

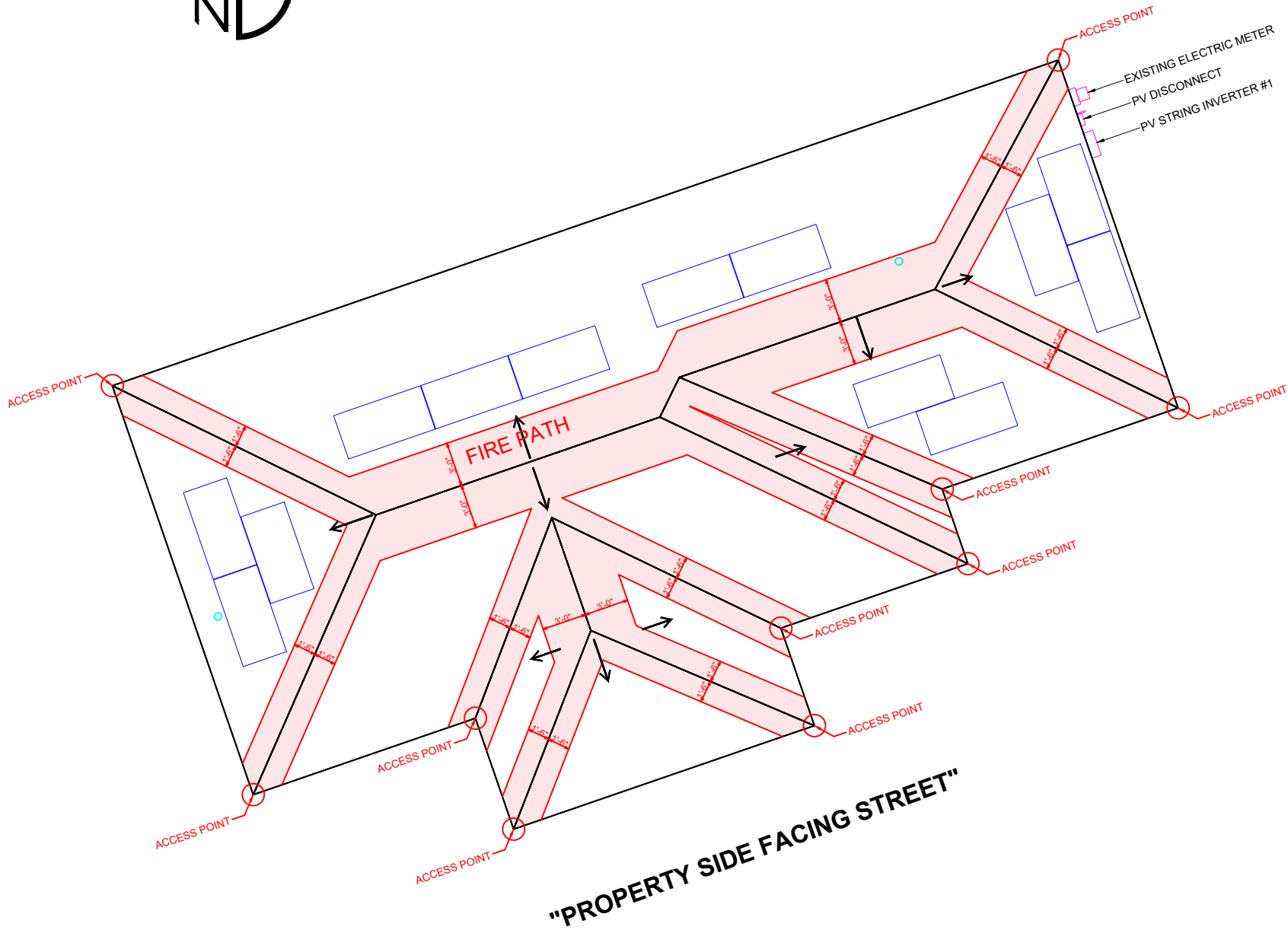
2 LOCATION MAP / WIND ZONES  
N.T.S.



3 IRRADIANCE MAP  
N.T.S.



4 3D RENDERING  
N.T.S.



1 ROOF PLAN VIEW / BOS LOCATION  
N.T.S.

## PROJECT DESCRIPTION

SYSTEM CAPACITY: 5.1 KW DC / 3.8 KW AC

PV PANELS: (13) Q.PEAK DUO BLK ML-G10+ 395W BY Q CELL

OPTIMIZERS: (13) P505 BY SOLAREDGE

INVERTER: (1) SE3800H-US BY SOLAREDGE

RACKING SYSTEM: CROSS RAIL SYSTEM 44-X BY K2 SYSTEMS

## PROJECT INFORMATION

PROJECT LATITUDE	30.296604	MIN AMBIENT TEMP	-7 ° C
PROJECT LONGITUDE	-82.708187	MAX AMBIENT TEMP	37 ° C
AHJ	COLUMBIA CITY	WIND EXPOSURE	C
		DESIGN WIND SPEED	117 MPH

## DRAWINGS INDEX

C-1	COVER SHEET
C-2	SAFETY PLANS
E-1	ONE LINE RISER DIAGRAM
E-2	SAFETY LABELS
S-1	STRUCTURAL PLAN
S-2	RACKING PLAN
D-1	PV MODULES DATA SHEET
D-2	SMART MONITORING DATA SHEET
D-3	INVERTER DATA SHEET

## GENERAL NOTES

PER FL. STATUTE 377.705 (REVISED 7/1/2017), I RAFAEL A. GONZALEZ SOTO, P.E. 83104 AN ENGINEER LICENSED PURSUANT TO CHAPTER 471, CERTIFY THAT THE PV ELECTRICAL SYSTEM AND ELECTRICAL COMPONENTS ARE DESIGNED AND APPROVED USING THE STANDARDS CONTAINED IN THE MOST RECENT VERSION OF THE FLORIDA BUILDING CODE.

APPLICABLE CODES: 2020 FLORIDA BUILDING CODE 7TH EDITION, ASCE 7-16 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES, FFPC 7TH EDITION, NFPA 2018, NFPA 70 AND NEC 2017.

