

**SOLAR PV MODULE**

Manufacturer: Suntech Power  
 Model: STP275 – 24/Vd  
 Rating: 275 W at STC  
 VOC: 44.7 Vdc  
 ISC: 8.26 A  
 VMP: 35.1 Vdc  
 IMP: 7.84 A  
 Leads: #12 AWG  
 Connectors: H4 locking  
 (+) leads: 1100 mm  
 (-) leads: 1100 mm  
 Certification mark: cCSAus

**SOLAR PV ARRAY**

# of sub-arrays: 2  
 # of PV modules: 60 total (30 x 2)  
 # of PV panels: 2  
 # of PV strings: 6  
 Rated capacity: 16,511 Wdc  
 VOC: 447 Vdc  
 ISC: 24.8 A x 2  
 VMP: 351 Vdc  
 IMP: 23.5 A x 2  
 Tracking: 2-axis  
 Mounting: each sub-array on its own ground-mounted pole

**DC TO AC INVERTER**

Manufacturer: SMA  
 Model: SB 8000U  
 Rating: 7680 WAC  
 Input rating: 600 Vdc, 30 A  
 Output rating: 240 VAC, 32 A  
 Certification mark: cULus

Notes:  
 Certified to be connected to the electric utility distribution grid.

**SOLAR PV SYSTEM**

Rating: 15.4 kWAC

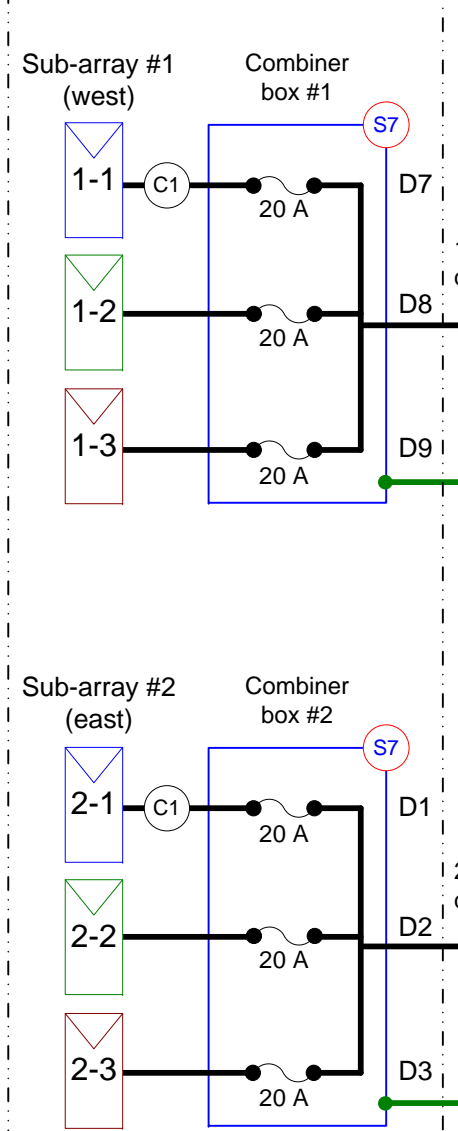
**EQUIPMENT NOTES:**

- All electrical components shall meet their Canadian product certification standards.
- All electrical components shall contain nameplate labels indicating the acceptable Certifying Organization.
- Inverters designed for grid connection and containing a Canadian Certification Mark meet CSA standard C22.2 No. 107.1 for grid-connection.
- Grid-connection safety requirements are given by the Canadian Electrical Code Section 84, and the Wires Service Provider.
- Wiring arrows indicate direction of electrical power flow.

LOCATION:  
 IN SOUTH FIELD  
 135 m FROM HOUSE

**PV string designation**

i-s  
 i = PV inverter #  
 s = PV string #  
 represents 1 string of 10 PV modules

