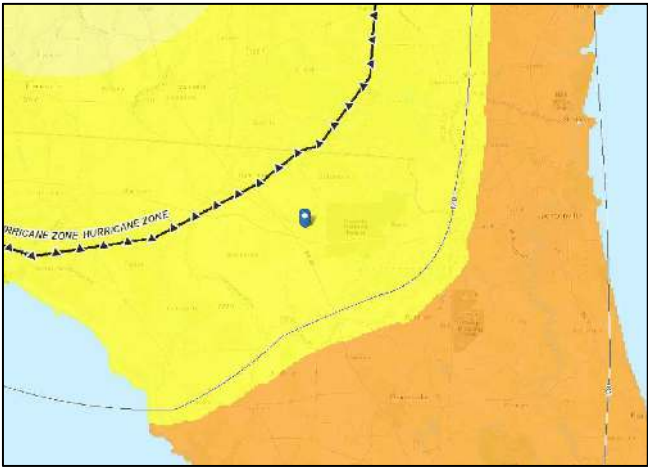




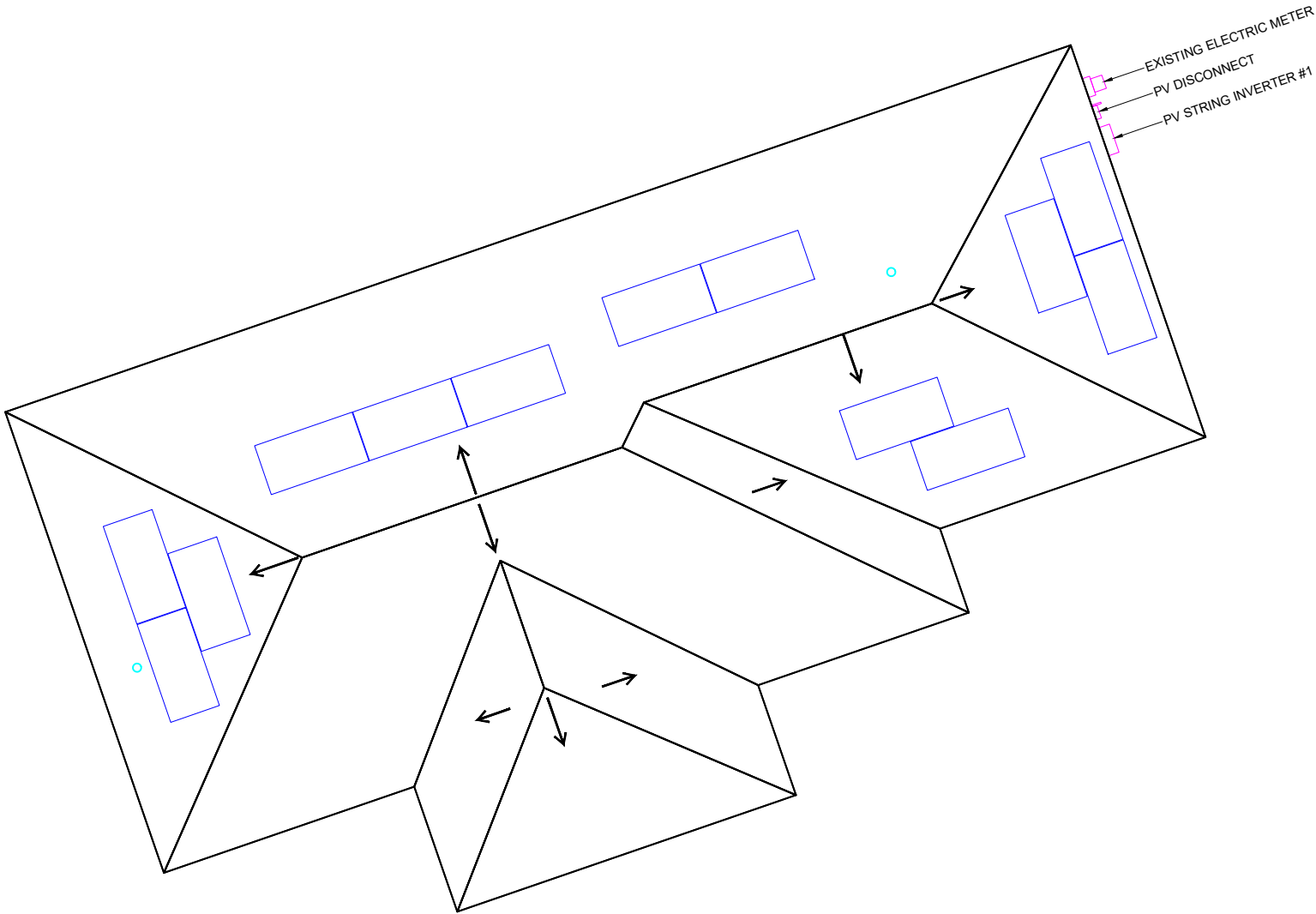
2 LOCATION MAP / WIND ZONES
N.T.S.