CONTRACTOR SHALL ENSURE ALL ROOF PENETRATIONS TO BE INSTALLED AND SEALED PER 2020 FLORIDA BUILDING CODE 7TH EDITION OR LOCAL GOVERNING CODE.

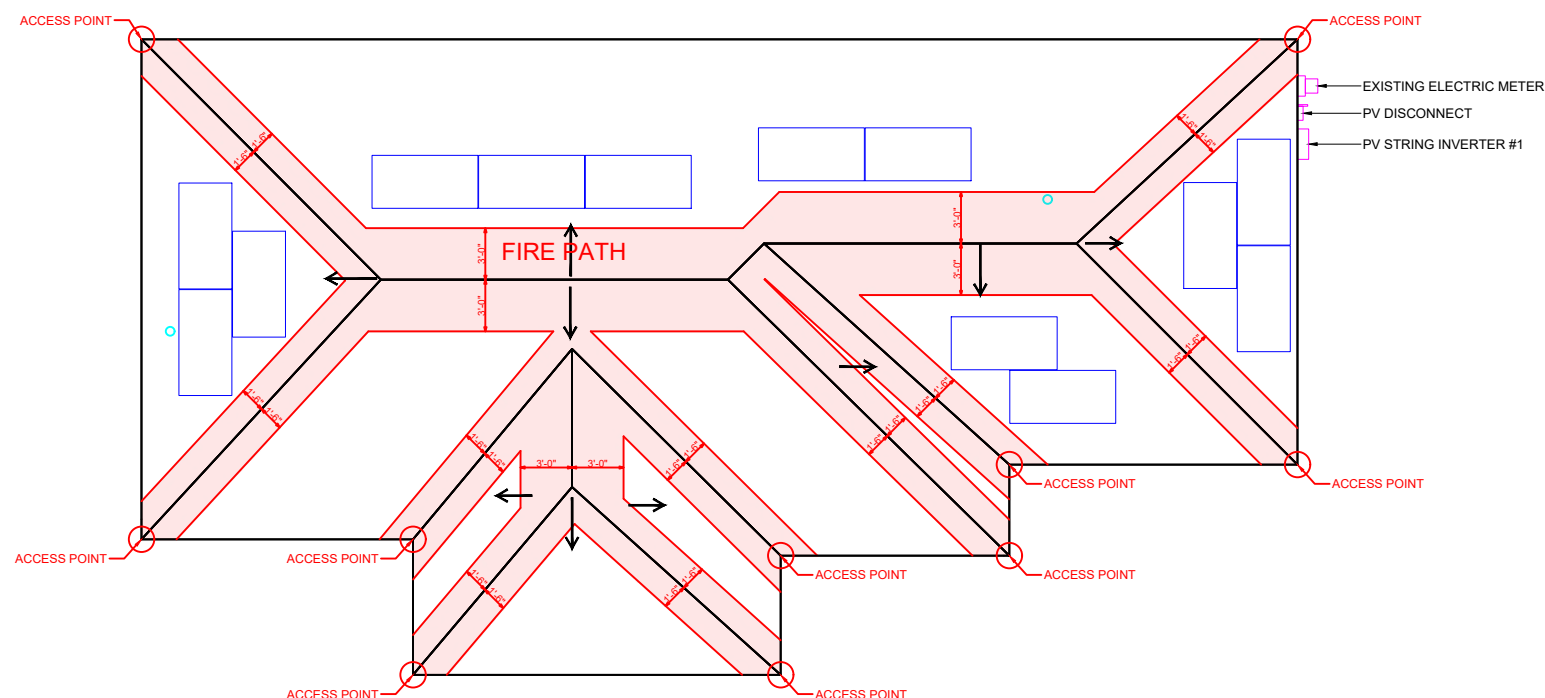
ALL WIRING METHODS AND INSTALLATION PRACTICES SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE (NEC) 2017, LOCAL STATE CODES, AND OTHER APPLICABLE LOCAL CODES. MEANS SHALL BE PROVIDED TO DISCONNECT ALL CURRENT CARRYING CONDUCTORS OF THE PHOTOVOLTAIC POWER SOURCE FROM ALL OTHER CONDUCTORS IN THE BUILDING. CONNECTORS TO BE TORQUED PER DEVICE LISTING, OR MANUFACTURERS RECOMMENDATIONS. NON-CURRENT CARRYING METAL PARTS SHALL BE CHECKED FOR PROPER GROUNDING.

REQUIRED SAFETY SIGNS AND LABELS SHALL BE PERMANENTLY ATTACHED BY ADHESIVE, OR OTHER MECHANICAL MEANS, LABELS SHALL COMPLY WITH ARTICLE 690 VI OF THE NEC 2017 OR OTHER APPLICABLE STATE AND LOCAL CODES. SEE LABELS AND MARKING PAGE FOR MORE INFORMATION.

RACKING ROOF MOUNT SYSTEM SHALL BE INSTALLED FOLLOWING MANUFACTURERS INSTRUCTION SPEC'S, INCLUDING ALL GROUNDING WEEB CLIPS, GROUND LUGS, AND RAIL SPLICE KITS FOR ELECTRICAL CONTINUITY.

MECAWIND TOOL IS BASED ON THE C&C WIND LOADS FOR ENCLOSED BUILDINGS. DESIGN WIND PRESSURES ARE CALCULATED USING ASCE 7-16 EQUATION 30.6-1. ALL NOTES IN FIGURES ASCE 7-16 30.4-1 AND 30.4-2(A,B AND /67C) HAVE BEEN INCORPORATED. MEAN ROOF HEIGHT MUST BE LESS THAN 60 FEET.

