WYSSLING CONSULTING
CORPORATE EXPERIENCE WITH SMALL BUSINESS VALUE

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December 18, 2023

Current Insight
2852 W. Amini Way
South Jordan, UT 84095

Re: Engineering Services
Woods Residence
410 Colony Point Drive, Punta Gorda FL
12.000 kW System

To Whom It May Concern:

We have received information regarding solar panel installation on the roof of the above referenced structure. Our evaluation of the structure is to verify the existing capacity of the roof system and its ability to support the additional loads imposed by the proposed solar system.

A. Site Assessment Information

1. Site visit documentation identifying attic information including size and spacing of framing for the existing roof structure.
2. Design drawings of the proposed system including a site plan, roof plan and connection details for the solar panels. This information will be utilized for approval and construction of the proposed system.

B. Description of Structure:

Roof Framing:	Assumed prefabricated wood trusses at 24" on center. All truss members are constructed of 2x4 dimensional lumber.
Roof Material:	Metal Roofing
Roof Slope:	27 degrees
Attic Access:	Inaccessible
Foundation:	Permanent

C. Loading Criteria Used

- **Dead Load**
  - Existing Roofing and framing = 7 psf
  - New Solar Panels and Racking = 3 psf
  - TOTAL = 10 PSF
- **ive Load** = 20 psf (reducible) – 0 psf at locations of solar panels
- **Ground Snow Load** = 0 psf
- **Wind Load** based on ASCE 7-16
  - Ultimate Wind Speed = 160 mph (based on Risk Category II)
  - Exposure Category C

Analysis performed of the existing roof structure utilizing the above loading criteria is in accordance with the 2020 FBC 7th Edition, including provisions allowing existing structures to not require strengthening if the new loads do not exceed existing design loads by 105% for gravity elements and 110% for seismic elements. This analysis indicates that the existing framing will support the additional panel loading without damage, if installed correctly.

D. Solar Panel Anchorage

1. The solar panels shall be mounted in accordance with the most recent S-5! Installation manual. If during solar panel installation, the roof framing members appear unstable or deflect non-uniformly, our office should be notified before proceeding with the installation.
2. System will be attached to the metal roofing material utilizing the patented S-5! Connection. Installation of the connections shall be in accordance with the manufacturer's recommendations.
3. Considering the wind speed, roof slopes, size and spacing of framing members, and condition of the roof, the panel supports shall be placed no greater than 36" on center.

Based on the above evaluation, this office certifies that with the racking and mounting specified, the existing roof system will adequately support the additional loading imposed by the solar system. This evaluation is in conformance with the 2020 FBC 7th Edition, current industry standards, and is based on information supplied to us at the time of this report.

Should you have any questions regarding the above or if you require further information do not hesitate to contact me.

Very truly yours,

Scott E. Wyssling, PE
Florida License No. 81558
Florida COA # RY34912

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Wyssling Consulting, PLLC
76 N Meadowbrook Drive Alpine UT 84004
Florida License # RY34912
Signed 12/18/2023

WOODS RESIDENCE

PHOTOVOLTAIC SYSTEM
410 COLONY POINT DRIVE,
PUNTA GORDA, FL 33950

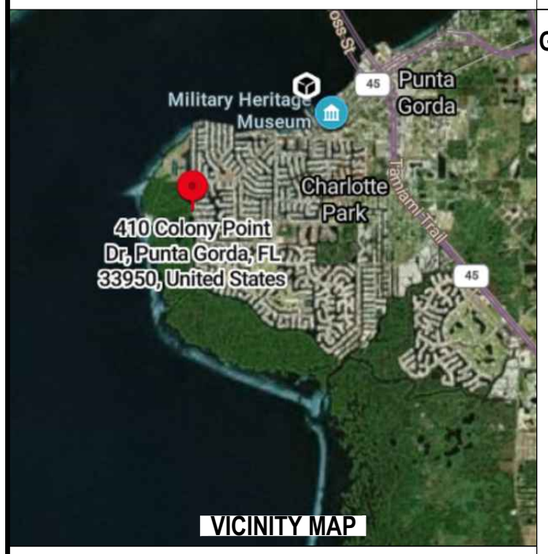
SYSTEM SIZE: 11.20 KW-DC | 12.00 KW-AC
MODULE: (28) HANWHA Q CELL Q.PEAK DUO BLACK ML-G10+400 [400W]
INVERTER: (1) EG4 18KPV-12 LV HYBRID INVERTER/CHARGER
BATTERY: (2) EG4 POWERPRO - 14.3KWH (28.6KWH)

