

DIY Grid Tied Solar

Richard & Rosemary Mudgett

Research

- Tracking vs fixed
 - – Active tracking, passive tracking, or fixed frame
- Panels
 - – Monocrystalline or Polycrystalline
- Inverters
 - – SMA Sunny Boy with backup circuit
- Find a company that will work with you

Return On Investment

- Incentives
 - 30% tax credit, TVA \$1000, kWH premium rate
- Cost
 - Equipment, rental, services
- Estimate production
 - PV estimator website
- Calculate payback time

Bureaucracy

- TVA Green Power Providers (GPP) contracts
 - GPP Capacity Reservation Request
 - GPP Participation Agreement
 - GPP Interconnection Agreement
- Huntsville Utilities
 - System line drawing
- Local inspections
 - NEC compliance

PV MODULE - Renogy 250P

STC at 25 °C

P_{max} = 250W V_{mp} = 30.20V I_{mp} = 8.29A

V_{oc} = 37.3V I_{sc} = 8.84A 600 Vdc RATED

V_{oc} Temp Coefficient = -0.30 %/ °C (Assume) -23°C Low Temperature

Maximum System Voltage = 427 Vdc per string of 10

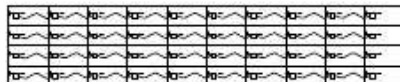
I_{sc} Temp Coefficient = 0.04 %/ °C (Assume) 40°C High Temperature

Maximum Short Circuit Current = 8.84A

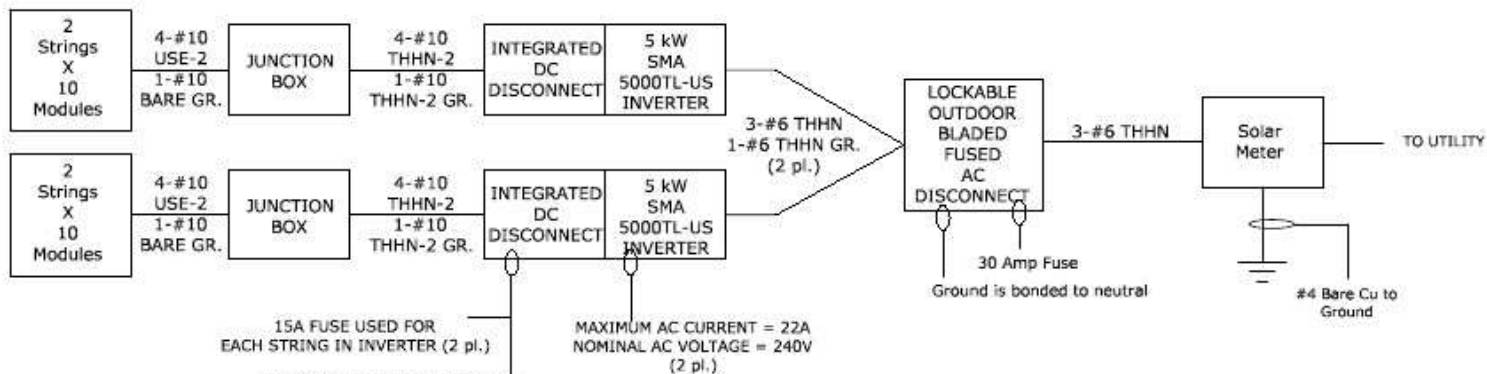
MOC_P = 15A at 600 Vdc

ARRAY CONSISTS OF 4 STRINGS OF 10 MODULES

PV STRING DETAIL



SITE LAYOUT



15A FUSE USED FOR
EACH STRING IN INVERTER (2 pl.)

PHOTOVOLTAIC POWER SOURCE
OPERATING CURRENT = 8A
OPERATING VOLTAGE = 302V
MAXIMUM SYSTEM VOLTAGE = 427V
SHORT CIRCUIT CURRENT = 9A
(2 pl.)

MAXIMUM AC CURRENT = 22A
NOMINAL AC VOLTAGE = 240V
(2 pl.)

Southern Solar Systems, Inc 11807 S. Memorial PKWY Huntsville, AL 35803 (256)883-9848			
Mudgett Residence 528 Ohatchee Rd, Huntsville, AL 35811			
SCALE: NONE	DATE: 08-27-14	DRAWN BY: AMP	DRAWING NO. MUD-E-01
10 kW SOLAR SYSTEM ONE LINE ELECTRICAL DRAWING			SHEET NO. 1 OF 1

Installation





01/01/2012 12:06





01/28/2012 16:16



01/28/2012 18:28





02/09/2012 15:14



02/11/2012 13:03



02/12/2012 13:20



02/14/2012 13:20



02/14/2012 17:34



03/16/2012 15:48



03/16/2012 15:49





03/16/2012 15:54

Results

Month	Total (kWh)	kWh/Day	Est KWH/Day
Dec (partial)	247	17.6	26.7
Jan	916	29.5	28.8
Feb	877	31.3	35.9
Mar	1010	32.5	39.1
Apr	1204	40.1	44.3
May	1452	46.8	43.3
Jun	1355	45.2	44.4

We expect to pay \$200 for electricity this year.

We expect \$525 from TVA this year for the \$0.04 premium.