DOCUMENT CONTROL				DATE		CAD	QC	ENGINEER CONTACT INFORMATION				ENGINEERING STAMP		CONTRACTOR CONTACT INFORMATION		CONTRACTOR LOGO		CUSTOMER:		SHEET NAME:	
ISSUED FOR PERMIT				12-27-2021		BW	JG	ENGIPARTNERS LLC				Digitally signed by Rafael A Gonzalez Soto Date: 2022.01.17 05:14:37 -05'00'		TITAN SOLAR POWER FL		TITAN SOLAR POWER		SANDY FIROOZ		COVER SHEET	
REV DESCRIPTION				DATE		CAD	QC	C.A. 32661 255 GIRALDA AVE CORAL GABLES, FL 33134 DESIGN@ENGIPARTNERS.COM 833 - 888 - 3644				12221 N US HIGHWAY 301 THONOTASASSA, FL 33592 (813) 982 -9001 #EC13008093		161 NORTHWEST SPARR LANE LAKE CITY FL 32055		PROJECT ADDRESS:		PROJECT ID:		ENGINEER OF RECORD:	
																		TSP110728		ENG. RAFAEL A. GONZALEZ SOTO, PE	
																		PARCEL NUMBER:		DATE:	
																		22-2S-16-01716-002		12-27-2021	
																				SHEET TITLE:	
																				C-1	
																				SHEETS:	
																				1 OF 9	

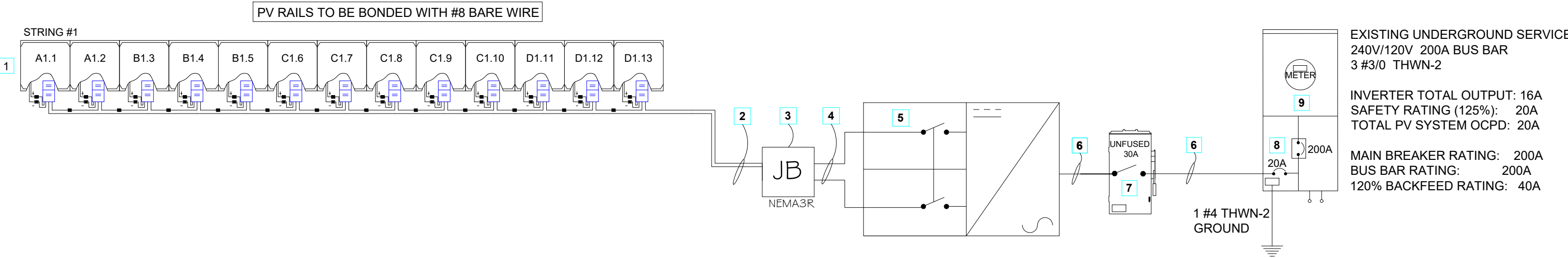


**1 SAFETY PLAN**  
N.T.S.

LOCATION OF NEAREST URGENT CARE FACILITY	
NAME:	
ADDRESS:	
PHONE NUMBER:	
NOTES:	
1.	INSTALLERS SHALL DRAW IN DESIGNATED SAFETY AREA AROUND HOME
2.	INSTALLERS SHALL UPDATE NAME ADDRESS AND PHONE NUMBER OF NEAREST URGENT CAR FACILITY RELATIVE TO THE SITE BEFORE STARTING WORK

DOCUMENT CONTROL				DATE	CAD	QC	ENGINEER CONTACT INFORMATION				ENGINEERING STAMP		CONTRACTOR CONTACT INFORMATION		CONTRACTOR LOGO		CUSTOMER:		SHEET NAME:										
ISSUED FOR PERMIT				12-27-2021	BW	JG	ENGIPARTNERS LLC C.A. 32661 255 GIRALDA AVE CORAL GABLES, FL 33134  DESIGN@ENGIPARTNERS.COM  833 - 888 - 3644				 Digitally signed by Rafael A Gonzalez Soto Date: 2022.01.17 05:14:50 -05'00'		TITAN SOLAR POWER FL 12221 N US HIGHWAY 301  THONOTASASSA, FL 33592  (813) 982 - 9001  #EC13008093				SANDY FIROOZ		SAFETY PLAN										
REV				DATE	CAD	QC											PROJECT ADDRESS:						PROJECT ID:		ENGINEER OF RECORD:		SHEET TITLE:		
DESCRIPTION																								161 NORTHWEST SPARR LANE LAKE CITY FL 32055		ENG. RAFAEL A. GONZALEZ SOTO, PE		C-2	
																								PARCEL NUMBER:		DATE:		SHEETS:	
															22-2S-16-01716-002		12-27-2021		2 OF 9										

	WIRE SIZES, QUANTITY & TYPE			RACEWAY SIZE, TYPE, LOCATION & INFO.			WIRE AMPACITY CALCULATIONS							ADDITIONAL INFORMATION			
WIRE TAG	CONDUCTOR QTY. SIZE & TYPE	NEUTRAL QTY. SIZE & TYPE	GROUND QTY. SIZE & TYPE	RACEWAY SIZE & TYPE	RACEWAY LOCATION	RACEWAY HEIGHT ABOVE ROOF	OUTPUT CURRENT	125% OF OUTPUT CURRRENT	MIN OCPD	WIRE DE-RATED CALCULATION				DIST.	VOLTAGE	VOLTAGE DROP %	CONDUIT FILL %
										WIRE RATING	AMBIENT TEMP	# OF COND.	FINAL AMPACITY				
DC (BEFORE JB)	(4) #10 AWG PV WIRE	N/A	(1) #8 AWG BARE COPPER	NOT APPLICABLE	UNDER ARRAY	1/2" TO 3-1/2"	15A	18.8A	20A	40A X 0.76 X 1 = 30.4 A				10 FT.	350V	0.11%	6.4%
DC (AFTER JB)	(4) #10 AWG THWN-2	N/A	(1) #8 AWG THWN-2	3/4" EMT CONDUIT	ABOVE ROOF	1/2" TO 3-1/2"	15A	18.8A	20A	40A X 0.76 X 0.8 = 24.3 A				20 FT.	350V	0.21%	8.1%
AC (INVERTER TO METER)	(2) #10 AWG THWN-2	(1)#10AWG THWN-2	(1) #8 AWG THWN-2	3/4" EMT CONDUIT	EXTERIOR WALL	"N/A"	16A	20.0A	20A	40A X 0.76 X 1 = 30.4 A				5 FT.	240V	0.1%	7.7%



# 1 ONE LINE RISER DIAGRAM


N.T.S.