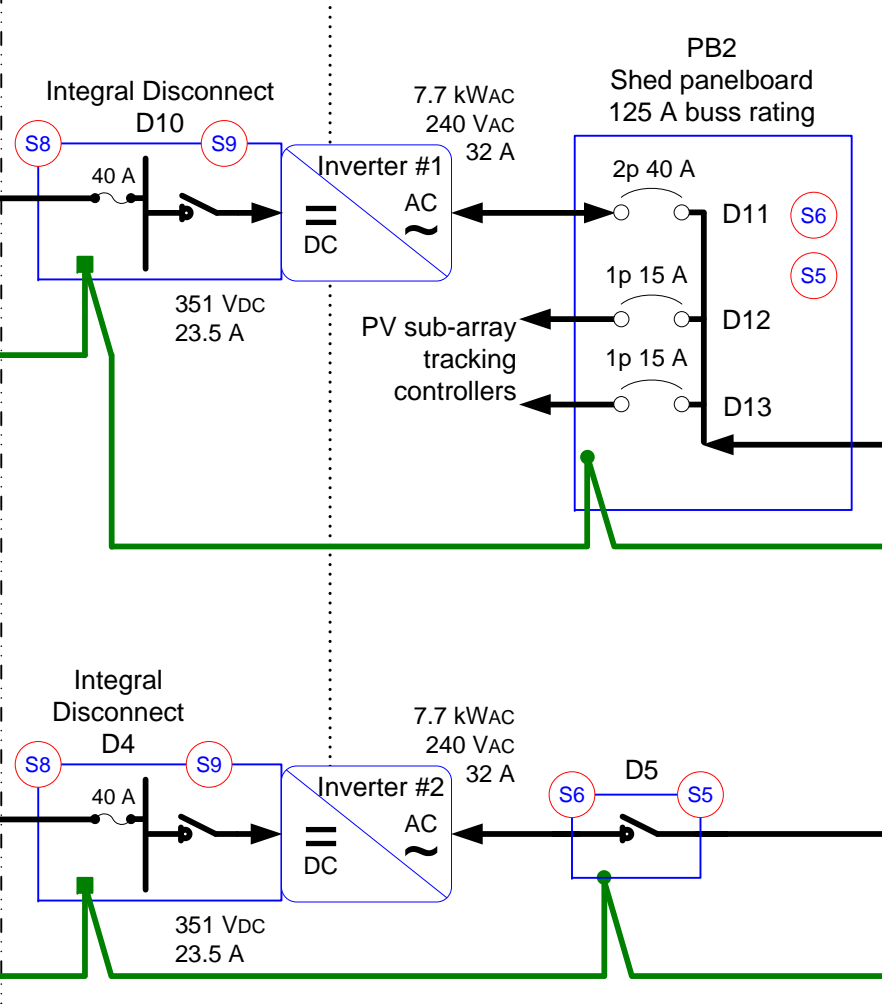


**PROTECTION LEGEND:**

27 - Under-Voltage  
 59 - Over-Voltage  
 81O - Over-Frequency  
 81U - Under-Frequency  
 I.D. - Islanding detection

