6) Inverter bundled DC Disconnect suitable as disconnecting means per 690.13
- 7) DC/AC Inverter: SolarEdge SE5000A-US Utility Interactive ETL listed per UL 1741  
 Max DC Voltage: 500V; Max DC Power Input: 6250W  
 Nominal DC Voltage: 350V; Max DC Current: 16A  
 AC Output: 240V @ 60Hz; Max Current 21A; Max AC Power: 5000W  
 Internal GDFI; NEMA 3R rated for outdoor use.
- 8) AC Wiring: 3 - #10 AWG THHN Copper; Equipment Ground: #10 AWG THHN Copper  
 Conduit: 1/2" EMT min.  
 Mfg. recommends Voltage Drop to Main Service Panel of 1% @ 240 VAC:  
 - using #10 AWG up to 90 ft. RTD  
 - using #8 AWG up to 150 ft. RTD
- 9) AC Disconnect nonfusible 240V, 30A  
 Lockable in the open position, located outside within 10 ft. of utility meter.
- 10) Where permitted by both the AHJ and the Utility, this device may be omitted allowing the Accessible Interactive point of connection to serve as the disconnecting means.
- 11) GE-I210+C smart meter or equivalent for dedicated PV performance tracking. Meter to be ANSI Residential Meter Form 2S, 3-wire, single phase unit compatible with standard 2S, 3-wire meter sockets. PV connected to line side of meter. Meter socket wiring #8 AWG THWN Copper. Meter configured to record energy delivered by PV system only.
- 12) Interactive point of connection a 30A 2P circuit breaker.
- 13) Per NEC 690.94, sum of ampere ratings of all ocd's supplying power not to exceed 120% of bus bar rating.
- 14) AC Equipment ground connected to main house grounding system at main service panel.

Customer:			
Address:			
Title: One Line Diagram 6kW Grid-Tie Solar PV		Dwg. No.	Rev
Drawn By: P. Daniel		E72-24-01	0
Date: 5-5-2020			