## LEGEND:

1	(13) Q.PEAK DUO BLK ML-G10+395W BY Q CELL REFER TO D-1 SHEET	2	2 #10 PV WIRE PER STRING 1 #8 BARE WIRE GROUND 3/4" EMT CONDUIT	3	NEMA3R JUNCTION BOX
4	2 #10 THWN-2 PER STRING 1 #8 THWN-2 GROUND 3/4" EMT CONDUIT	5	SE3800H-US BY SOLAREEDGE REFER TO D-3 SHEET	6	2 #10 L1,L2 THWN-2 1 #10 THWN-2 NEUTRAL 1 #8 THWN-2 GROUND 3/4" EMT CONDUIT
7	PV SYSTEM DISCONNECT - 30A RATED	8	PV INTERCONNECTION POINT - PV BREAKER	9	UTILITY ELECTRICAL SERVICE

DOCUMENT CONTROL				DATE	CAD	QC	ENGINEER CONTACT INFORMATION		ENGINEERING STAMP	CONTRACTOR CONTACT INFORMATION		<div>CONTRACTOR LOGO</div> <div></div>	CUSTOMER: SANDY FIROOZ		SHEET NAME:  ONE LINE RISER DIAGRAM		
ISSUED FOR PERMIT				12-27-2021	BW	JG	ENGIPARTNERS LLC  C.A. 32661 255 GIRALDA AVE CORAL GABLES, FL 33134  DESIGN@ENGIPARTNERS.COM  833 - 888 - 3644		<div></div> <div>Digitally signed by Rafael A Gonzalez Soto Date: 2022.01.17 05:14:59 -05'00'</div>	TITAN SOLAR POWER FL 12221 N US HIGHWAY 301  THONOTASASSA, FL 33592  (813) 982 -9001  #EC13008093			PROJECT ADDRESS:  161 NORTHWEST SPARR LANE LAKE CITY FL 32055				
REV	DESCRIPTION			DATE	CAD	QC				PROJECT ID: TSP110728			ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE		SHEET TITLE: E-1		
										DATE: 12-27-2021			SHEETS: 3 OF 9				




**WARNING**

**ELECTRICAL SHOCK HAZARD**

TERMINALS ON BOTH LINE AND  
LOAD SIDES MAY BE ENERGIZED  
IN THE OPEN POSITION

LABEL LOCATION:  
AC DISCONNECT,  
POINT OF INTERCONNECTION  
PER CODE: NEC 690.13 (B)

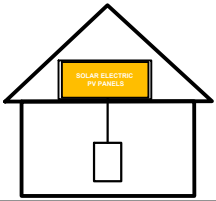
**WARNING**

TURN OFF PHOTOVOLTAIC  
AC DISCONNECT PRIOR TO  
WORKING INSIDE PANEL

LABEL LOCATION:  
AC DISCONNECT, MAIN PANEL  
PER CODE: NEC 110.27 (C)  
OSHA 1910.145(f)(7)

**SOLAR PV SYSTEM EQUIPPED  
WITH RAPID SHUTDOWN**

TURN RAPID SHUTDOWN  
SWITCH TO THE "OFF"  
POSITION TO  
SHUT DOWN PV SYSTEM  
AND REDUCE SHOCK  
HAZARD IN THE ARRAY.



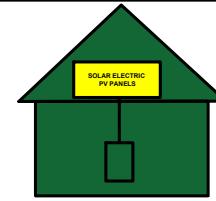
LABEL LOCATION:  
AC DISCONNECT, MAIN PANEL  
PER CODE: NEC 690.56(C)(3)

**PHOTOVOLTAIC  
SYSTEM EQUIPPED  
WITH RAPID SYSTEM  
SHUTDOWN**

LABEL LOCATION:  
AC DISCONNECT  
POINT OF INTERCONNECTION  
PER CODE: NEC 690.56(C)

**EMERGENCY RESPONDER  
THIS SOLAR PV SYSTEM IS  
EQUIPPED WITH RAPID SHUTDOWN**

TURN RAPID SHUTDOWN  
SWITCH TO THE "OFF"  
POSITION TO SHUT DOWN  
THE ENTIRE PV SYSTEM.



LABEL LOCATION:  
AC DISCONNECT, MAIN PANEL  
PER CODE: FFPC 7TH EDITION: 11.12.2.1.1.1.1

**INVERTER #1**

NOMINAL OPERATING AC VOLTAGE

240 V

NOMINAL OPERATING AC FREQUENCY

60 HZ

MAXIMUM AC POWER

3.8 KW

MAXIMUM AC CURRENT

16 A

MAX OVERCURRENT DEVICE RATING  
FOR AC MODULE PROTECTION

N/A

LABEL LOCATION:  
INVERTER  
PER CODE: NEC 690.52

MAXIMUM VOLTAGE

480 VDC

MAXIMUM CIRCUIT CURRENT

10.5 A

MAX RATED OUTPUT CURRENT OF  
THE CHARGE CONTROLLER OR DC-TO-DC  
CONVERTER  
(IF INSTALLED)

15 A

LABEL LOCATION:  
INVERTER  
PER CODE: NEC 690.53

**PHOTOVOLTAIC AC DISCONNECT**

RATED AC OUTPUT CURRENT:

16 A

NOMINAL OPERATING AC VOLTAGE:

240V

LABEL LOCATION:  
AC DISCONNECT  
PER CODE: NEC 690.54

**MAIN PHOTOVOLTAIC  
SYSTEM DISCONNECT**

LABEL LOCATION:  
AC DISCONNECT  
PER CODE: NEC 690.13 (B)

**WARNING: PHOTOVOLTAIC  
POWER SOURCE**

LABEL LOCATION:  
MAIN SERVICES DISCONNECT, DC CONDUIT  
PER CODE: NEC 690.31 (G) (3)

**WARNING**

**DUAL POWER SOURCE**  
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:  
POINT OF  
INTERCONNECTION  
PER CODE: NEC 705.12 (B)(3)

**WARNING**

POWER SOURCE OUTPUT CONNECTION. DO NOT  
RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:  
POINT OF  
INTERCONNECTION  
PER CODE: NEC  
705.12(B)(2)(3)(b)

**CAUTION**

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION:  
MAIN SERVICE PANEL  
PER CODE: NEC 690.45(B)(5)