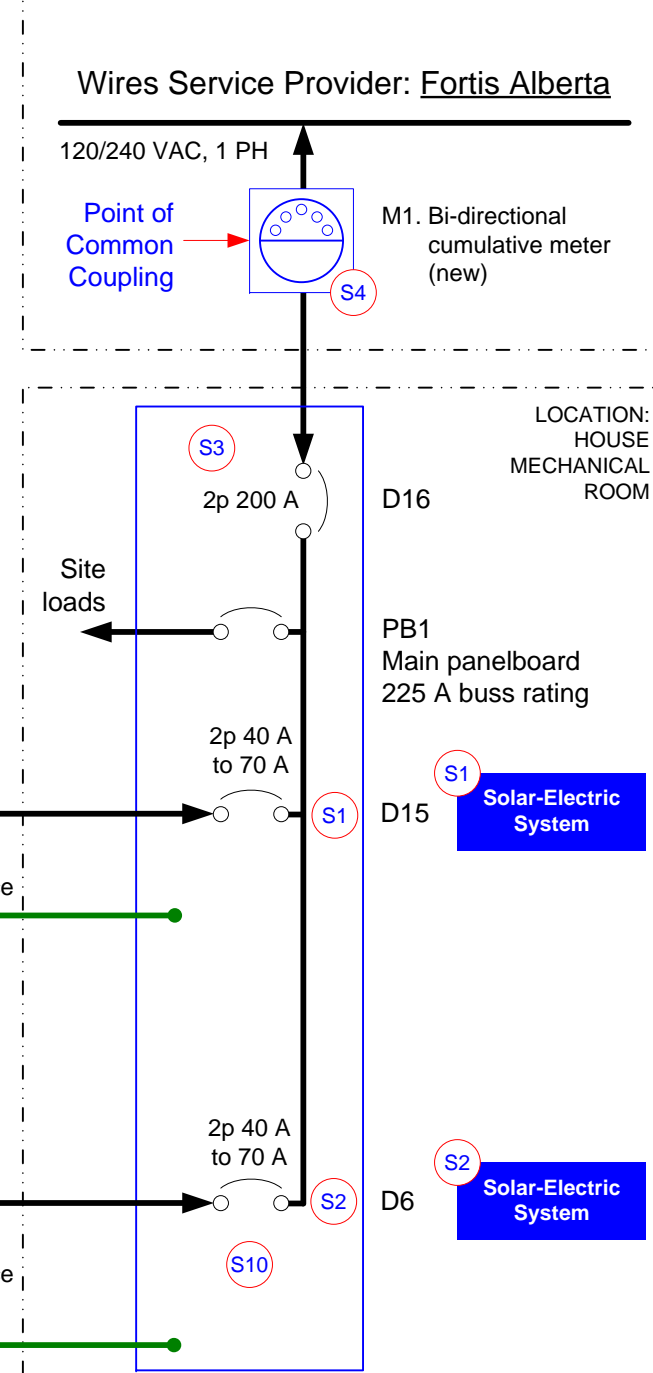
INTERCONNECTION PROTECTION FUNCTIONS

I.D. 27 59 81/O 81/U



LOCATION:  
 INVERTER SHED

LOCATION:  
 SERVICE ENTRANCE



NO.	REVISION	DATE
1	issued for review	11oc09
2	issued for review	11oc10
3	issued for review	11oc11
4	issued for grid-connection	11oc12

**PERMIT TO PRACTICE**  
 HOWELL MAYHEW ENGINEERING INC.  
 Signature: *Gordon Howell*  
 Date: 2011 October 12  
**PERMIT NUMBER: P 4284**  
 The Association of Professional Engineers, Geologists and Geophysicists of Alberta

SEAL:  
  
 2011 October 12

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PROJECT:  
 Dennis Cuku  
 Solar-Electric Generating Station #3, 51410 RR271, Devon

TITLE:  
**SINGLE-LINE DIAGRAM**  
 for Grid-Dependent, Solar PV Electric Generating Equipment Interconnecting through Fortis Alberta's Distribution Transformer

DATE: 2011 10 05	DESIGNED BY: GH
PROJECT NO. 1108	REVIEWED BY: DC, GH
SCALE: NOT TO SCALE	DRAWN BY: GH

DRAWING NO. **PV1** SHEET 1 OF 1  
 REV **4**

**INSTALLATION NOTES:**

- WARNING: All solar PV modules are live with DC voltage during daylight hours. Handle all solar PV circuits with care. String voltages can amount to over 400 VDC during installation.**
- Test string circuit for correct connections each time a string circuit is completed.
- See PV Modules' Installation Sheet for important instructions re handling and bonding.
- PV module conductors and extension leads to be closely strapped to module frame and rack using cable guide clips to prevent long-term wind abrasion.
- Marrette connectors and wire nuts shall not be used for DC voltage terminations.
- All wire connections within junction boxes to be completed using terminal blocks mounted on a terminal strip.
- No change in wiring specs without prior agreement from Howell Mayhew Engineering.
- Any outdoor-located junction boxes to be NEMA 3 rated.
- See Inverter Installation Manual for mounting and making DC and AC connections.
- All breakers in the circuit between the inverter and the grid shall not have line and load markings.
- See sign specification document for details about signage size, location and justification.
- Installer shall be familiar with relevant sections of the Canadian Electrical Code, including Sections 14, 50 and 84.**

**WIRE LEGEND**

(C1) All supplied PV-module MC4 extension leads: 1c #10 AWG Cu, 600V, 90°C, sunlight resistant  
 (C2) PV module bond: 1c #6 AWG Cu, green continuous  
 (C3) 3c #8 AWG Cu, 1000 V, Teck 90  
 (C4) 3c 2/0 AWG Al, 600 V, NMWU  
 (C5) 3c #2 AWG Al, 600 V, NMWU

(S3) Solar-Electric System Two power source parallel system  
 (S4) Solar-Electric System AC Disconnect Inside parts can still be energized when this switch is open  
 (S5) Solar PV Array Rating Voc 447 VDC Isc 24.8 A Vmp 351 VDC Imp 23.5 A Pmp 8.3 kW DC  
 (S6) Solar PV Array DC Disconnect Inside parts can still be energized when this switch is open  
 (S7) CAUTION Solar Electricity Live During Daylight Hours Max. 550 volts DC  
 (S8) Do not re-position the solar breakers. They must be at the opposite end of the panelboard from the main breaker.