GOVERNING CODES

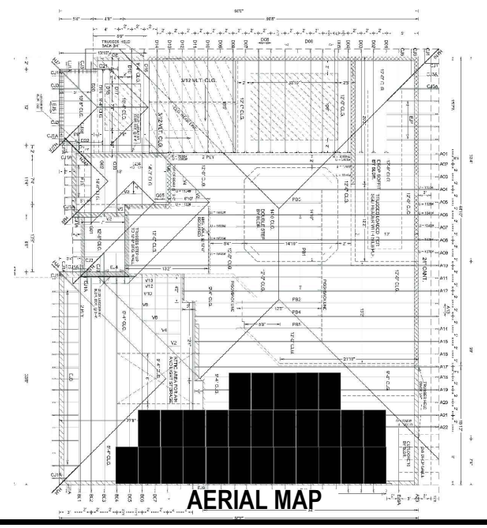
ALL MATERIALS, EQUIPMENT, INSTALLATION AND WORK SHALL COMPLY WITH THE FOLLOWING APPLICABLE CODES:

- 2017 NATIONAL ELECTRIC CODE
- 2020 FLORIDA BUILDING CODE
- 2020 FLORIDA RESIDENTIAL CODE
- 2020 FLORIDA PLUMBING CODE
- 2020 FLORIDA FIRE CODE
- 2020 FLORIDA MECHANICAL CODE

- IEEE STANDARD 929
- OSHA 29 CFR 1910.269
- WHERE APPLICABLE, RULES OF THE PUBLIC UTILITIES COMMISSION REGARDING SAFETY AND RELIABILITY
- THE AUTHORITY HAVING JURISDICTION
- MANUFACTURERS' LISTINGS AND INSTALLATION INSTRUCTIONS
- ANY OTHER LOCAL AMENDMENTS



VICINITY MAP


AERIAL MAP

GENERAL

1. ONCOR SHALL BE NOTIFIED BEFORE ACTIVATION OF PHOTOVOLTAIC SYSTEM.
2. 110.2 APPROVAL: ALL ELECTRICAL EQUIPMENT SHALL BE LABELED, LISTED, OR CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY ACCREDITED BY THE UNITED STATES OCCUPATIONAL SAFETY HEALTH ADMINISTRATION
3. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO INITIATING CONSTRUCTION.
4. CONTRACTOR SHALL REVIEW ALL MANUFACTURER INSTALLATION DOCUMENTS PRIOR TO INITIATING CONSTRUCTION.
5. ALL EQUIPMENT AND ASSOCIATED CONNECTIONS, ETC, AND ALL ASSOCIATED WIRING AND INTERCONNECTIONS SHALL BE INSTALLED ONLY BY QUALIFIED PERSONNEL.
6. THE CONTRACTOR OR OWNER MUST PROVIDE ROOF ACCESS (LADDER TO ROOF) FOR ALL THE REQUIRED INSPECTIONS. LADDERS MUST BE OSHA APPROVED, MINIMUM TYPE I WITH A 250LB. RATING, IN GOOD CONDITION AND DESIGNED FOR ITS INTENDED USE.
7. CONTRACTOR SHALL VERIFY THAT THE ROOF STRUCTURE WILL WITHSTAND THE ADDITIONAL LOADS.
8. LAG SCREWS SHALL PENETRATE A MINIMUM 2" INTO SOLID SAWN STRUCTURAL MEMBERS AND SHALL NOT EXCEED MANUFACTURER RECOMMENDATIONS FOR FASTENERS INTO ENGINEERED STRUCTURAL MEMBERS.
9. AN ACCESS POINT SHALL BE PROVIDED THAT DOES NOT PLACE THE GROUND LADDER OVER OPENINGS SUCH AS WINDOWS OR DOORS ARE LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION AND IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES, OR SIGNS.
10. WHERE DC CONDUCTORS ARE RUN INSIDE BUILDING, THEY SHALL BE CONTAINED IN A METAL RACEWAY; THEY SHALL NOT BE INSTALLED WITHIN 10" OF THE ROOF DECKING OR SHEATHING EXCEPT WHERE COVERED BY THE PV MODULES AND EQUIPMENT.
11. ALL FIELD -INSTALLED JUNCTION, PULL AND OUTLET BOXES LOCATED BEHIND MODULES SHALL BE ACCESSIBLE DIRECTLY OR BY DISPLACEMENT OF A MODULE SECURED BY REMOVABLE FASTENERS.