**DO NOT DISCONNECT  
UNDER LOAD**

LABEL LOCATION:  
POINT OF  
INTERCONNECTION  
PER CODE:  
NEC 690.33(E)(2) & NEC  
690.15 (C)

**CAUTION: SOLAR ELECTRIC  
SYSTEM CONNECTED**



LABEL LOCATION: POINT OF INTERCONNECTION  
PER CODE: NEC 690.15, NEC 690.13(B)

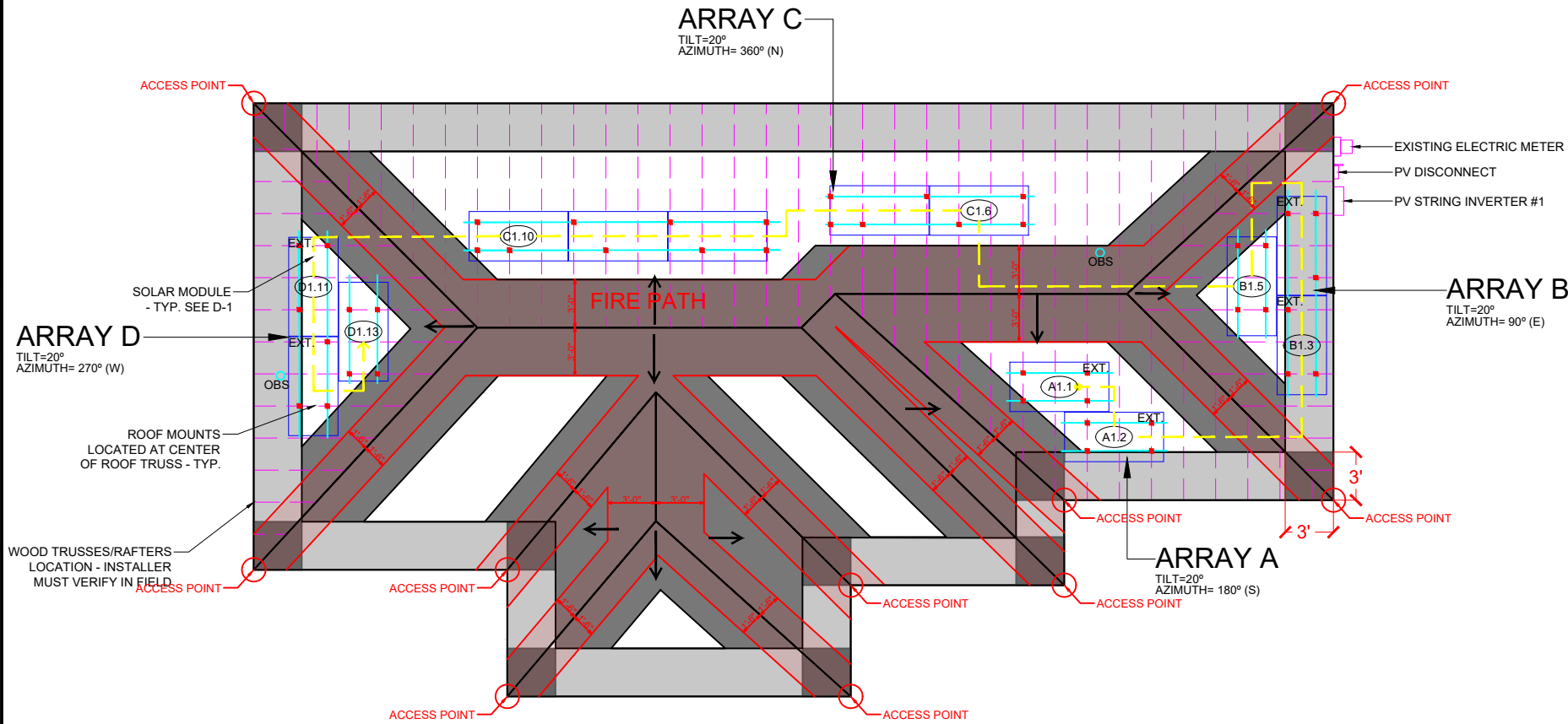
LABEL LOCATION: ADJACENT TO MAIN DISCONNECT

**TITAN**  
SOLAR POWER  
FLORIDA  
901 ARMSTRONG BLVD, KISSIMMEE, FL 34741  
1-855-SAY-SOLAR

1

**PV SAFETY LABELS DATA**  
N.T.S.

DOCUMENT CONTROL				DATE	CAD	QC	ENGINEER CONTACT INFORMATION		ENGINEERING STAMP		CONTRACTOR CONTACT INFORMATION		CONTRACTOR LOGO		CUSTOMER:		SHEET NAME:							
ISSUED FOR PERMIT				12-27-2021	BW	JG	ENGIPARTNERS LLC  C.A. 32661 255 GIRALDA AVE CORAL GABLES, FL 33134  DESIGN@ENGIPARTNERS.COM  833 - 888 - 3644			Digitally signed by Rafael A Gonzalez Soto Date: 2022.01.17 05:15:06 -05'00'	TITAN SOLAR POWER FL  12221 N US HIGHWAY 301  THONOTASASSA, FL 33592  (813) 982 -9001  #EC13008093		SANDY FIROOZ		SAFETY LABELS									
PROJECT ADDRESS:																								
161 NORTHWEST SPARR LANE LAKE CITY FL 32055				PARCEL NUMBER:		22-2S-16-01716-002							PROJECT ID:  TSP110728		ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE  DATE: 12-27-2021		SHEET TITLE:  E-2  SHEETS:  4 OF 9							
REV	DESCRIPTION			DATE	CAD	QC																		



## LEGEND & SYMBOLS

OBS	ROOF OBSTRUCTIONS
XX.X	ARRAY # MODULE # STRING #
[Box]	PV MODULES
[Dashed Line]	TRUSSES OR RAFTERS
[Red Dots]	ROOF MOUNTS & RAIL
[Arrow]	ROOF SLOPE
EXT.	EXTERIOR PV MODULE

### ROOF'S GENERAL NOTES:

- 1- CONTRACTOR/INSTALLER TO VERIFY ROOF CONDITIONS FOR PROPER INSTALLATION OF THE PV SYSTEM.
- 2- CONTRACTOR/INSTALLER TO NOTIFY THE OWNER IMMEDIATELY OF ANY ROOF DEFICIENCIES AND/OR REPAIR REQUIRED TO INSTALL THE PV SYSTEM.
- 3- EOR DOES NOT ASSUME ANY RESPONSIBILITY FOR THE INSTALLATION OF ANY PV SYSTEM ON DEFICIENT ROOFS.
- 4-CONTRACTOR/INSTALLER ASSUMES ALL RESPONSIBILITY TO INSTALL AS PER MANUFACTURER STANDARDS.

