

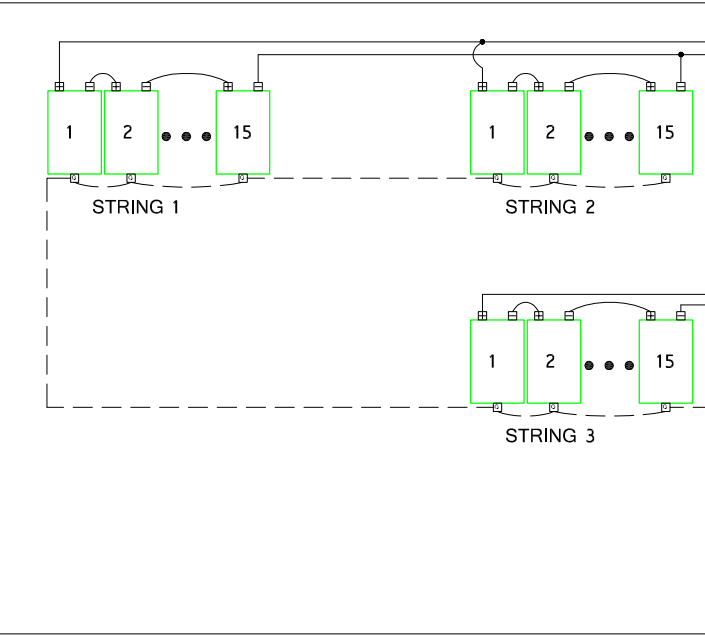
SOLAR ARRAY (15 kWstc)

(45) SUNPOWER X21-335 SOLAR MODULES TOTAL

3 STRINGS OF (15) SE-P400 DC OPTIMIZERS IN SERIES

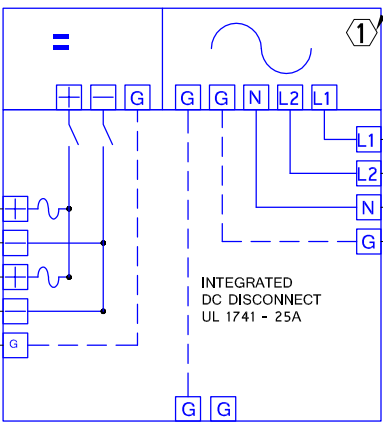
(3) SERIES-STRINGS RUN TO (3) INDEPENDENT INVERTER INPUTS

PHOTOVOLTAIC ARRAY SUMMARY						
STRING I.D. #	MODULE MODEL	STRING LENGTH	STRING QTY	QTY	SUB-ARRAY POWER	INV. I.D. #
1,2,3	SUNPOWER/X21-335	15	3	1	5025 W	1



INVERTER (NEW)

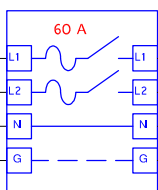
SOLAREGE SE11400A-US, 240 VAC, 48A
97.5% CEC-WEIGHTED EFFICIENCY
NEMA 4X, UL LISTED, INTERNAL GFDI



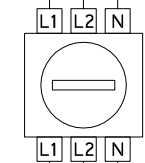
INVERTER I.D. #

AC DISCONNECT

SQ D D222NRB
240 VAC, 60 A
NEMA 3R, UL LISTED
(2) 60 A FUSES



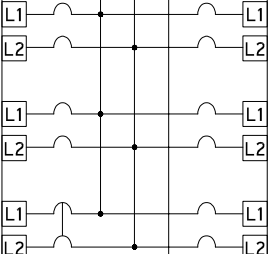
TO UTILITY GRID



BI-DIRECTIONAL
UTILITY METER
1-PHASE, 240 V

POINT OF INTERCONNECTION
PER NEC 240.21(B)(1) & 690.64(A)
LENGTH OF TAP CONDUCTORS
SHALL NOT EXCEED 10 FT

MAIN SERVICE DISCONNECT
240 V, 200 A



MAIN SERVICE PANEL

1-PH, 3-W
240 VAC
200 A

EXISTING GROUNDING
ELECTRODE SYSTEM

WIRE & CONDUIT SCHEDULE

CIRCUIT I.D. #	CIRCUIT ORIGIN	CIRCUIT DESTINATION	CONDUCTOR SIZE	CONDUCTORS PER POLE	CONDUCTOR QUANTITY	CONDUCTOR INSULATION	GROUND SIZE	GROUND QUANTITY	GROUND INSULATION	TYPE (CU/AL)	CONDUIT TYPE	CONDUIT SIZE	AMBIENT TEMP	ESTIMATED DISTANCE
1	STRING	INVERTER	AWG #10	1	4	PV-WIRE	AWG #6	1	BARE	CU	EMT	1"	53°C	30 FT
2	INVERTER	MAIN PANEL	AWG #6	1	2	THWN-2	AWG #6	1	THWN-2	CU	EMT	1"	31°C	35 FT

ELECTRICAL NOTES

- 1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- 2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90°C WET ENVIRONMENT.
- 3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- 4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- 5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- 6.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- 7.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- 8.) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- 9.) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- 10.) THE DC SIDE OF THE PV SYSTEM IS UNGROUNDED AND SHALL COMPLY WITH NEC 690.35.

CALCULATIONS FOR CURRENT CARRYING CONDUCTORS

DC required conductor ampacity
[NEC 690.8(B)(1)]:
 $(6.46A) \times (1) \times (1.56) = 10 A$

AWG #10, derated ampacity
 $(40) \times (0.76) \times (.8) = 24.3 A$
 $24.3 A > 10 A$, therefore DC wire size is valid.

AC required conductor ampacity
 $(48A) \times (1.25) = 60 A$

AWG #6, derated ampacity
 $(75) \times (0.96) \times (1) = 72 A$
 $72 A > 60 A$, therefore AC wire size is valid.

CONFIGURATION	
Optimizers per String	15
Strings per Inverter	3
Number of Inverters	1
Record low temp	-30°C
Voc Temp Coefficient	-176.6mV/°C

DC SYSTEM SPECIFICATIONS		CALCULATIONS
Operating Current	17.9 A	$= (\# \text{ of strings}) \times (I_{mp})$
Operating Voltage	350 V	SOLAREGE MAINTAINS CONSTANT STRING VOLTAGE
Max. System Voltage	500 V	SOLAREGE MAINTAINS CONSTANT STRING VOLTAGE
Short System Current	24.2 A	$= (\# \text{ of strings}) \times (I_{sc}) \times (1.25) \text{ per Art. 690.8(A)(1)}$
AC SYSTEM SPECIFICATIONS		
Max AC Output Current	48 A	
Operating AC Voltage	240 V	

DESIGN & DRAFTING BY:

Bryan McGum
NABCEP Certified
#PV-101913-Q02446

REVISIONS

DESCRIPTION	DATE	REV
ORIGINAL	01/27/2016	A
CHANGE ORDER	03/14/2016	B

CONTRACTOR



LIGHTHOUSE SOLAR
4 CHERRY HILL RD
NEW ALTZ, NY, 12561

PROJECT NAME

Arthur Tolis
70 Ralphie Lane
Chester, NY 10918

SHEET NAME

ELECTRICAL
3-LINE
DIAGRAM

SHEET SIZE

ANSI B
11"x17"

SHEET NUMBER

PV-2