ELECTRICAL

1. WIRING MATERIALS SHALL COMPLY WITH MAXIMUM CONTINUOUS CURRENT OUTPUT AT 25°C AND MAXIMUM VOLTAGE AT 600V; WIRE SHALL BE WET RATED AT 90°C.
2. EXPOSED PHOTOVOLTAIC SYSTEM CONDUCTORS ON THE ROOF WILL BE USE 2 OR PV-TYPE WIRE.
3. PHOTOVOLTAIC SYSTEM CONDUCTORS SHALL BE IDENTIFIED AND GROUPED. THE MEANS OF IDENTIFICATION SHALL BE PERMITTED BY SEPARATE COLOR-CODING, MARKING TAPE, TAGGING OR OTHER APPROVED MEANS.
4. ALL EXTERIOR CONDUIT, FITTINGS, AND BOXES SHALL BE RAIN-TIGHT AND APPROVED FOR USE IN WET LOCATIONS.
5. ALL METALLIC RACEWAYS AND EQUIPMENT SHALL BE BONDED AND ELECTRICALLY CONTINUOUS.
6. WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, CONTRACTOR SHALL SIZE THEM ACCORDING TO APPLICABLE CODES.
7. REMOVAL OF A ONCOR-INTERACTIVE INVERTER OR OTHER EQUIPMENT SHALL NOT DISCONNECT THE BUILDING CONNECTION BETWEEN THE GROUNDING ELECTRODE CONDUCTOR AND THE PV SOURCE AND/OR OUTPUT CIRCUIT GROUNDED CONDUCTOR.
8. FOR GROUNDED SYSTEMS, THE PHOTOVOLTAIC SOURCE AND OUTPUT CIRCUITS SHALL BE PROVIDED WITH A GROUND-FAULT PROTECTION DEVICE OR SYSTEM THAT DETECTS A GROUND FAULT, INDICATES THAT FAULT HAS OCCURED AND AUTOMATICALLY DISCONNECTS ALL CONDUCTORS OR CAUSES THE INVERTER TO AUTOMATICALLY CEASE SUPPLYING POWER TO OUTPUT CIRCUITS.
9. FOR UNGROUNDED SYSTEMS, THE INVERTER IS EQUIPPED WITH GROUND FAULT PROTECTION AND A GFI FUSE PORT FOR GROUND FAULT INDICATION.
10. PV MODULE FRAMES SHALL BE BONDED TO RACKING RAIL OR BARE COPPER GEC/GEC PER THE MODULE MANUFACTURER'S LISTED INSTRUCTION SHEET.
11. PV MODULE RACKING RAIL SHALL BE BONDED TO BARE COPPER GEC VIA WEEB LUG, ILSCO GBL-4DBT LAY-IN LUG, OR EQUIVALENT LISTED LUG.
12. THE PHOTOVOLTAIC INVERTER WILL BE LISTED AS UL 1741 COMPLIANT.
13. RACKING AND BONDING SYSTEM TO BE UL2703 RATED.
14. ANY REQUIRED GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AS BUS BARS WITHIN LISTED EQUIPMENT.
15. WHEN BACKFED BREAKER IS THE METHOD OF ONCOR INTERCONNECTION, THE BREAKERS SHALL NOT READ "LINE AND LOAD".
16. WHEN APPLYING THE 120% RULE, THE SOLAR BREAKER TO BE POSITIONED AT THE OPPOSITE END OF THE BUS BAR FROM THE MAIN BREAKER.
17. THE WORKING CLEARANCE AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED

SCOTT E WYSSLING
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PROFESSIONAL ENGINEER

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SHEET INDEX:

WOODS,
410 COLONY POINT DRIVE,
PUNTA GORDA, FL 33950

AHJ: PUNTA GORDA CITY

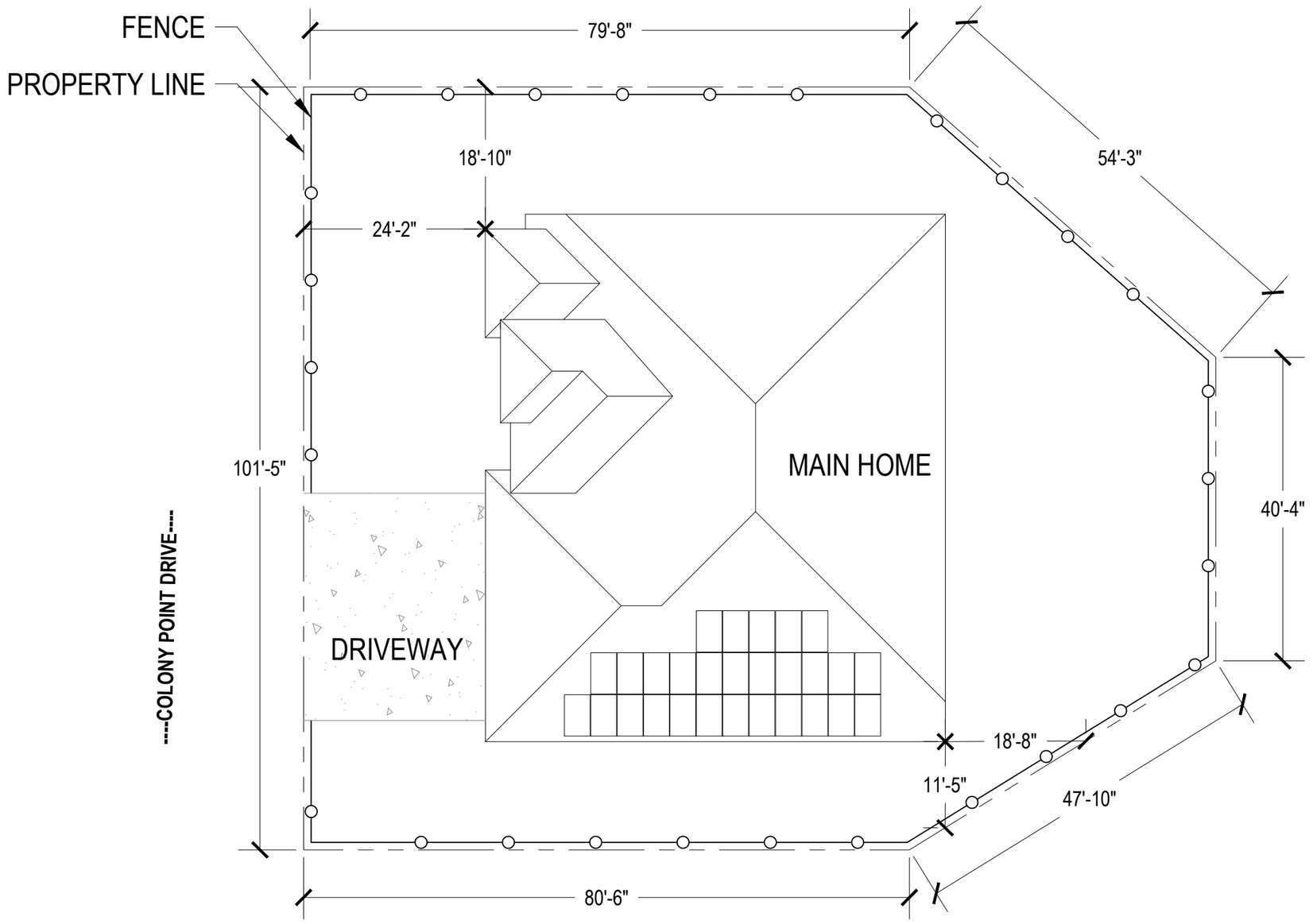
POSITIVE ENERGY SOLAR LLC.
12713 MCGREGOR BLVD SUITE 2, FORT MYERS, FLORIDA 33919
TEL. NO.:- 2392001081, LIC NO EC13011008/CVC57233