### ROOF INSPECTION NOTE:

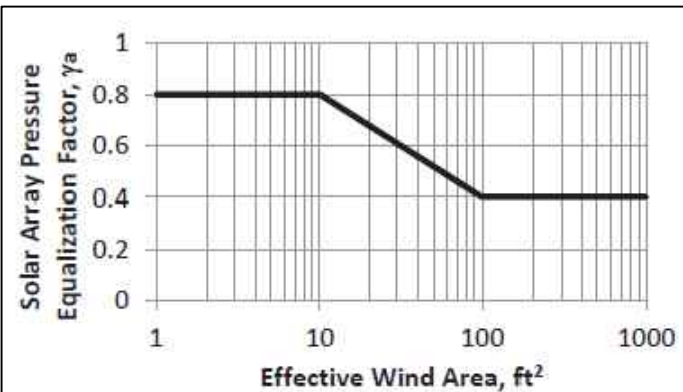
PV MODULE IN LAYOUT IS CONSIDERED NON-EXPOSED AFTER COMPLYING WITH THE FOLLOWING STATEMENTS BASED ON ASCE7-16:

- NO INDIVIDUAL PV MODULE IS MORE THAN 0.5(MEAN ROOF HEIGHT) AWAY FROM ROOF EDGE OR ANOTHER MODULE.
- NO INDIVIDUAL PV MODULE IS MORE THAN 4 FT AWAY FROM ROOF EDGE OR ANOTHER MODULE.
- INDIVIDUAL PV MODULE IS MORE THAN 1.5(MODULE LENGTH) AWAY FROM CLOSEST EXPOSED EDGE

### ASCE 7.16 - 29.4-7

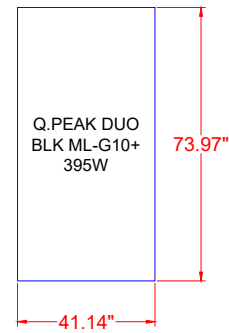
#### DESIGNED WIND PRESSURES:

$$p = q_h (GC_p)(\gamma_E)(\gamma_a)$$



## SOLAR MODULE

UL 1703 CERTIFIED  
MAX. DESIGN LOAD: 83.54 psf  
APPLIED WIND LOAD : 34.12 psf



**NOTES:**

- INSTALL MID CLAMPS BETWEEN MODULES AND ENDS CLAMPS AT THE END OF EACH ROW OF MODULES.
- ALUMINUM RAILS SHOULD ALWAYS BE SUPPORTED BY MORE THAN ONE FOOTING ON BOTH SIDES OF THE SPLICE.

## WEIGHTED AVERAGE

### WORST CASE MODULE:

ZONE 1: 21%

ZONE 2e: 64%

ZONE 2r: 15%

$$25.49(0.21) + 36.41(0.64) + 36.41(0.15) = 34.12\text{psf}$$

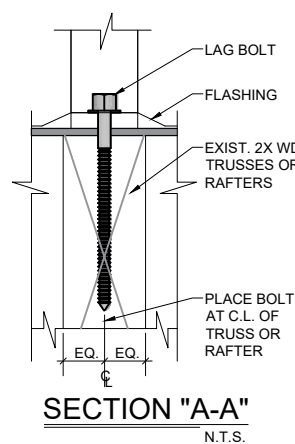
ULTIMATE WIND SPEED	120	mph
DESIGN WIND SPEED	117	mph
RISK CATEGORY	II	
EXPOSURE CATEGORY	C	
ROOF SLOPE (°)	26	
ROOF TYPE	HIPPED	
MATERIAL ROOF TYPE	ASPHALT SHINGLES	
PRESSURE ZONE:	1&2	
MEAN ROOF HEIGHT:	13.73	
PERIMETER WIDTH:	3.0	
$K_D$	0.85	
$K_{ZT}$	1.00	
$K_H$	0.850	
VELOCITY PRESSURE ( $q$ ) = $0.60 \cdot 0.00256 \cdot K_H K_{ZT} K_D V^2$		
VELOCITY PRESSURE (ASD)	15.17	
INTERIOR EDGE FACTOR: $\gamma_E = 1.0$	EXTERIOR EDGE FACTOR: $\gamma_E = 1.5$	ARRAY EQUALIZATION FACTOR: $\gamma_a = 0.8$
EXTERNAL PRESSURE COEFFICIENT Z1	0.7	-1.4
EXTERNAL PRESSURE COEFFICIENT Z2e	0.7	-2.0
EXTERNAL PRESSURE COEFFICIENT Z2r	0.7	-2.0
EXTERNAL PRESSURE COEFFICIENT Z3	0.7	-2.0
INTERNAL PRESSURE COEFFICIENT	0.18	
ZONES	PRESSURES (PSF)	INTERIOR PRESSURES (PSF)
1	-23.97	-16.99
2e	-33.07	-24.27
2r	-33.07	-24.27
3	-33.07	-24.27
EXTERNAL PRESSURES (PSF)	MAX SPAN (FT)	MAX CANTI-LEVER (IN)
-25.49	6'	24"
-36.41	6'	24"
-36.41	4'	16"
-36.41	4'	16"
TOTAL ROOF AREA	1961.57	sq.-ft
TOTAL MODULES:	13	
TOTAL PHOTOVOLTAIC AREA:	274.69	sq.-ft
WIND LOAD (PSF):	34.12	
TOTAL WIND LOAD (LBS):	9,372.42	
TOTAL ROOF MOUNTS:	44	
TENSION FORCE PER MOUNT (LBS):	213.01	

## 1 STRUCTURAL ROOF PLAN & PV MODULES LAYOUT

N.T.S.

