PROJECT DESCRIPTION

SYSTEM CAPACITY: 9.60 KW DC / 6.96 KW AC

PV PANELS: (24) Q.PEAK DUO BLK ML-G10+ 400 BY QCELL

COMBINER: (1) IQ COMBINER 4C BY ENPHASE

INVERTER: (24) IQ8+ BY ENPHASE

RACKING SYSTEM: CROSS RAIL 80 BY K2 SYSTEMS

PROJECT INFORMATION

PROJECT LATITUDE	30.09257	MIN AMBIENT TEMP	-5 ° C
PROJECT LONGITUDE	-82.63192	MAX AMBIENT TEMP	35 ° C
AHJ	COLOMBIA COUNTY	WIND EXPOSURE	C
		DESIGN WIND SPEED	120 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
S-3	RACKING PLAN
D-1	PV MODULES DATA SHEET
D-2	SMART MONITORING DATA SHEET
D-3	INVERTER DATA SHEET
D-4	SYSTEM CONTROLLER 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.

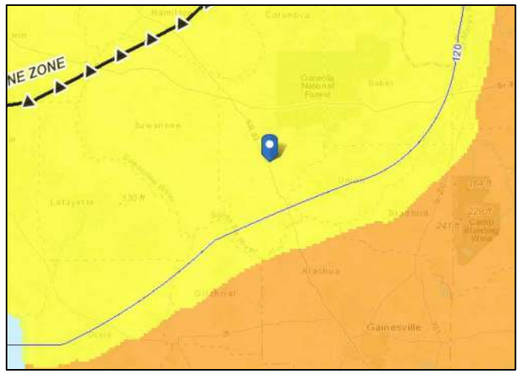
CONTRACTOR SHALL ENSURE ALL ROOF PENETRATIONS TO BE INSTALLED AND SEALED PER 2020 FLORIDA BUILDING CODE 7TH EDITION OR LOCAL GOVERNING CODE.

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.



2 LOCATION MAP / WIND ZONES

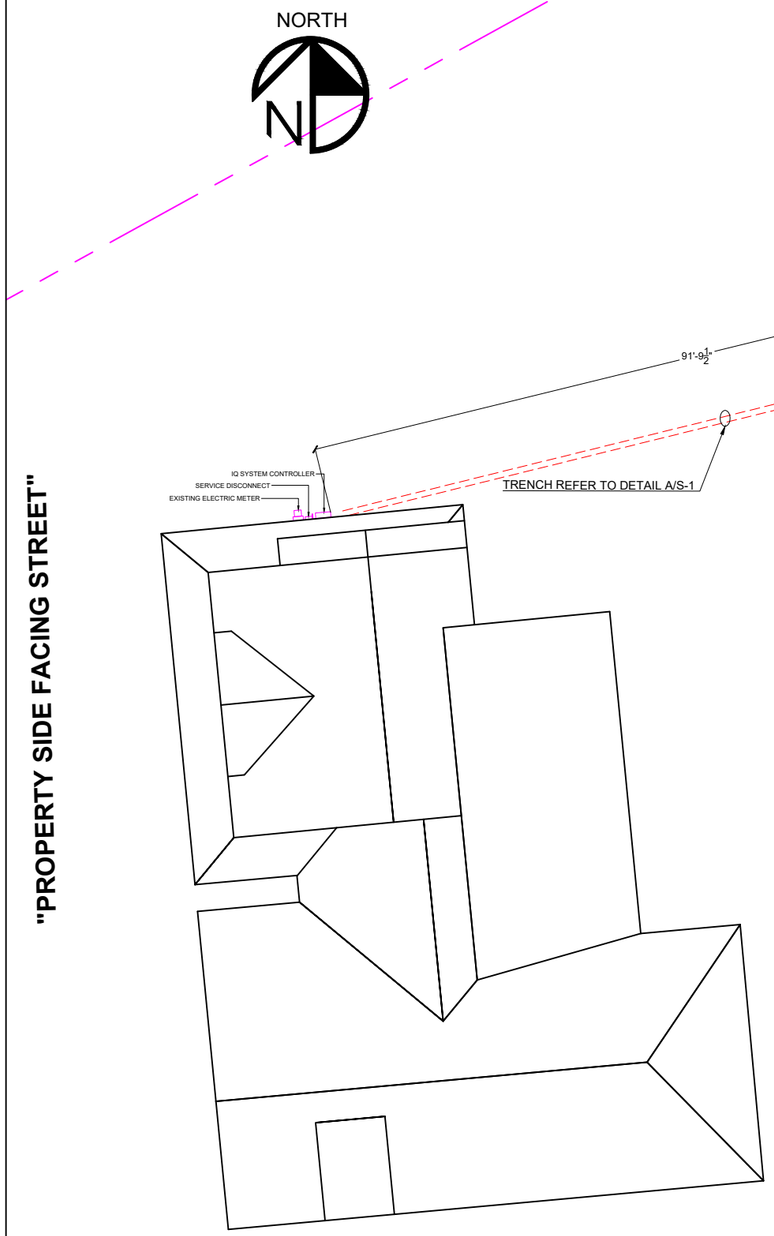
N.T.S.

3 IRRADIANCE MAP

N.T.S.

4 3D RENDERING

N.T.S.



1 ROOF PLAN VIEW / BOS LOCATION

N.T.S.

Columbia County Building Department
Plans Reviewed for Code Compliance
State of Florida

DOCUMENT CONTROL	DATE	CAD	QC
ISSUED FOR PERMIT	08-31-2022	AV	DM

REV	DESCRIPTION	DATE	CAD	QC

ENGINEER CONTACT INFORMATION

ENGIPARTNERS LLC
C.A. 32661
1825 PONCE DE LEON BLVD #114
CORAL GABLES, FL 33134

DESIGN@ENGIPARTNERS.COM

833 - 888 - 3644

ENGINEERING STAMP

Rafael A Gonzalez Soto
2022.09.12 08:26:18 -04'00'