3 IRRADIANCE MAP
N.T.S.



4 3D RENDERING
N.T.S.



"PROPERTY SIDE FACING STREET"

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 SOLAREEDGE

INVERTER: (1) SE3800H-US BY SOLAREEDGE

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.

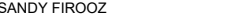
CONTRACTOR SHALL ENSURE ALL ROOF PENETRATIONS TO BE INSTALLED AND SEALED PER 2020 FLORIDA BUILDING CODE 7TH EDITION OR LOCAL GOVERNING CODE.

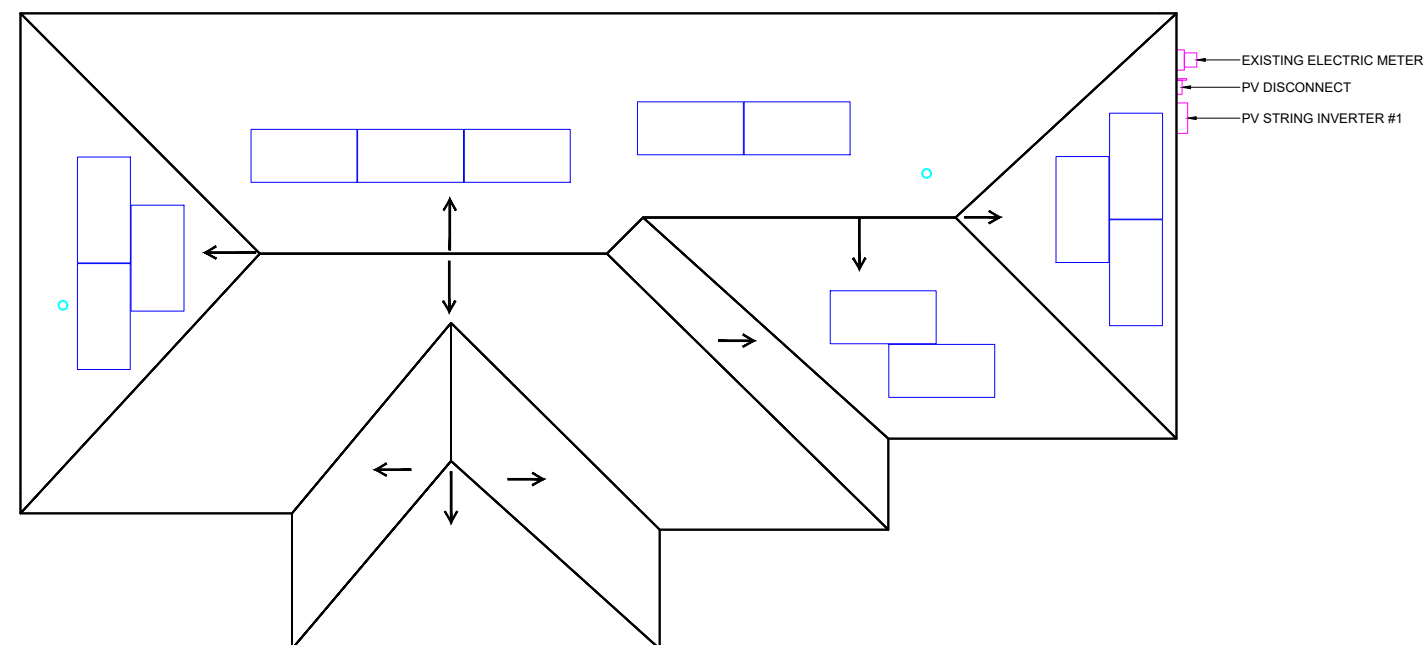
ALL WIRING METHODS AND INSTALLATION PRACTICES SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE (NEC) 2017, LOCAL STATE CODES, AND OTHER APPLICABLE LOCAL CODES. MEANS SHALL BE PROVIDED TO DISCONNECT ALL CURRENT CARRYING CONDUCTORS OF THE PHOTOVOLTAIC POWER SOURCE FROM ALL OTHER CONDUCTORS IN THE BUILDING. 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.