DOCUMENT CONTROL				DATE		CAD	QC	ENGINEER CONTACT INFORMATION				ENGINEERING STAMP		CONTRACTOR CONTACT INFORMATION		CONTRACTOR LOGO		CUSTOMER:		SHEET NAME:			
ISSUED FOR PERMIT				12-27-2021		BW	JG	ENGIPARTNERS LLC				Digitally signed by Rafael A Gonzalez Soto		TITAN SOLAR POWER FL		TITAN SOLAR POWER		SANDY FIROOZ		STRUCTURAL PLAN			
REV				DATE		CAD	QC	C.A. 32661 255 GIRALDA AVE CORAL GABLES, FL 33134 DESIGN@ENGIPARTNERS.COM 833 - 888 - 3644				Date: 2022.01.17 05:15:15 -05'00		12221 N US HIGHWAY 301 THONOTASASSA, FL 33592 (813) 982 -9001 #EC13008093				PROJECT ADDRESS: 161 NORTHWEST SPARR LANE LAKE CITY FL 32055		PROJECT ID: TSP110728			
																		PARCEL NUMBER: 22-2S-16-01716-002		ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE DATE: 12-27-2021			
																				SHEET TITLE: S-1 SHEETS: 5 OF 9			



[illegible]

K2 SYSTEM    44-X Landscape 60-Cell										
Ground Snow Load	Exposure Category	Panel Angle	Wind Speed	120 mph						
			Roof Zone	1'	1	2e	2r	2n	3e	3r
0 psf	C	20 to 27	Array Interior	88	88	88	74	74	74	72
			Array Edge	76	76	76	64	64	64	62

**DISTRIBUTED LOAD CALCULATIONS**

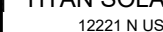
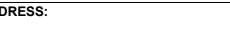
**PV MODULES & RACKING WEIGHT = (INDIVIDUAL MODULE WEIGHT**  
**+ 3.5 LBS) \* (MODULE QTY) = (52 LBS) \* (13) = 676 LBS**

**PER SQUARE FEET (PSF) ARRAY LOAD = PV MODULES & RACKING**  
**WEIGHT / TOTAL ARRAY AREA = 676 LBS / 274 SQFT**  
**= 2.46 PSF**

**HENCE, ROOF WILL CARRY THE ADDITIONAL SOLAR SYSTEM**  
**LOAD**

STAINLESS STEEL Lag screw specifications		
	Specific gravity	$\frac{5}{16}$ " shaft, * per inch thread depth
Douglas Fir, Larch	0.50	266
Douglas Fir, South	0.46	235
Engelman Spruce, Lodgepole Pine (MSR 1650 f & higher)	0.46	235
Hem, Fir, Redwood (close grain)	0.43	212
Hem, Fir (North)	0.46	235
Southern Pine	0.55	307
Spruce, Pine, Fir	0.42	205
Spruce, Pine, Fir (E of 2 million psi and higher grades of MSR and MEL)	0.50	266

## 1 SHINGLE ROOF MOUNT DETAIL & DATA

DOCUMENT CONTROL				DATE	CAD	QC	ENGINEER CONTACT INFORMATION				ENGINEERING STAMP		CONTRACTOR CONTACT INFORMATION		CONTRACTOR LOGO		CUSTOMER:		SHEET NAME:					
ISSUED FOR PERMIT				12-27-2021	BW	JG	<div>ENGIPARTNERS LLC</div> <div>C.A. 32661 255 GIRALDA AVE CORAL GABLES, FL 33134</div> <div>DESIGN@ENGIPARTNERS.COM</div> <div>833 - 888 - 3644</div>				<div></div> <div>Digitally signed by Rafael A Gonzalez Soto Date: 2022.01.17 05:15:23 -05'00'</div>		<div>TITAN SOLAR POWER FL</div> <div>12221 N US HIGHWAY 301</div> <div>THONOTASASSA, FL 33592</div> <div>(813) 982 - 9001</div> <div>#EC13008093</div>		<div></div> <div>TITAN</div> <div>SOLAR POWER</div>		SANDY FIROOZ		RACKING PLAN					
REV		DESCRIPTION		DATE	CAD	QC											PROJECT ADDRESS:							
																	161 NORTHWEST SPARR LANE LAKE CITY FL 32055							
																	PARCEL NUMBER:		TSP110728		ENGINEER OF RECORD:		SHEET TITLE:	
																			22-2S-16-01716-002		ENG. RAFAEL A. GONZALEZ SOTO, PE		S-2	
											DATE:		SHEETS:											
											12-27-2021		6 OF 9											







Power Optimizer

For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505



POWER OPTIMIZER

PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

solaredge.com



Power Optimizer

For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505

Optimizer model (typical module compatibility)	P320 (for 60-cell modules)	P340 (for high- power 60-cell modules)	P370 (for higher- power 60 and 72- cell modules)	P400 (for 72 & 96-cell modules)	P401 (for high power 60 and 72 cell modules)	P405 (for high- voltage modules)	P485 (for high- voltage modules)	P505 (for higher current modules)	
INPUT									
Rated Input DC Power <sup>(1)</sup>	320	350	370	400	405		485	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	60	125 <sup>(2)</sup>		83 <sup>(3)</sup>	Vdc
MPPT Operating Range	8 - 48		8 - 60	8 - 80	8-60	12.5 - 105		12.5 - 83	Vdc
Maximum Short Circuit Current (Isc)	11	11.02	11	10.1	11.75	11		14	Adc
Maximum DC Input Current	13.75			12.5	14.65	12.5		17.5	Adc
Maximum Efficiency					99.5				%
Weighted Efficiency					98.8		98.5		%
Overvoltage Category					II				
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)									
Maximum Output Current					15				Adc
Maximum Output Voltage	60						85		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF)									
Safety Output Voltage per Power Optimizer					1 ± 0.1				Vdc
STANDARD COMPLIANCE									
EMC					FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3				
Safety					IEC62109-1 (class II safety), UL1741				
Material					UL94 V-0, UV Resistant				
RoHS					Yes				
INSTALLATION SPECIFICATIONS									
Maximum Allowed System Voltage					1000				Vdc
Compatible inverters	All SolarEdge Single Phase and Three Phase inverters								
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1			129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 153 x 29.5 / 5.1 x 6 x 1.16	129 x 159 x 49.5 / 5.1 x 6.3 x 1.9		129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight (including cables)	630 / 1.4			750 / 1.7	655 / 1.5	845 / 1.9		1064 / 2.3	gr / lb
Input Connector	MC4 <sup>(4)</sup>						Single or dual MC4 <sup>(4)(5)</sup>	MC4 <sup>(4)</sup>	
Input Wire Length	0.16 / 0.52				0.16 or 0.9 / 0.52 or 2.95 <sup>(6)</sup>		0.16 / 0.52		m / ft
Output Wire Type / Connector	Double Insulated / MC4								
Output Wire Length	0.9 / 2.95						1.2 / 3.9		m / ft
Operating Temperature Range <sup>(1)</sup>					-40 to +85 / -40 to +185				°C / °F
Protection Rating					IP68 / NEMA6P				
Relative Humidity					0 - 100				%