CONTRACTOR CONTACT INFORMATION

TITAN SOLAR POWER FL
901 ARMSTRONG BLVD,
KISSIMMEE, FL 34741
(813) 982 -9001
#EC13009924

CONTRACTOR LOGO

TITAN SOLAR POWER

CUSTOMER: DAVID CALVERLY

PROJECT ADDRESS: 403 SW OAK WAY LAKE CITY FL 32025

PARCEL NUMBER: 32-4S-17-09116-124

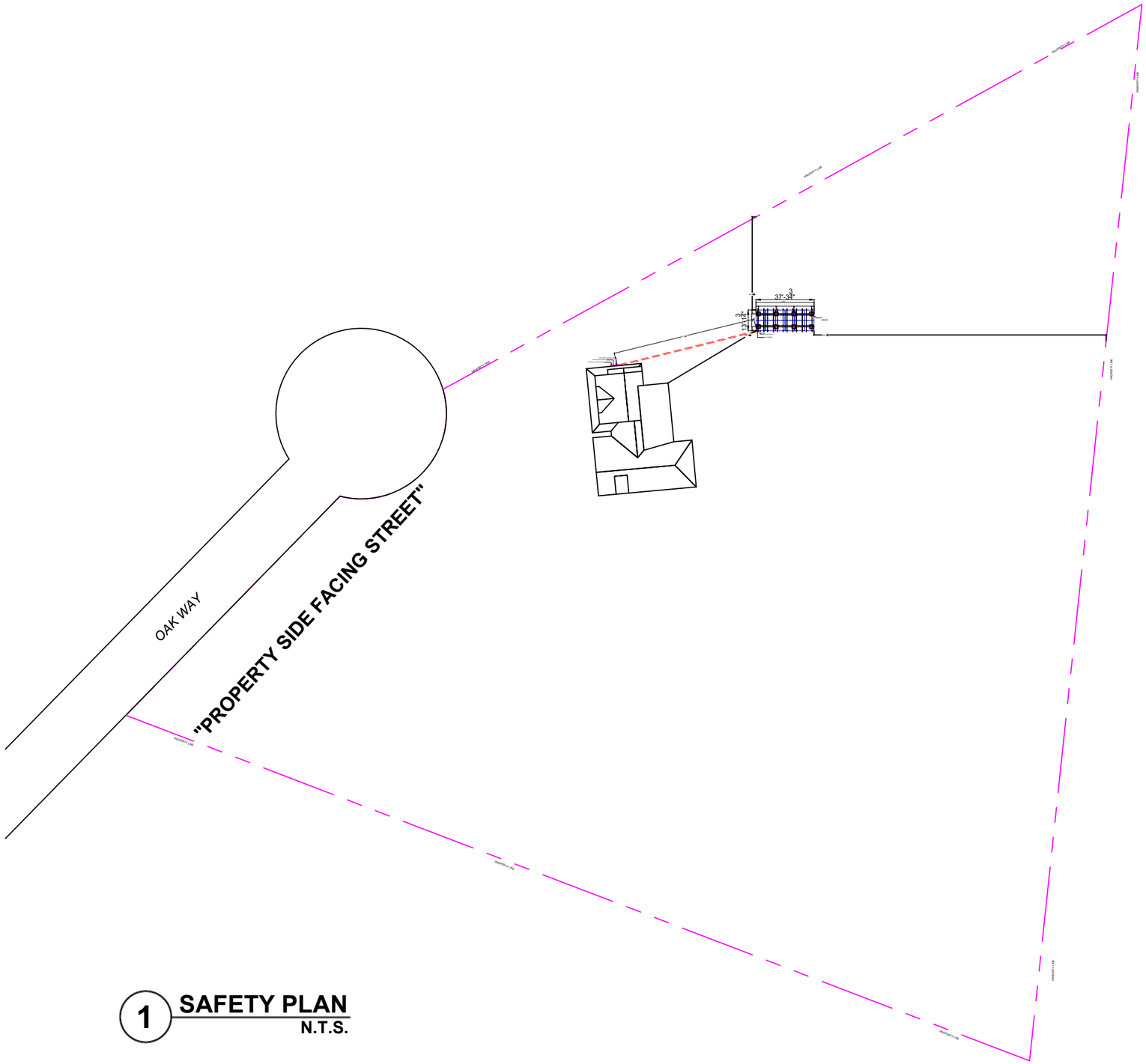
SHEET NAME: COVER SHEET

PROJECT ID: TSP140412

ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE

DATE: 08-30-22

SHEET TITLE: C-1



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

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ISSUED FOR PERMIT	08-31-2022	AV	DM

REV	DESCRIPTION	DATE	CAD	QC

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901 ARMSTRONG BLVD,
KISSIMMEE, FL 34741