COVER PAGE

DATE: 12/9/2023
DRAWN BY: AN

REV #1:
REV #2:
REV #3:

PV-1



N

LEGEND:

PROPERTY LINE: ——— – – ———

DRIVEWAY: – – – – – – – – – – –

FENCE: —○———○———○———

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SCALE: 1/16" = 1'-0"

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410 COLONY POINT DRIVE,
PUNTA GORDA, FL 33950

AHJ: PUNTA GORDA CITY

POSITIVE ENERGY SOLAR LLC.
12713 MCGREGOR BLVD SUITE 2, FORT MYERS, FLORIDA 33919
TEL. NO.:- 2392001081, LIC NO EC13011008/CVC57233

PROPERTY PLAN

DATE: 12/9/2023
DRAWN BY: AN

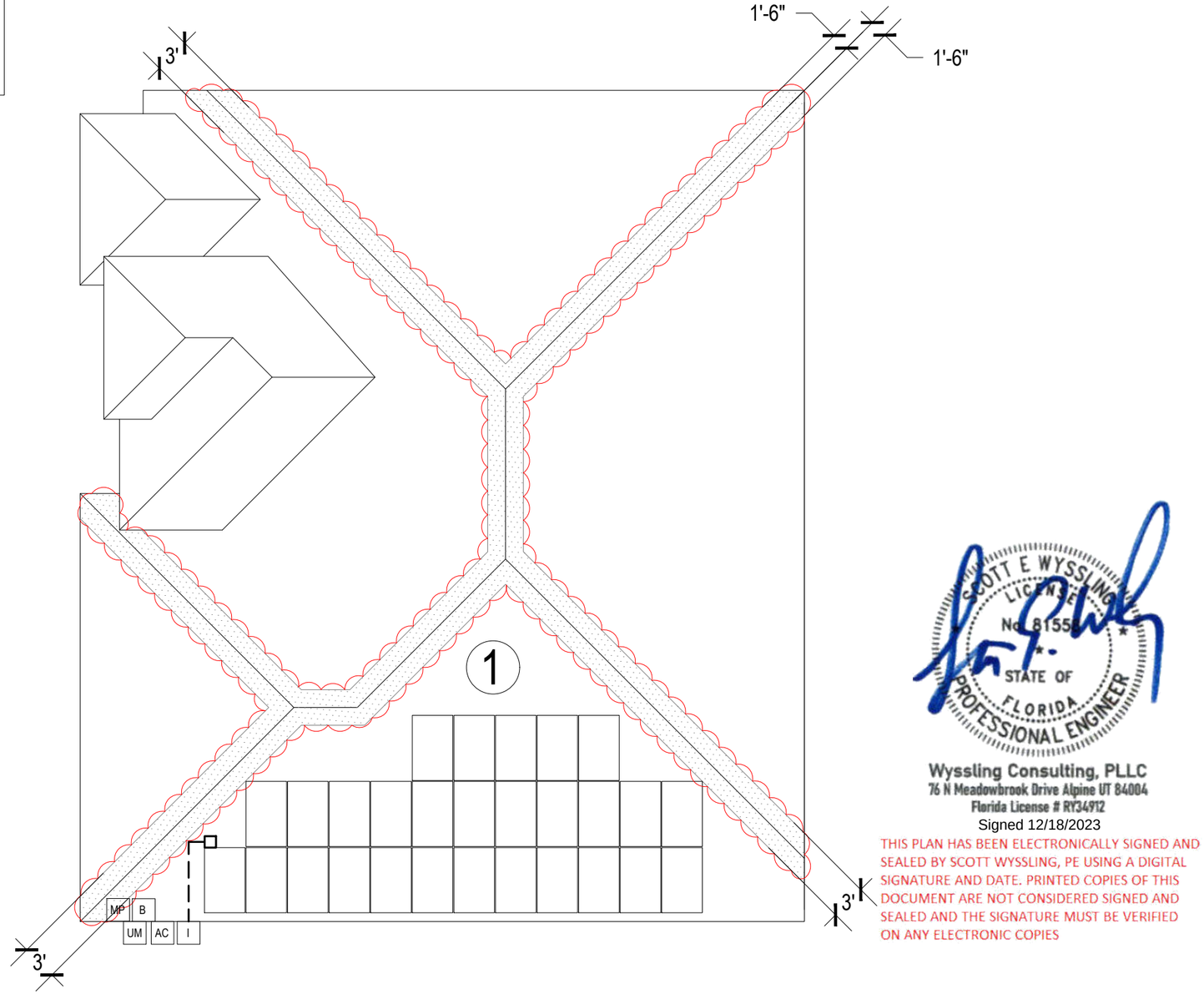
PV-2

ROOF DETAIL

ROOF TYPE: STANDING SEAM METAL

ROOF SECTION 1: 28 MODULES
AZIMUTH: 180°
PITCH: 27°

1



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SYSTEM LEGEND

PHOTOVOLTAIC SYSTEM:
DC SYSTEM SIZE: 11.20 kW
AC SYSTEM SIZE: 12.00 kW

UM	MAIN SERVICE METER AND SERVICE POINT
MP	MAIN SERVICE PANEL
AC	FUSED AC DISCONNECT