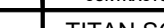
MECAWIND TOOL IS BASED ON THE C&C WIND LOADS FOR ENCLOSED BUILDINGS. DESIGN WIND PRESSURES ARE CALCULATED USING ASCE 7-16 EQUATION 30.6-1. ALL NOTES IN FIGURES ASCE 7-16 30.4-1 AND 30.4-2(A,B AND /67C) HAVE BEEN INCORPORATED. MEAN ROOF HEIGHT MUST BE LESS THAN 60 FEET.

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	ENGPARTNERS LLC C.A. 32661 255 GIRALDA AVE CORAL GABLES, FL 33134 DESIGN@ENGPARTNERS.COM 833 - 888 - 3644				Digitally signed by Rafael A Gonzalez Soto Date: 2021.12.29 17:40:45 -04'00' (813) 982 -9001 #EC13008093				SANDY FIROOZ PROJECT ADDRESS: 161 NORTHWEST SPARR LANE LAKE CITY FL 32055 PARCEL NUMBER: 22-2S-16-01716-002		COVER SHEET								
REV				DESCRIPTION		DATE															CAD		QC		
																PROJECT ID: TSP110728									
																ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE									
																DATE: 12-27-2021									
																SHEET TITLE: C-1									
																SHEETS: 1 OF 9									

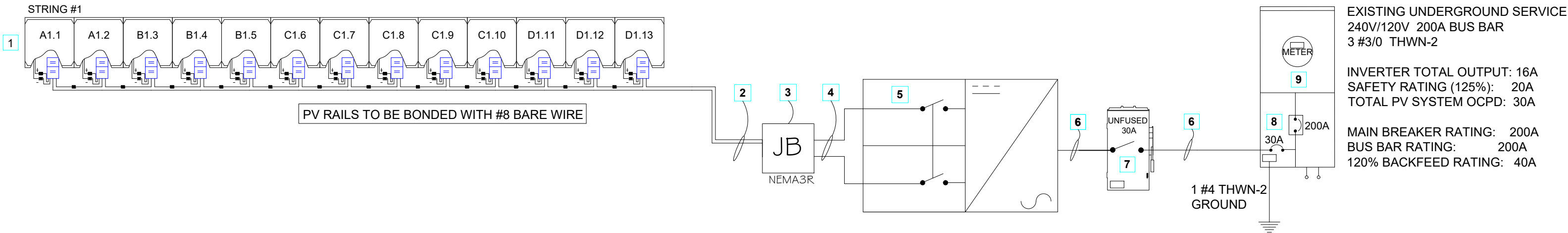


1 SAFETY PLAN

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@ENGIPARTNRS.COM 833 - 888 - 3644				 Digitally signed by Rafael A Gonzalez Soto Date: 2021.12.29 17:40:57 -04'00'				TITAN SOLAR POWER FL 12221 N US HIGHWAY 301 THONOTASASSA, FL 33592 (813) 982 - 9001 #EC13008093				 TITAN SOLAR POWER				SANDY FIROOZ				SAFETY PLAN																			
REV		DESCRIPTION				DATE		CAD	QC																	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				SHEET TITLE: C-2			
																																						DATE: 12-27-2021				SHEETS: 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%

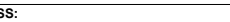


1 ONE LINE RISER DIAGRAM

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
10	NOT USED	11	NOT USED	12	NOT USED

DOCUMENT CONTROL				DATE	CAD	QC	ENGINEER CONTACT INFORMATION		ENGINEERING STAMP		CONTRACTOR CONTACT INFORMATION		CONTRACTOR LOGO		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		 Digitally signed by Rafael A Gonzalez Soto Date: 2021.12.29 17:41:06 -04'00'		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 PARCEL NUMBER: 22-2S-16-01716-002						PROJECT ID: TSP110728		ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE		SHEET TITLE: E-1
REV				DESCRIPTION		DATE											CAD		QC		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)



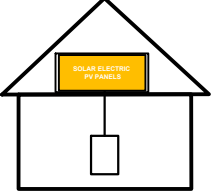
WARNING

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.