(813) 982 -9001

#EC13009924

CONTRACTOR LOGO

TITAN SOLAR POWER

CUSTOMER: DAVID CALVERLY

PROJECT ADDRESS: 403 SW OAK WAY LAKE CITY FL 32025

PARCEL NUMBER: 32-4S-17-09116-124

SHEET NAME: SAFETY PLAN

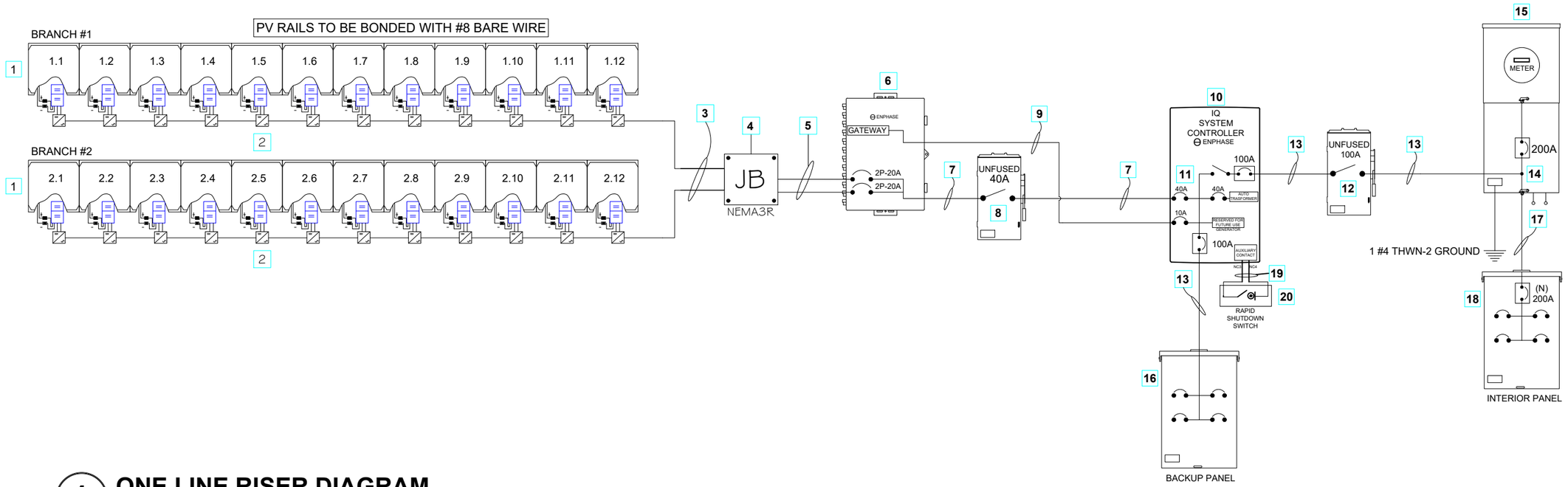
PROJECT ID: TSP140412

ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE

DATE: 08-30-22

SHEET TITLE: C-2

WIRE TAG	WIRE SIZES, QUANTITY & TYPE						WIRE AMPACITY CALCULATIONS							ADDITIONAL INFORMATION			
	CONDUCTOR QTY. SIZE & TYPE	NEUTRAL QTY. SIZE & TYPE	GROUND QTY. SIZE & TYPE	RACEWAY SIZE & TYPE	RACEWAY LOCATION	RACEWAY HEIGHT ABOVE ROOF	OUTPUT CURRENT (AMP)	125% OF OUTPUT CURRRENT (AMP)	MIN OCPD (AMP)	WIRE DE-RATED CALCULATION				DIST.	VOLTAGE	VOLTAGE DROP %	CONDUIT FILL %
										WIRE RATING	AMBIENT TEMPERATURE COEFFICIENT	# OF CONDUCTORS COEFFICIENT	DE-RATES AMPACITY				
AC.1 BRANCH 1 (BEFORE JB)	(1) IQ CABLE BY ENPHASE	N/A	(1) #8 AWG BARE COPPER	NOT APPLICABLE	UNDER ARRAY	1/2" TO 3-1/2"	14.52	18.15	20A	30A	0.76	1	22.8A	10 FT.	240V	0.11%	6.4%
AC.1 BRANCH 2 (BEFORE JB)	(1) IQ CABLE BY ENPHASE	N/A	(1) #8 AWG BARE COPPER	NOT APPLICABLE	UNDER ARRAY	1/2" TO 3-1/2"	14.52	18.15	20A	30A	0.76	1	22.8A	10 FT.	240V	0.11%	6.4%
AC.2 BRANCH 1 (FROM JB TO COMBINER BOX)	(2) #10 AWG THWN-2	N/A	(1) #8 AWG THWN-2	3/4" EMT CONDUIT	ABOVE ROOF	1/2" TO 3-1/2"	14.52	18.15	20A	40A	0.76	0.8	24.3A	20 FT.	240V	0.21%	8.1%
AC.2 BRANCH 2 (FROM JB TO COMBINER BOX)	(2) #10 AWG THWN-2	N/A	(1) #8 AWG THWN-2	3/4" EMT CONDUIT	ABOVE ROOF	1/2" TO 3-1/2"	14.52	18.15	20A	40A	0.76	0.8	24.3A	20 FT.	240V	0.21%	8.1%
AC.3(FROM COMBINER BOX TO IQ SYSTEM CONTROLLER)	(2) #4 AWG THWN-2	(1) #4 AWG THWN-2	(1) #8 AWG THWN-2	1 1/4" PVC SCH-80 CONDUIT	EXTERIOR WALL	"N/A"	29.04A	36.30A	40A	85A	1	1	85A	92 FT.	240V	0.1%	7.7%
AC.3(IQ SYSTEM CONTROLLER TO SERVICE)	(2) #3 AWG THWN-2	(1) #3 AWG THWN-2	(1) #6 AWG THWN-2	1" EMT CONDUIT	EXTERIOR WALL	"N/A"	29.04A	36.30A	40A	100A	1	1	100A	5 FT.	240V	0.1%	7.7%



EXISTING UNDERGROUND SERVICE
240V/120V
3 # 3/0 THWN-2

INVERTER TOTAL OUTPUT: 29.04A
SAFETY RATING (125%): 36.30A
TOTAL PV SYSTEM OCPD: 40A

MAIN BREAKER RATING: 200A
BUS BAR RATING: 200A
IN COMPLIANCE WITH NEC CODE 705.12(B)(2)(2)

1 ONE LINE RISER DIAGRAM

N.T.S.

LEGEND:

1	(24) Q.PEAK DUO BLK ML-G10+ 400 BY QCELL REFER TO D-1 SHEET	2	IQ8+ MICROINVERTER BY ENPHASE REFER TO D-3 SHEET	3	2 IQ CABLE BY ENPHASE 1 #8 BARED WIRE GROUND	4	NEMA 3R JUNCTION BOX
5	4 #10 THWN-2 1 #8 THWN-2 GROUND 3/4" EMT CONDUIT	6	IQ COMBINER BOX BY ENPHASE - REFER TO D-2 SHEET WITH ENVOY BREAKER - OPTIONAL SIZE:10A, 15A OR 20A	7	2 #4 L1,L2 THWN-2 1 #4 THWN-2 NEUTRAL 1 #8 THWN-2 GROUND 1 1/4" PVC SCH-80 CONDUIT	8	PV SYSTEM DISCONNECT - 60A RATED WITH 40A FUSES
9	2 #10 L1, L2 THWN-2 1 #10 THWN-2 NEUTRAL 3/4" PVC SCH-80 CONDUIT	10	IQ SYSTEM CONTROLLER 2 REFER TO D-4 SHEET	11	PV INTERCONNECTION POINT	12	SERVICE DISCONNECT - 100A RATED
13	2 #3 L1,L2 THWN-2 1 #3 THWN-2 NEUTRAL 1 #6 THWN-2 GROUND 1" EMT CONDUIT	14	IQ SYSTEM INTERCONNECTION POINT - LOAD SIDE	15	UTILITY ELECTRICAL SERVICE	16	AC LOAD CENTER FOR CRITICAL LOADS RATED 125A
17	2 #3/0 L1,L2 THWN-2 1 #3/0 THWN-2 NEUTRAL 1 #6 THWN-2 GROUND 1-1/2" EMT CONDUIT	18	INTERIOR PANEL RATED 200A	19	4 #12 L1,L2 THWN-2 1" EMT CONDUIT	20	RAPID SHUTDOWN SWITCH

DOCUMENT CONTROL	DATE	CAD	QC
ISSUED FOR PERMIT	08-31-2022	AV	DM

REV	DESCRIPTION	DATE	CAD	QC

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C.A. 32661
1825 PONCE DE LEON BLVD #114
CORAL GABLES, FL 33134
DESIGN@ENGIPARTNERS.COM
833 - 888 - 3644

ENGINEERING STAMP
Rafael A Gonzalez Soto
2022.09.12 08:26:53 -04'00'

CONTRACTOR CONTACT INFORMATION
TITAN SOLAR POWER FL
901 ARMSTRONG BLVD,
KISSIMMEE, FL 34741
(813) 982 -9001
#EC13009924

CONTRACTOR LOGO
TITAN SOLAR POWER

CUSTOMER: DAVID CALVERLY

PROJECT ADDRESS: 403 SW OAK WAY LAKE CITY FL 32025

PARCEL NUMBER: 32-4S-17-09116-124

SHEET NAME: ONE LINE RISER DIAGRAM

PROJECT ID: TSP140412

ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE

DATE: 08-30-22

SHEET TITLE: E-1

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)

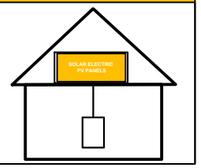
WARNING

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.