I	(1) EG4 18KPV-12 LV HYBRID INVERTER/CHARGER INVERTER INTEGRATED DC DISCONNECT
	(28) HANWHA Q CELL Q.PEAK DUO Black ML-G10+400 [400W]
B	EG4 BATTERY CABINET WITH (2) EG4 POWERPRO - 14.3KWH / 28.6KWH TOTAL

CONDUIT RUN

CONDUIT TO BE RUN IN ATTIC IF POSSIBLE, OTHERWISE CONDUIT BLOCKS MIN. 1"/MAX 6" ABOVE ROOF SURFACE, CLOSE TO RIDGE LINES, AND UNDER EAVES; TO BE PAINTED TO MATCH EXTERIOR/EXISTING BACKGROUND COLOR OF ITS LOCATION; TO BE LABELED AT MAX 10' INTERVALS. CONDUIT RUNS ARE APPROXIMATE AND ARE TO BE DETERMINED IN THE BY THE INSTALLERS

FIRE CODE SETBACK (18"MIN./ 36" MAX.)

SCOTT E WYSSLING LICENSE No. 81551 STATE OF FLORIDA PROFESSIONAL ENGINEER

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SCALE: 3/32" = 1'-0"

WOODS,
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12713 MCGREGOR BLVD SUITE 2, FORT MYERS, FLORIDA 33919
TEL. NO.:- 2392001081, LIC NO EC13011008/CVC57233