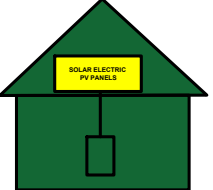
LABEL LOCATION:
AC DISCONNECT, MAIN PANEL
PER CODE: NEC 690.56(C)(3)

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

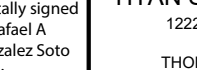


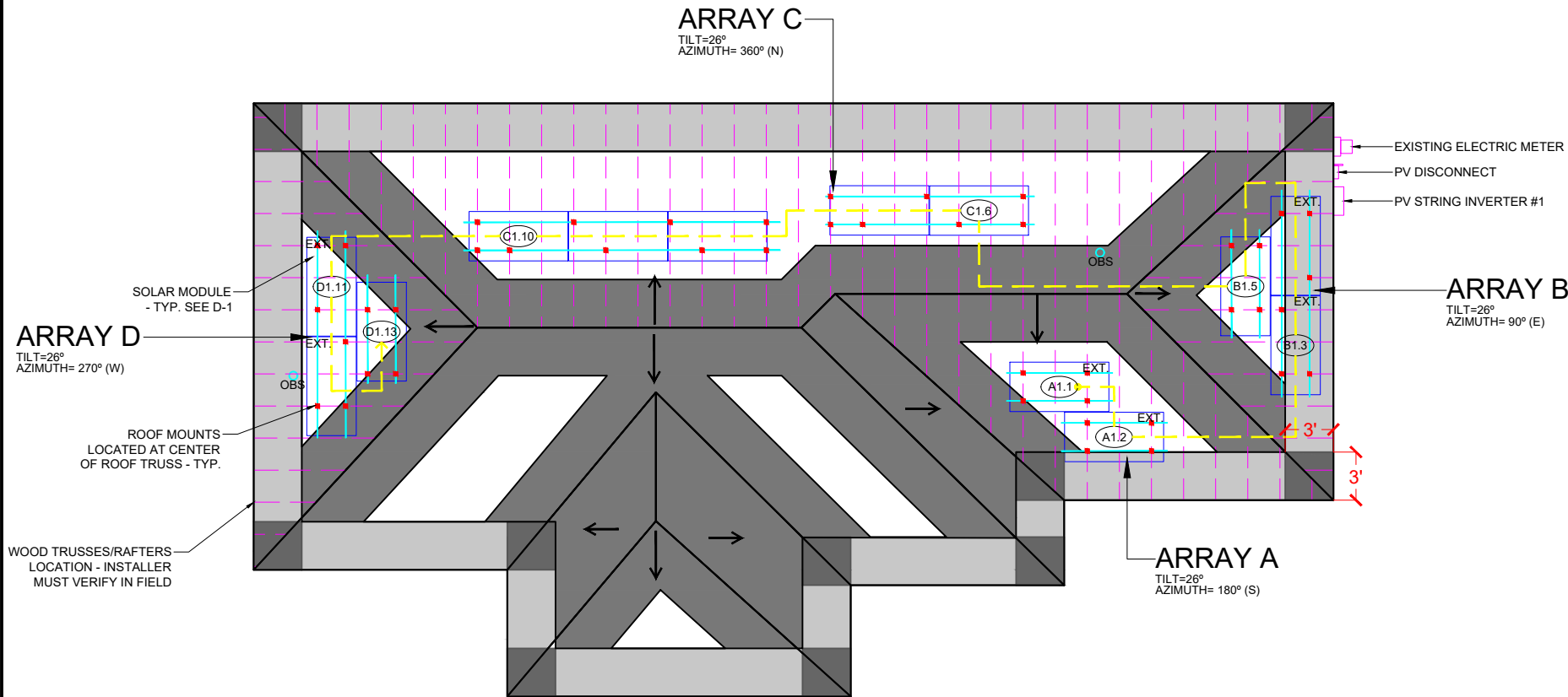
901 ARMSTRONG BLVD, KISSIMMEE, FL 34741
1-855-SAY-SOLAR

