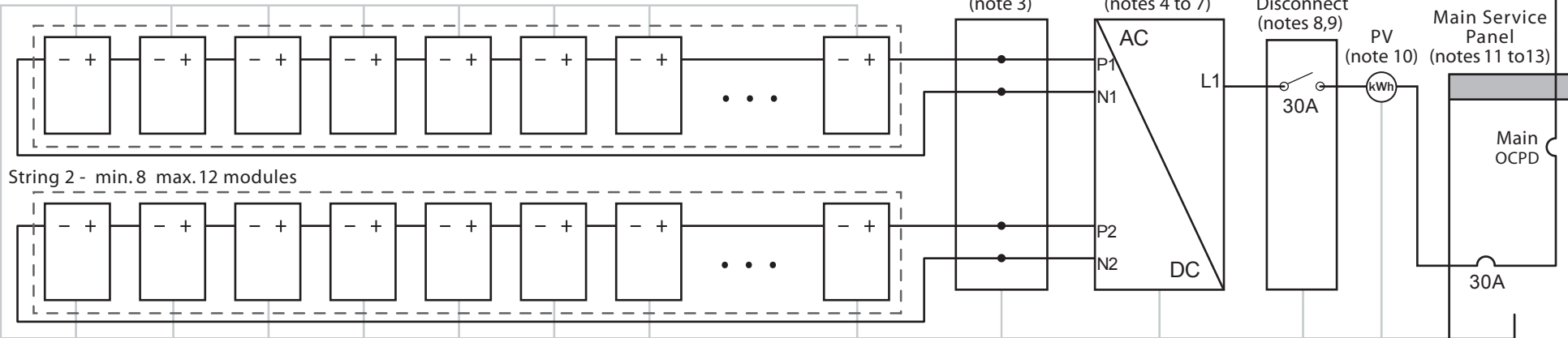


One Line Diagram | 5.6kW Grid-Tie Solar PV



Solar Array 20 - 280W PV Modules
 2 series strings of variable length (notes 1,2)
 String 1 - min.8 max.12 modules



Notes:

- 1) PV Module: Yingli YL280P-35b
 $P_{max}=280W, V_{mp}=35.9V, V_{oc}=45.2V$
 $V_{oc, temp corr}=49.3V$ per mfg. guidelines
 $I_{mp}=7.87A, I_{sc}=8.42A, I_{max}=10.5A$ per NEC 690.8 @ 125% of short circuit

Since variable strings are used, source circuit calculations are for max. and min. strings only.

PV Source Circuit for max. series string - 12 modules

- $P_{max}=3360W, V_{mp}=431V, V_{oc}=542V$
 $V_{oc, temp corr}=592V$ per mfg. guidelines
 $I_{mp}=7.87A, I_{sc}=8.42A, I_{max}=10.5A$ per NEC 690.8 @ 125% of short circuit

PV Source Circuit for min. series string - 8 modules

- $P_{max}=2240W, V_{mp}=287V, V_{oc}=362V$
 $V_{oc, temp corr}=394V$ per mfg. guidelines
 $I_{mp}=7.87A, I_{sc}=8.42A, I_{max}=10.5A$ per NEC 690.8 @ 125% of short circuit

PV Array Circuit (unbalanced source circuits 20 modules)

- $P_{max}=5600W, V_{mp}=431V, V_{oc}=542V$
 $V_{oc, temp corr}=592V$ per mfg. guidelines
 $I_{mp}=7.87A, I_{sc}=8.42A, I_{max}=10.5A$ per NEC 690.8 @ 125% of short circuit

- 2) PV Array racking and Modules grounded with #6 AWG Bare Copper. Listed grounding clips may be utilized to bond PV Module frames to racking. Equipment grounding conductors sized per NEC 690.45 and 250.122.
- 3) 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.

- 3) continued -
 Voltage Drop to Inverter: 1% @ 200VDC, Max 200 ft. RTD
- 4) PV Circuits are ungrounded and conform to 690.35
- 5) Inverter internal DC switch suitable as disconnecting means per 690.13
- 6) DC/AC Inverter: Power-One PVI-5000-OUTD-US Utility Interactive CSA listed per UL 1741
 DC Input: 200-530V MPPT; Max DC Power per String: 4000W; Max DC Voltage: 600V
 Max Usable Current per String: 18A, Max MPPT Strings: 2
 AC Output: 240V @ 60Hz; Max Current 23A; Nominal AC Power: 5000W
 Internal GDFI; NEMA 4X rated for outdoor use.
- 7) AC Wiring: 3 - #10 AWG THHN Copper, Equipment Ground: #10 AWG THHN Copper
 Conduit: 1/2" EMT min.
 Voltage Drop to Main Service Panel: 2.7% @ 211 VAC, Max 200 ft. RTD
- 8) AC Disconnect nonfusible 240V, 30A
 Lockable in the open position, located outside within 10 ft. of utility meter.
- 9) 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.
- 10) 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.
- 11) Interactive point of connection a 30A 2P circuit breaker.
- 12) Per NEC 690.94, sum of ampere ratings of all ocd's supplying power not to exceed 120% of bus bar rating.
- 13) AC Equipment ground connected to main house grounding system at main service panel.

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| Customer: | | | |
| Address: | | | |
| Title: One Line Diagram 5.6kW Grid-Tie Solar PV | | Dwg. No. | Rev |
| Drawn By: P. Daniel | Date: 5-11-2020 | E24-20-01 | 0 |