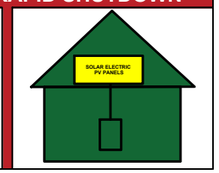
LABEL LOCATION:
AC DISCONNECT, MAIN PANEL
PER CODE: NEC 690.56(C)(1)(a)

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	6.96 KW
MAXIMUM AC CURRENT	29.04A
MAX OVERCURRENT DEVICE RATING FOR AC MODULE PROTECTION	20A

LABEL LOCATION:
INVERTER
PER CODE: NEC 690.52

MAXIMUM VOLTAGE	60 VDC
MAXIMUM CIRCUIT CURRENT	15.73 A
MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-TO-DC CONVERTER (IF INSTALLED)	N/A

LABEL LOCATION:
INVERTER
PER CODE: NEC 690.53

PHOTOVOLTAIC AC DISCONNECT

RATED AC OUTPUT CURRENT:	29.04 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 LOAD SIDE

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.

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C.A. 32661
1825 PONCE DE LEON BLVD #114
CORAL GABLES, FL 33134
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ENGINEERING STAMP
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2022.09.12 08:27:11 -04'00'

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901 ARMSTRONG BLVD,
KISSIMMEE, FL 34741
(813) 982 -9001
#EC13009924

CONTRACTOR LOGO
TITAN SOLAR POWER

CUSTOMER: DAVID CALVERLY
PROJECT ADDRESS: 403 SW OAK WAY LAKE CITY FL 32025
PARCEL NUMBER: 32-4S-17-09116-124

SHEET NAME: SAFETY LABELS
PROJECT ID: TSP140412
ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE
DATE: 08-30-22
SHEET TITLE: E-2

DESIGN WIND PRESSURE CALCULATIONS FOR SOLAR MODULES INSTALLED ON GROUND

ARRAY DETAILS

FBC VERSION	2020	RISK CATEGORY	II
CONFIG	4X6	EXPOSURE CATEGORY	C
MODS / PIERS	3	N-S SPACING	8'-3.25"
PIERS	8	PIPE CANTILEVER	0'-6"
SOUTH PIERS	4 (2'-6")	ULTIMATE WIND SPEED	120 mph
NORTH PIERS	4 (4'-6")	TOTAL PIPE LENGTH	37' - 3/34"
DIAGONAL PIPES	YES	GROUND SNOW LOAD	0 psf
TOTAL RAILS	12		
RAIL CANTILEVER	3'-3"		
RAIL TYPE	XR 1000		

1

SUBSTRUCTURE

TILT ANGLE	20°
PIPE SIZE	1.5"
E-W PIER SPACING	11'-4"
DIAGONAL BRACING	YES
TOTAL FOUNDATIONS	8
SOUTH CLEARANCE	1'- 11"
NORTH CLEARANCE	5'- 1"

FOUNDATION

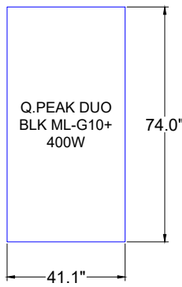
SOIL CLASS	4
HOLE DIAMETER	1'-8"
TYPE	CONCRETE
MIN HOLE DEPTH	5'-0"

REACTION FORCES

SHEAR	MOMENT	UPLIFT
1416.00 lbs	0 ft-lbs	-1011.704400 lbs

LEGEND & SYMBOLS

- PV MODULES
- MOUNTS & RAIL
- TRENCH PATH
- PIERS
- CONCRETE FOOTING

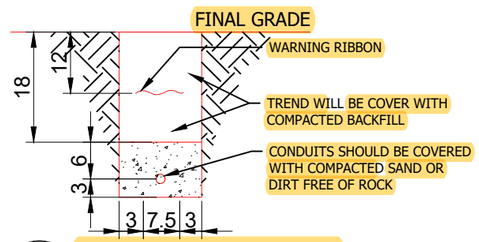


UL 1703 CERTIFIED
MAX. DESIGN LOAD: 55.0 psf
APPLIED WIND LOAD : -15.96 psf

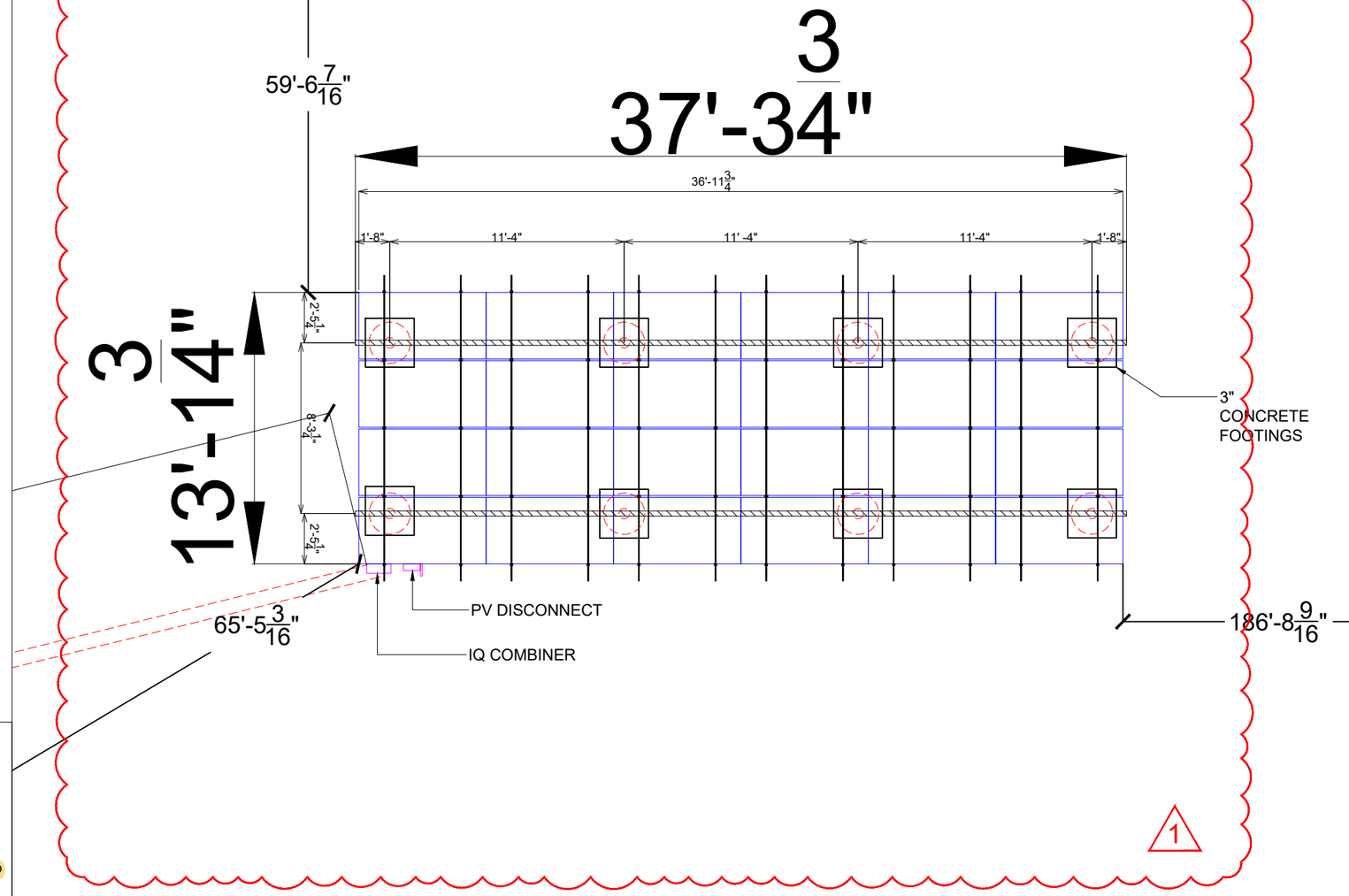
NOTES:
-INSTALL MID CLAMPS BETWEEN MODULES AND ENDS CLAMPS AT THE END OF EACH ROW OF MODULES.