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: SAFETY LABELS					
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: 2021.12.29 17:41:15 -04'00'				TITAN SOLAR POWER FL 12221 N US HIGHWAY 301 THONOTASASSA, FL 33592 (813) 982 -9001 #EC13008093								SANDY FIROOZ									
REV				DESCRIPTION		DATE																	CAD	QC	PROJECT ADDRESS:							
																									161 NORTHWEST SPARR LANE LAKE CITY FL 32055							
																									PARCEL NUMBER:							
																					22-2S-16-01716-002											
													PROJECT ID:				ENGINEER OF RECORD:				SHEET TITLE:											
													TSP110728				ENG. RAFAEL A. GONZALEZ SOTO, PE				E-2											
																	DATE:				SHEETS:											
																	12-27-2021				4 OF 9											



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:

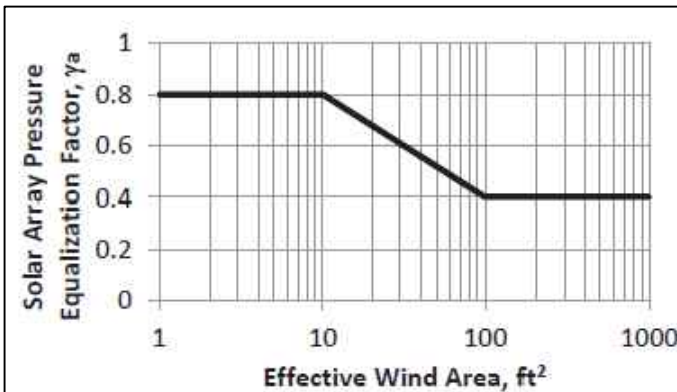
PV MODULE IN LAYOUT IS CONSIDERED NON-EXPOSED AFTER COMPLYING WITH THE FOLLOWING STATEMENTS BASED ON ASCE7-16:

- 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 SHINGLE	
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)	EXTERIOR PRESSURES (PSF)	MAX SPAN (FT)	MAX CANTI-LEVER (IN)
1	-23.97	-16.99	-25.49	6'	24"
2e	-33.07	-24.27	-36.41	6'	24"
2r	-33.07	-24.27	-36.41	4'	16"
3	-33.07	-24.27	-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				No. 2219 STATE OF FLORIDA		12221 N US HIGHWAY 301		161 NORTHWEST SPARR LANE LAKE CITY FL 32055		PROJECT ADDRESS:		PROJECT ID:			
								DESIGN@ENGIPARTNERS.COM				Date: 2021.12.29 17:41:23 -04'00'		THONOTASASSA, FL 33592				PARCEL NUMBER:		TSP110728			
								833 - 888 - 3644						(813) 982 -9001						ENGINEER OF RECORD:			
														#EC13008093						DATE:			
																				12-27-2021			
																				SHEET TITLE:			
																				S-1			
																				SHEETS:			
																				5 OF 9			

Q.PEAK DUO BLK ML-G10+ 385-410

ENDURING HIGH
PERFORMANCE



BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 21.1%.



THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry. The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.



INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti-LID Technology, Hot-Spot Protect and Traceable Quality Tra.Q™.



EXTREME WEATHER RATING

High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).



A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty¹.

¹ See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:



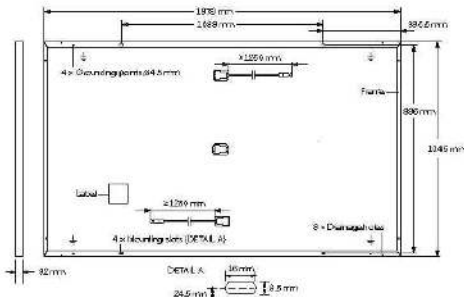
Rooftop energy on
residential buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	1879mm x 1045mm x 32mm (including frame)
Weight	22.0 kg
Front Cover	3.2mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 x 22 monocrystalline Q.ANTUM solar half cells
Junction box	53-101 mm x 32-60 mm x 15-18 mm Protection class IP67, with bypass diodes
Cable	4mm² Solar cable; (+) ≥1250mm, (-) ≥1250mm
Connector	Stäubli MC4, IP68