(1) Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.  
(2) NEC 2017 requires max input voltage be not more than 800V.  
(3) For other connector types please contact SolarEdge.  
(4) For dual version for parallel connection of two modules use P485-4NMDMM. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimizer connected to one PV module. When connecting a single module seal the unused input connectors with the supplied pair of seals.  
(5) Longer inputs wire length are available for use for 0.9m module wire length under P401 and so on.  
(6) For ambient temperature above +85°C / +185°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details.

PV System Design Using a SolarEdge Inverter <sup>(7)(8)</sup>	Single Phase HD-Wave	Single phase	Three Phase for 208V grid	Three Phase for 277/480V grid
Minimum String Length (Power Optimizers)	P320, P340, P370, P400, P401 P405, P485, P505	8	10	18
Maximum String Length (Power Optimizers)		6	8	14
		25	25	50 <sup>(10)</sup>
Maximum Power per String	5700 (6000 with SE7600-US - SE11400-US)	5250	6000 <sup>(9)</sup>	12750 <sup>(11)</sup>
Parallel Strings of Different Lengths or Orientations	Yes			

(7) For detailed string sizing information refer to: [http://www.solaredge.com/sites/default/files/string\\_sizing\\_na.pdf](http://www.solaredge.com/sites/default/files/string_sizing_na.pdf)  
(8) It is not allowed to mix P320/P340/P370/P400/P401 in one string.  
(9) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements, safety voltage will be above the 30V requirement.  
(10) For 208V grid: it is allowed to install up to 6,500W per string when the maximum power difference between each string is 1,000W.  
(11) For 277/480V grid: it is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W.

© SolarEdge Technologies Ltd. All rights reserved. SOLAREEDGE, the SolarEdge logo, OPTIMIZED BY SOLAREEDGE are trademarks or registered trademarks of SolarEdge Technologies, Inc. All other trademarks mentioned herein are trademarks of their respective owners. Date: 08/2021 DS-00044-12-NA. Subject to change without notice.



DOCUMENT CONTROL				DATE		CAD	QC	ENGINEER CONTACT INFORMATION				ENGINEERING STAMP		CONTRACTOR CONTACT INFORMATION		CONTRACTOR LOGO		CUSTOMER:		SHEET NAME:	
ISSUED FOR PERMIT				12-27-2021		BW	JG	ENGIPARTNERS LLC						TITAN SOLAR POWER FL				SANDY FIROOZ		SMART MONITORING DATA SHEET	
REV				DATE		CAD	QC	C.A. 32661						12221 N US HIGHWAY 301				PROJECT ADDRESS:			
								255 GIRALDA AVE						THONOTASASSA, FL 33592				161 NORTHWEST SPARR LANE			
								CORAL GABLES, FL 33134										LAKE CITY FL 32055			
								DESIGN@ENGIPARTNERS.COM													
								833 - 888 - 3644						#EC13008093		PARCEL NUMBER:		TSP110728		PROJECT ID:	
																		22-2S-16-01716-002		ENGINEER OF RECORD:	
																		12-27-2021		ENG. RAFAEL A. GONZALEZ SOTO, PE	
																				SHEET TITLE:	
																				D-2	
																				SHEETS:	
																				8 OF 9	



# Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US /  
SE7600H-US / SE10000H-US / SE11400H-US



INVERTERS

## Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)

solaredge.com

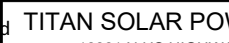
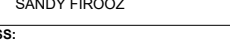
**solar**edge

## Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US /  
SE7600H-US / SE10000H-US / SE11400H-US

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXXXH-XXXXXBXX4							
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5 <sup>(1)</sup>							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
Power Factor	1, Adjustable - 0.85 to 0.85							
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380				400			Vdc
Maximum Input Current @240V <sup>(2)</sup>	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V <sup>(2)</sup>	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600mA Sensitivity							
Maximum Inverter Efficiency	99				99.2			%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W

<sup>(1)</sup> For other regional settings please contact Solar Edge support  
<sup>(2)</sup> A higher current source may be used; the inverter will limit its input current to the values stated

DOCUMENT CONTROL				DATE	CAD	QC	ENGINEER CONTACT INFORMATION				ENGINEERING STAMP				CONTRACTOR CONTACT INFORMATION				CONTRACTOR LOGO				CUSTOMER: SANDY FIROOZ				SHEET NAME:  INVERTER DATA SHEET			
ISSUED FOR PERMIT				12-27-2021	BW	JG	ENGIPARTNERS LLC								TITAN SOLAR POWER FL								PROJECT ADDRESS: 161 NORTHWEST SPARR LANE LAKE CITY FL 32055							
REV	DESCRIPTION			DATE	CAD	QC	C.A. 32661 255 GIRALDA AVE CORAL GABLES, FL 33134								12221 N US HIGHWAY 301								THONOTASASSA, FL 33592				PARCEL NUMBER: 22-2S-16-01716-002			
							DESIGN@ENGIPARTNERS.COM								Digitally signed by Rafael A Gonzalez Soto															
															Date: 2022.01.17								(813) 982 - 9001							
															05:16:00 - 05:00								#EC13008093							
							833 - 888 - 3644																							