-ALUMINUM RAILS SHOULD ALWAYS BE SUPPORTED BY MORE THAN ONE FOOTING ON BOTH SIDES OF THE SPLICE.

2 SOLAR MODULE
N.T.S.



A TRENCH DETAIL
N.T.S.



1 STRUCTURAL PLAN & PV MODULES LAYOUT
N.T.S.

DOCUMENT CONTROL	DATE	CAD	QC
ISSUED FOR PERMIT	08-31-2022	AV	DM

REV	DESCRIPTION	DATE	CAD	QC
1	ADDED CONCRETE FOOTER, REVISED ARRAY DETAILS	09-09-2022	NL	---

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TITAN SOLAR POWER

CUSTOMER: DAVID CALVERLY
PROJECT ADDRESS: 403 SW OAK WAY LAKE CITY FL 32025
PARCEL NUMBER: 32-4S-17-09116-124

SHEET NAME: STRUCTURAL PLAN
PROJECT ID: TSP140412
ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE
DATE: 08-30-22
SHEET TITLE: S-1

CrossRail 80

Material: aluminum
Finish: mill

CrossRail Mid Clamp UL2703+ Set

30-47 mm, 48-50 mm
Material: stainless steel
Finish: silver, dark

CrossRail End Clamp Set

30-50mm
Material: stainless steel
Finninsh: silver, dark

Hollaender No. 70 External Coupling

Material: aluminum

Aluminum Hollaender 5EXT Extended Barrel Tee OR Hollaender 5EX

Material: aluminum

Aluminum Hollaender 17 Adj. Elbow

Material: aluminum

Aluminum End Clamp Set

Material: stainless steel
Finish: silver, black
Hardware: stainless steel

Optional: End Cap for CR80

Material: glass fiber reinforced polamide

Optional: External Omega Cable Clip

Material: polyamide, black

Optional: HEY Clip SunRunner Cable Clip SS, S6404

Material: stainless steel

NON UL LISTED COMPONENTS

K2 Pipe L Bracket Kit

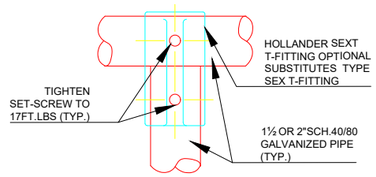
Material: stainless steel, galvanized steel

JF3 MiniRail Screw w/ EPDM 6x32

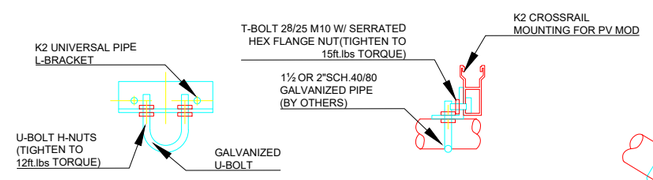
Material: stainless steel

1/2 in Serrated Flange Nut and T-Bolt 28/15 M10

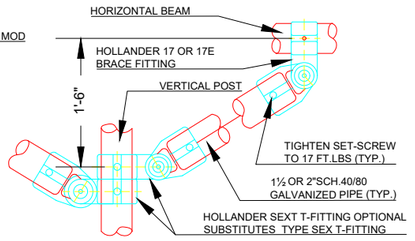
Material: stainless steel



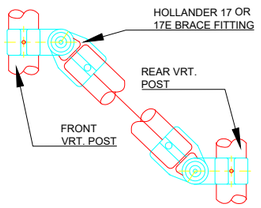
A GROUND MOUNT T-FITTING
SCALE: 3"=1'



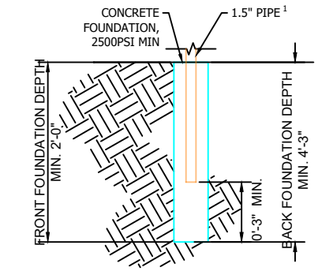
B K2 1.5" PIPE L-BRACKET
SCALE: 3"=1'



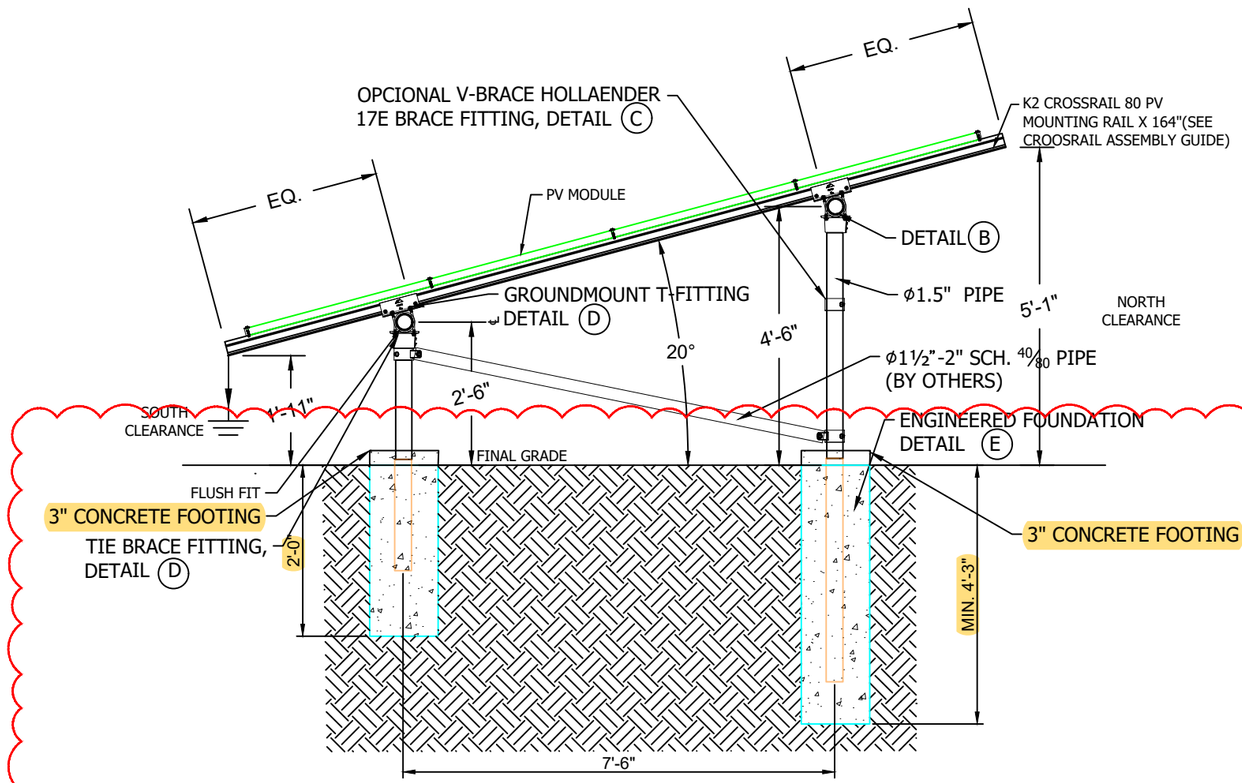
C OPTIONAL V-BRACE (TYP. EACH POST)
SCALE: 3"=1'