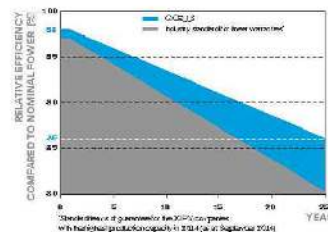
ELECTRICAL CHARACTERISTICS

POWER CLASS		385	390	395	400	405	410
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC¹ (POWER TOLERANCE: +5W / -0W)							
Minimum	Power at MPP¹	P _{MPP} [W]	385	390	395	400	405
	Short Circuit Current¹	I _{SC} [A]	11.04	11.07	11.10	11.14	11.17
	Open Circuit Voltage¹	V _{OC} [V]	45.19	45.23	45.27	45.30	45.37
	Current at MPP	I _{MPP} [A]	10.59	10.65	10.71	10.77	10.89
	Voltage at MPP	V _{MPP} [V]	36.36	36.62	36.88	37.13	37.39
	Efficiency¹	η [%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT²							
Minimum	Power at MPP	P _{MPP} [W]	288.8	292.6	296.3	300.1	303.8
	Short Circuit Current	I _{SC} [A]	8.90	8.92	8.95	8.97	9.00
	Open Circuit Voltage	V _{OC} [V]	42.62	42.65	42.69	42.72	42.79
	Current at MPP	I _{MPP} [A]	8.36	8.41	8.46	8.51	8.57
	Voltage at MPP	V _{MPP} [V]	34.59	34.81	35.03	35.25	35.46

¹ Measurement tolerances P_{MPP} ±3%; I_{SC}, V_{OC} ±5% at STC: 1000 W/m², 25±2°C, AM 1.5 according to IEC 60904-3; ² 800 W/m², NMOT spectrum AM 1.5

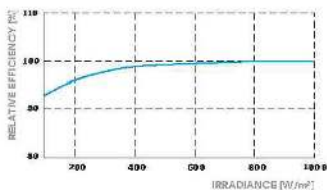
Q CELLS PERFORMANCE WARRANTY

PERFORMANCE AND DEGRADATION



At least 88% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 88.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.



Typical module performance under low irradiance conditions in comparison to STC conditions (25°C, 1000 W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	α [%/K]	+0.04	Temperature Coefficient of V _{OC}	β [%/K]	-0.27
Temperature Coefficient of P _{MPP}	γ [%/K]	-0.34	Nominal Module Operating Temperature	NMOT [°C]	43±3

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage	V _{sys} [V]	1000	PV module classification	Class II
Maximum Reverse Current	I _R [A]	20	Fire Rating based on ANSI/UL 61730	C / TYPE 2
Max. Design Load, Push/Pull	[Pa]	3600/2660	Permitted Module Temperature on Continuous Duty	-40°C - +85°C
Max. Test Load, Push/Pull	[Pa]	5400/4000		

QUALIFICATIONS AND CERTIFICATES

Quality Controlled PV - TÜV Rheinland, IEC 61215/2016, IEC 61730/2016. This data sheet complies with DIN EN 50380. QCPV Certification ongoing. Certification holder: Hanwha Q CELLS GmbH



PACKAGING INFORMATION

Horizontal packaging	1840mm	1100mm	1220mm	751kg	28 pallets	24 pallets	32 modules
----------------------	--------	--------	--------	-------	------------	------------	------------

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Made in Korea

Hanwha Q CELLS Australia Pty Ltd

Suite 1, Level 1, 15 Blue Street, North Sydney, NSW 2060, Australia | TEL +61 (0)2 9016 3033 | FAX +61 (0)2 9016 3032 | EMAIL q-cells-australia@q-cells.com | WEB www.q-cells.com/au

Engineered in Germany

Q CELLS

DOCUMENT CONTROL				ENGINEER CONTACT INFORMATION			
ISSUED FOR PERMIT	DATE	CAD	QC	ENGINEERING STAMP			
REV	DESCRIPTION	DATE	CAD				
				CONTRACTOR CONTACT INFORMATION			
				CONTRACTOR LOGO			
				CUSTOMER:			
				PROJECT ADDRESS:			
				PARCEL NUMBER:			