D TIE BRACE CONNECTIONS
SCALE: 3"=1'



E FOUNDATION DETAILS
SCALE: 1/2'"= 1'



1 PV SYSTEM SIDE SECTION
SCALE: 3/4"=1'

DOCUMENT CONTROL		DATE	CAD	QC
ISSUED FOR PERMIT		08-31-2022	AV	DM
REV	DESCRIPTION	DATE	CAD	QC
1	ADDED CONCRETE FOOTER, REVISED ARRAY DETAILS	09-09-2022	NL	---

ENGINEER CONTACT INFORMATION

ENGIPARTNERS LLC
C.A. 32661
1825 PONCE DE LEON BLVD #114
CORAL GABLES, FL 33134

DESIGN@ENGIPARTNERS.COM

833 - 888 - 3644

ENGINEERING STAMP

Rafael A Gonzalez Soto 2022.09.12 08:27:51 -04'00'

CONTRACTOR CONTACT INFORMATION

TITAN SOLAR POWER FL
901 ARMSTRONG BLVD,

KISSIMMEE, FL 34741

(813) 982 -9001

#EC13009924

CONTRACTOR LOGO

TITAN SOLAR POWER

CUSTOMER: DAVID CALVERLY

PROJECT ADDRESS: 403 SW OAK WAY LAKE CITY FL 32025

PARCEL NUMBER: 32-4S-17-09116-124

SHEET NAME: RACKING PLAN

PROJECT ID: TSP140412

ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE

DATE: 08-30-22

SHEET TITLE: S-2

powered by Q.ANTUM DUO Z

Q.PEAK DUO BLK ML-G10+

385-405

ENDURING HIGH PERFORMANCE

25 YR Warranty Product & Performance

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2021

Q CELLS Plant Security

BREAKING THE 20% EFFICIENCY BARRIER
Q ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.

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 behavior.

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING
High-tech aluminum 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 warranty[2].

[1] APT test conditions according to IEC/TS 62804-1:2015, method A (-1500 V, 96 h)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

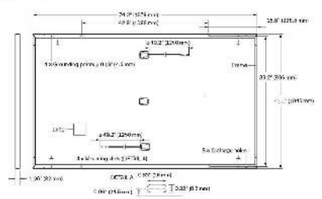
Rooftop arrays on residential buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
Weight	48.5 lbs (22.0 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09 - 3.98 in × 1.26 - 2.36 in × 0.59 - 0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥ 49.2 in (1250 mm), (-) ≥ 49.2 in (1250 mm)
Connector	Stäubli MC4; IP68

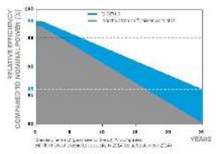


ELECTRICAL CHARACTERISTICS

POWER CLASS			385	390	395	400	405
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / -0 W)							
Minimum	Power at MPP[3]	P_{MPP} [W]	385	390	395	400	405
	Short Circuit Current[3]	I_{SC} [A]	11.04	11.07	11.10	11.14	11.17
	Open Circuit Voltage[3]	V_{OC} [V]	45.19	45.23	45.27	45.30	45.34
	Current at MPP	I_{MPP} [A]	10.59	10.65	10.71	10.77	10.83
	Voltage at MPP	V_{MPP} [V]	36.35	36.62	36.88	37.13	37.39
	Efficiency[3]	η [%]	≥19.8	≥19.9	≥20.1	≥20.4	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]							
Minimum	Power at MPP	P_{MPP} [W]	280.8	282.6	286.3	290.1	293.9
	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	42.76
	Current at MPP	I_{MPP} [A]	8.35	8.41	8.46	8.51	8.57
	Voltage at MPP	V_{MPP} [V]	34.04	34.61	34.03	34.08	34.40

[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

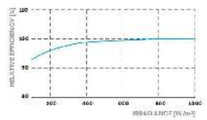
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 92.6% 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 organization of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25°C, 200 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	[°F]	109±5.4 (43±3°C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC)/1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull[3]	[lbs/ft²]	75 (3600 Pa)/ 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	-40°F up to +185°F (-40°C up to +85°C)
Max. Test Load, Push / Pull[3]	[lbs/ft²]	113 (5400 Pa)/ 84 (4000 Pa)		

[3] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

IEC 61730: CC-compliant; Quality Controlled PV - TÜV Rheinland; IEC 61215:2016, IEC 61730:2016; US Patent No. 9,893,215 (solar cells); SCYV Certification ongoing.

PACKAGING INFORMATION

Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	46.0 in 1222 mm	1650 lbs 751 kg	24 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.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us

Product Data Sheet	VDE
Crystalline Silicon Terrestrial Photovoltaic Modules	VDE Testing and Certification Institute

Picture of Product

VDE CERTIPOINT Quality Tested
✓ high reliability
✓ low degradation
✓ optimized durability
✓ continuous line monitoring
www.VDEinfo.com
ID: 40050642

Merianstr. 28
D-63069 Offenbach
Tel. +49 69 8306-0
Fax +49 69 8306-555
www.vde.com

Evaluation of safety and reliability

Low Voltage Directive	2014/35/EU	☑
Electrical Safety	IEC 61730-1:2016, EN IEC 61730-1:2018 + AC:2018, IEC 61730-2:2016, EN IEC 61730-2:2018 + AC:2018	☑
Reliability	IEC 61215-1:2016, EN 61215-1:2016 IEC 61215-1-1:2016, EN 61215-1-1:2016 IEC 61215-2:2016 EN 61215-2:2017+AC:2017+AC:2018	☑
Factory Surveillance	VDE PM 434E:2019-04	☑
Enhanced Reliability and Factory Surveillance	VDE Testing Specification VDE-QT-PV-001:2019-01	☑

Specifications

Manufacturer	Hanwha Q CELLS GmbH Sonnenallee 17-21, 06766 Bitterfeld-Wolfen, Germany
Trademark	Q CELLS
Factory Locations	#30018653, #30023330, #30023399, #30024181, #30025062
Model / Type (Construction I))	Q.PLUS DUO-GY XXX Q.PLUS DUO BLK-GY XXX Q.PLUS DUO BFR-GY.Y XXX Q.PEAK DUO BLK-GY XXX Q.PEAK DUO BLK-GY.Y XXX (XXX replaces the power at STC) Q.PLUS DUO BFR-GY XXX Q.PLUS DUO BLK-GY.Y XXX Q.PEAK DUO-GY XXX Q.PEAK DUO-GY.Y XXX

Accessories and technical features

Power at STC	270 – 335 W
Maximum System Voltage	1000 V
Class	II
Application Class	A
Fire Rating	C
Maximum Reverse Current	20 A
Mechanical Load	Qualified for heavy loads of snow and ice (Test load 5400 Pa)

Evaluation of quality characteristics

high reliability	▪ Testing with increased number of testing samples ▪ Testing with enhanced testing time and number of cycles	☑ ☑
low degradation	▪ Tightened pass/fail- criteria ▪ Maximum permitted degradation of the power of 5% over the enhanced test sequence	☑ ☑
optimized durability	▪ Additionally dynamic mechanical load test ▪ Robustness of terminations test with increased force	☑ ☑
continuous line monitoring	▪ Tightened and upgraded requirements within the 100% routine test ▪ Quarterly testing on samples collected from the running lines of each factory	☑ ☑

VDE	Tested and evaluated positively	Offenbach, 2019-12-16

08.7 P22_A3-2
2019-11-12

DOCUMENT CONTROL	DATE	CAD	QC
ISSUED FOR PERMIT	08-31-2022	AV	DM

REV	DESCRIPTION	DATE	CAD	QC

ENGINEER CONTACT INFORMATION
ENGIPARTNERS LLC
C.A. 32661
1825 PONCE DE LEON BLVD #114
CORAL GABLES, FL 33134
DESIGN@ENGIPARTNERS.COM
833 - 888 - 3644

ENGINEERING STAMP
STATE OF FLORIDA
Rafael A Gonzalez Soto
2022.09.12 08:28:01 -04'00'

CONTRACTOR CONTACT INFORMATION
TITAN SOLAR POWER FL
901 ARMSTRONG BLVD,
KISSIMMEE, FL 34741
(813) 982 -9001
#EC13009924

CONTRACTOR LOGO
TITAN SOLAR POWER

CUSTOMER: DAVID CALVERLY
PROJECT ADDRESS: 403 SW OAK WAY LAKE CITY FL 32025
PARCEL NUMBER: 32-4S-17-09116-124

SHEET NAME: PV MODULES DATA SHEET
PROJECT ID: TSP140412
ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE
DATE: 08-30-22
SHEET TITLE: D-1

Data Sheet
Enphase Networking

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C

X-IQ-AM1-240-4C

X-IQ-AM1-240-4

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed

LISTED

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE

Enphase IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE

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ENGINEER CONTACT INFORMATION
ENGIPARTNERS LLC
C.A. 32661
1825 PONCE DE LEON BLVD #114
CORAL GABLES, FL 33134
DESIGN@ENGIPARTNERS.COM
833 - 888 - 3644

ENGINEERING STAMP
Rafael A Gonzalez Soto
2022.09.12 08:28:14 -04'00'

CONTRACTOR CONTACT INFORMATION
TITAN SOLAR POWER FL
901 ARMSTRONG BLVD,
KISSIMMEE, FL 34741
(813) 982 -9001
#EC13009924

CONTRACTOR LOGO
TITAN SOLAR POWER

CUSTOMER: DAVID CALVERLY
PROJECT ADDRESS: 403 SW OAK WAY LAKE CITY FL 32025
PARCEL NUMBER: 32-4S-17-09116-124

SHEET NAME: SMART MONITORING DATA SHEET
PROJECT ID: TSP140412
ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE
DATE: 08-30-22
SHEET TITLE: D-2

ENPHASE

DATA SHEET

IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.

Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.

Enphase 25 year limited warranty

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.

Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.

UL CERTIFIED SAFETY

IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings[1]	W	235 – 350	235 – 440
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell and 72-cell/144 half-cell
MPPT voltage range	V	27 – 37	29 – 45
Operating range	V	25 – 48	25 – 58
Min/max start voltage	V	30 / 48	30 / 58
Max input DC voltage	V	50	60
Max DC current[2] [module Isc]	A	15	
Overvoltage class DC port		II	
DC port backfeed current	mA	0	
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		**IQ8-60-2-US**	**IQ8PLUS-72-2-US**
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range[3]	V	240 / 211 – 264	
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	50 – 68	
Max units per 20 A (L-L) branch circuit[4]		16	13
Total harmonic distortion		<5%	
Overvoltage class AC port		III	
AC port backfeed current	mA	30	
Power factor setting		1.0	
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging	
Peak efficiency	%	97.5	97.6
CEC weighted efficiency	%	97	97
Night-time power consumption	mW	60	
MECHANICAL DATA			
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)	
Relative humidity range		4% to 100% (condensing)	
DC Connector type		MC4	
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight		1.08 kg (2.38 lbs)	
Cooling		Natural convection – no fans	
Approved for wet locations		Yes	
Acoustic noise at 1 m		<60 dBA	
Pollution degree		PD3	
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating		NEMA Type 6 / outdoor	
COMPLIANCE			
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.	

(1) No enforced DC/AC ratio. See the compatibility calculator at https://link.enphase.com/module-compatibility (2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

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1825 PONCE DE LEON BLVD #114
CORAL GABLES, FL 33134

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TITAN SOLAR POWER FL
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TITAN SOLAR POWER

CUSTOMER: DAVID CALVERLY

PROJECT ADDRESS: 403 SW OAK WAY LAKE CITY FL 32025

PARCEL NUMBER: 32-4S-17-09116-124

SHEET NAME: INVERTER DATA SHEET

PROJECT ID: TSP140412

ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE

DATE: 08-30-22

SHEET TITLE: D-3

Data Sheet
Enphase Energy System

Enphase IQ System Controller 2

The **Enphase IQ System Controller 2** connects the home to grid power, the IQ Battery system, and solar PV. It provides microgrid interconnection device (MID) functionality by automatically detecting and seamlessly transitioning the home energy system from grid power to backup power in the event of a grid failure. It consolidates interconnection equipment into a single enclosure and streamlines grid independent capabilities of PV and storage installations by providing a consistent, pre-wired solution for residential applications.