ENGINEER CONTACT INFORMATION			
ENGIPARTNERS LLC			
C.A. 32661			
255 GIRALDA AVE			
CORAL GABLES, FL 33134			
DESIGN@ENGIPARTNERS.COM			
833 - 888 - 3644			

ENGINEERING STAMP			
Digitally signed by Rafael A Gonzalez Soto			
Date: 2021.12.29 17:41:41 -04'00'			
CONTRACTOR CONTACT INFORMATION			
TITAN SOLAR POWER FL			
12221 N US HIGHWAY 301			
THONOTASASSA, FL 33592			
(813) 982 -9001			
#EC13008093			

CONTRACTOR CONTACT INFORMATION			
TITAN SOLAR POWER FL			
12221 N US HIGHWAY 301			
THONOTASASSA, FL 33592			
(813) 982 -9001			
#EC13008093			

CONTRACTOR LOGO			
TITAN SOLAR POWER			

CUSTOMER:			
SANDY FIROOZ			
PROJECT ADDRESS:			
161 NORTHWEST SPARR LANE			
LAKE CITY FL 32055			
PARCEL NUMBER:			
22-2S-16-01716-002			

SHEET NAME:			
PV MODULES DATA SHEET			
PROJECT ID:		ENGINEER OF RECORD:	
TSP110728		ENG. RAFAEL A. GONZALEZ SOTO, PE	
DATE:		SHEET TITLE:	
12-27-2021		D-1	
		SHEETS:	
		7 OF 9	

Specifications subject to technical changes © Q CELLS Q.PEAK DUO BLK ML-G10+ 385-410, 2021-06, Rev01_AU

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 ⁽¹⁾	320	350	370	400	405		485	505
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	60	125 ⁽²⁾		83 ⁽³⁾
MPPT Operating Range	8 - 48		8 - 60	8 - 80	8-60	12.5 - 105		12.5 - 83
Maximum Short Circuit Current (IsC)	11	11.02	11	10.1	11.75		11	14
Maximum DC Input Current		13.75		12.5	14.65		12.5	17.5
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				
Maximum Output Voltage			60				85	
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF)								
Safety Output Voltage per Power Optimizer				1 ± 0.1				
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				
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 ⁽⁴⁾			Single or dual MC4 ⁽⁴⁾⁽⁵⁾	MC4 ⁽⁴⁾
Input Wire Length		0.16 / 0.52			0.16 or 0.9 / 0.52 or 2.95 ⁽⁶⁾		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 ⁽⁷⁾				-40 to +85 / -40 to +185				
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 ⁽⁷⁾⁽⁸⁾	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 6	10 8	18 14
Maximum String Length (Power Optimizers)		25	25	50 ⁽⁹⁾
Maximum Power per String	5700 (6000 with SE7600-US - SE11400-US)	5250	6000 ⁽¹⁰⁾	12750 ⁽¹¹⁾
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
(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						(813) 982 - 9001						LAKE CITY FL 32055					
								DESIGN@ENGIPARTNERS.COM						#EC13008093				PARCEL NUMBER:		TSP110728		PROJECT ID:			
								833 - 888 - 3644										22-2S-16-01716-002		12-27-2021		ENGINEER OF RECORD:			
																						ENG. RAFAEL A. GONZALEZ SOTO, PE		SHEET TITLE:	
																						DATE:		D-2	
																						12-27-2021		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

solaredge

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 ⁽¹⁾							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 ⁽²⁾	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V ⁽²⁾	-	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

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

DOCUMENT CONTROL				ENGINEER CONTACT INFORMATION				ENGINEERING STAMP				CONTRACTOR CONTACT INFORMATION				CONTRACTOR LOGO				CUSTOMER:				SHEET NAME:			
ISSUED FOR PERMIT				12-27-2021				BW/JG				SANDY FIROOZ				PROJECT ADDRESS:				161 NORTHWEST SPARR LANE LAKE CITY FL 32055				PROJECT ID:			
REV				DATE				CAD				PARCEL NUMBER:				22-2S-16-01716-002				ENGINEER OF RECORD:				SHEET TITLE:			
																				ENG. RAFAEL A. GONZALEZ SOTO, PE				D-3			
																				DATE:				SHEETS:			
																				12-27-2021				9 OF 9			