Reliable

- Durable NEMA type 3R enclosure
- Ten-year limited warranty

Smart

- Controls safe connectivity to the grid
- Automatically detects grid outages
- Provides seamless transition to backup

Simple

- Connects to the load or service equipment[1] side of the main load panel
- Centered mounting brackets support single stud mounting
- Supports conduit entry from the bottom, bottom left side, and bottom right side
- Supports whole home and partial home backup and subpanel backup
- Up to 200A main breaker support
- Includes neutral-forming transformer for split phase 120/240V backup operation
- IQ System Controller supports backward compatibility with older generation of PV microinverters (M215, M250 and S series), making it simple for home owners to upgrade their systems
- Easy integration with generator from major manufacturers

1. IQ System Controller 2 is not suitable for use as service equipment in Canada.

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Enphase IQ System Controller 2

MODEL NUMBER		
EP200G101-M240US01	Enphase IQ System Controller 2 with neutral-forming transformer (NFT), Microgrid Interconnect Device (MID), breakers, and screws. Streamlines grid-independent capabilities of PV and battery installations.	
ACCESSORIES and REPLACEMENT PARTS		
EP200G-NA-XA-E3	Replacement IQ System Controller 2 printed circuit board	
EP200G-NA-HD-200A	Eaton type BR circuit breaker hold-down screw kit, BRHDK125	
CT-200-SPLIT	200 A split core current transformers for Generator metering (+/- 2.5%)	
Circuit breakers (as needed)[2,5] • BRK-100A-2P-240V : Main breaker, 2 pole, 100A, 25kAIC, CSR2100 • BRK-125A-2P-240V: Main breaker, 2 pole, 125A, 25kAIC, CSR2125N • BRK-150A-2P-240V: Main breaker, 2 pole, 150A, 25kAIC, CSR2150N • BRK-175A-2P-240V: Main breaker, 2 pole, 175A, 25kAIC, CSR2175N • BRK-200A-2P-240V: Main breaker, 2 pole, 200A, 25kAIC, CSR2200N	Not included, must order separately: • BRK-20A-2P-240V-B: Circuit breaker, 2 pole, 20A, 10kAIC, BR220B • BRK-30A-2P-240V: Circuit breaker, 2 pole, 30A, 10kAIC, BR230B • BRK-40A-2P-240V: Circuit breaker, 2 pole, 40A, 10kAIC, BR240B • BRK-60A-2P-240V: Circuit breaker, 2 pole, 60A, 10kAIC, BR260 • BRK-80A-2P-240V: Circuit breaker, 2 pole, 80A, 10kAIC, BR280	
EP200G-HNDL-R1	IQ System Controller 2 installation handle kit (order separately)	
EP200G-LITKIT	IQ System Controller 2 literature kit, including labels, feed-through headers, screws, filler plates, and QIG	
BRK-20A40A-2P-240V	2 pole, 20A/40A, 10kAIC, BQC220240	
ELECTRICAL SPECIFICATIONS		
Assembly rating	Continuous operation at 100% of its rating	
Nominal voltage / range (L-L)	240 VAC / 100 - 310 VAC	
Voltage measurement accuracy	±1% V nominal (±1.2V L-N and ±2.4V L-L)	
Auxiliary contact for load control, excess PV control, and generator two-wire control	24V, 1A	
Nominal frequency / range	60 Hz / 56 - 63 Hz	
Frequency measurement accuracy	±0.1 Hz	
Maximum continuous current rating	160A	
Maximum input overcurrent protection device	200A	
Maximum output overcurrent protection device	200A	
Maximum overcurrent protection device rating for Generator circuit[4]	80A	
Maximum overcurrent protection device rating for storage branch circuit[4] (the storage branch circuit can be replaced with PV)	80A	
Maximum overcurrent protection device rating for IQ8 PV combiner branch circuit[4]	80A	
Neutral Forming Transformer (NFT)	• Breaker rating (pre-installed): 40A between L1 and Neutral; 40A between L2 and Neutral • Continuous rated power: 3600VA • Maximum continuous unbalance current: 30A @ 120V • Peak rated power: 8800VA for 30 seconds • Peak unbalanced current: 80A @ 120V for 30 seconds	
MECHANICAL DATA		
Dimensions (WxHxD)	50cm x 91.6cm x 24.6cm (19.7 in x 36 in x 9.7 in)	
Weight	39.4 kg (87 lbs)	
Ambient temperature range	-40° C to +50° C (-40° F to 122° F)	
Cooling	Natural convection, plus heat shield	
Enclosure environmental rating	Outdoor, NEMA type 3R, polycarbonate construction	
Altitude	To 2500 meters (8200 feet)	
WIRE SIZES		
Connections (All lugs are rated to 90C)	• Main lugs and backup load lugs • CSR breaker bottom wiring lugs • BR breakers (wire provided) • AC combiner lugs, Encharge lugs, and generator lugs • Neutral (large lugs)	Cu/Al: 1 AWG – 300 KCMIL Cu/Al: 2 AWG – 300 KCMIL 6 AWG 14 AWG – 2 AWG Cu/Al: 6 AWG - 300 KCMIL
Neutral and ground bars	Large holes (5/16-24 UNF) Small holes (10-32 UNF)	14 AWG – 1/0 AWG 14 AWG – 6 AWG
COMPLIANCE		
Compliance	UL 1741, UL 1741 SA, UL 1741 PCS, UL1998, UL869A[5], UL67[5], UL508[5], UL50E[5] CSA 22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003, AC156. IQ System Controller 2 is approved for Use as Service Equipment in the United States[5] IFETEL homologation number: RCPENEP22-2078	

2. Compatible with BRHDK125 Hold-Down Kit to comply with 2017 NEC 710.15E for back-fed circuit breakers.
3. The IQ System Controller 2 is rated 22 kAIC
4. Not included. Installer must provide properly rated breaker per circuit breaker list above.
5. Sections from these standards were used during the safety evaluation and included in the UL 1741 listing.

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DOCUMENT CONTROL	DATE	CAD	QC
ISSUED FOR PERMIT	08-31-2022	AV	DM

REV	DESCRIPTION	DATE	CAD	QC

ENGINEER CONTACT INFORMATION
ENGIPARTNERS LLC
C.A. 32661
1825 PONCE DE LEON BLVD #114
CORAL GABLES, FL 33134
DESIGN@ENGIPARTNERS.COM
833 - 888 - 3644

ENGINEERING STAMP
Rafael A Gonzalez Soto
2022.09.12 08:28:36 -04'00'

CONTRACTOR CONTACT INFORMATION
TITAN SOLAR POWER FL
901 ARMSTRONG BLVD,
KISSIMMEE, FL 34741
(813) 982 -9001
#EC13009924

CONTRACTOR LOGO
TITAN SOLAR POWER

CUSTOMER: DAVID CALVERLY
PROJECT ADDRESS: 403 SW OAK WAY LAKE CITY FL 32025
PARCEL NUMBER: 32-4S-17-09116-124

SHEET NAME: SYSTEM CONTROLLER DATA SHEET
PROJECT ID: TSP140412
ENGINEER OF RECORD: ENG. RAFAEL A. GONZALEZ SOTO, PE
DATE: 08-30-22
SHEET TITLE: D-4