SITE PLAN

DATE: 12/9/2023
DRAWN BY: AN

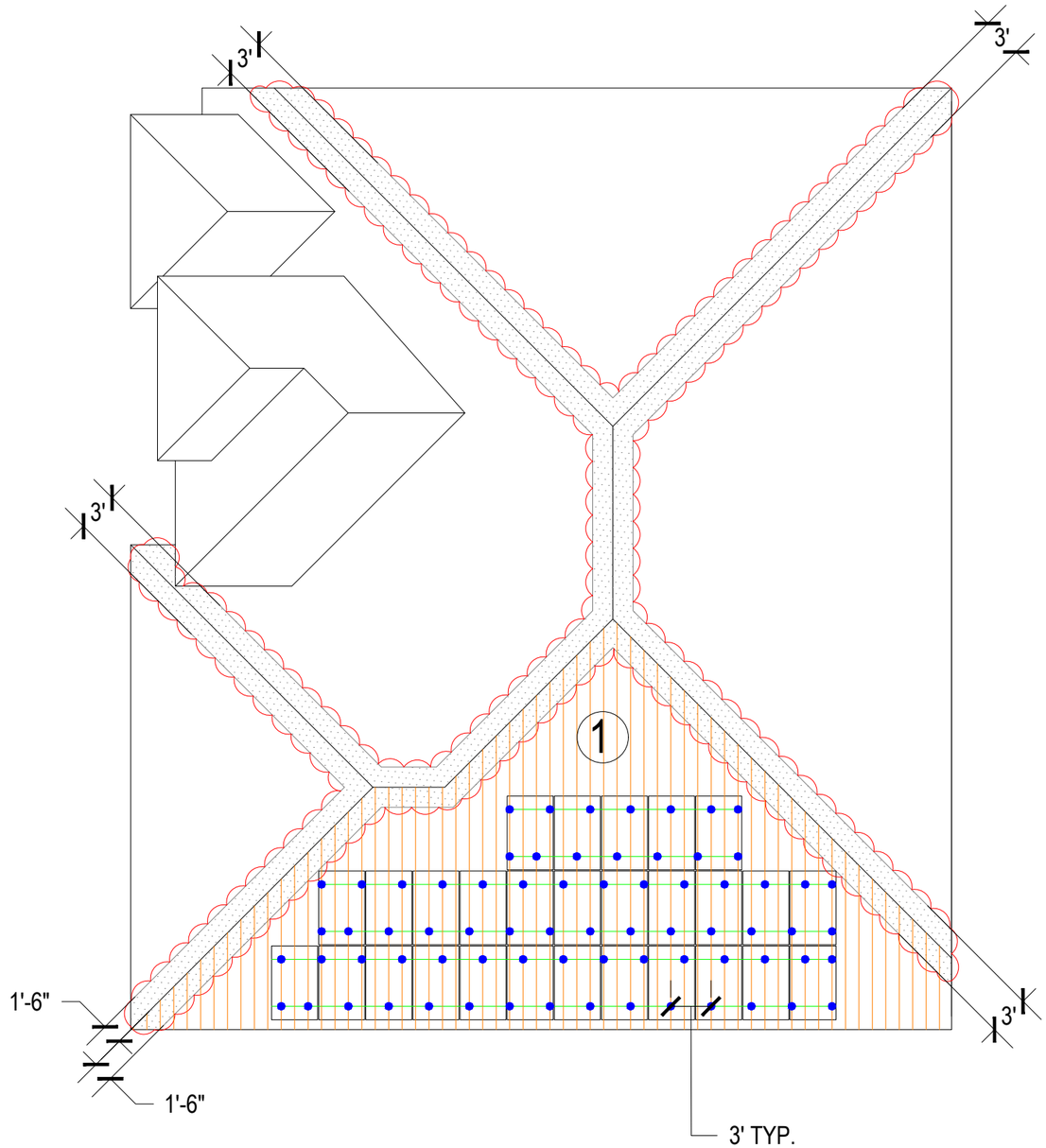
PV-3

ROOF DETAIL

ROOF TYPE: STANDING SEAM METAL

ROOF SECTION 1: 28 MODULES
AZIMUTH: 180°
PITCH: 27°

1

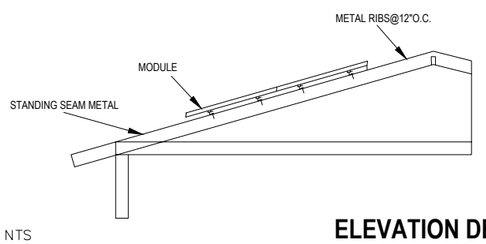


N

SYSTEM LEGEND

- ROOF ATTACHMENT POINT
- METAL RIBS
- RACKING
- FIRE CODE SETBACK (18" MIN./ 36" MAX.)

MODULE MECHANICAL SPECIFICATIONS(HOME)	
DESIGN WIND SPEED	160 MPH
DESIGN SNOW LOAD	0 PSF
# OF STORIES	1
ROOF PITCH	27°
TOTAL ARRAY AREA (SQ. FT)	591.36
TOTAL ROOF AREA (SQ. FT)	4228
ARRAY SQ. FT / TOTAL ROOF SQ. FT	13.99%



NTS

ELEVATION DETAIL

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TEL. NO.:- 2392001081, LIC NO EC13011008/CVC57233

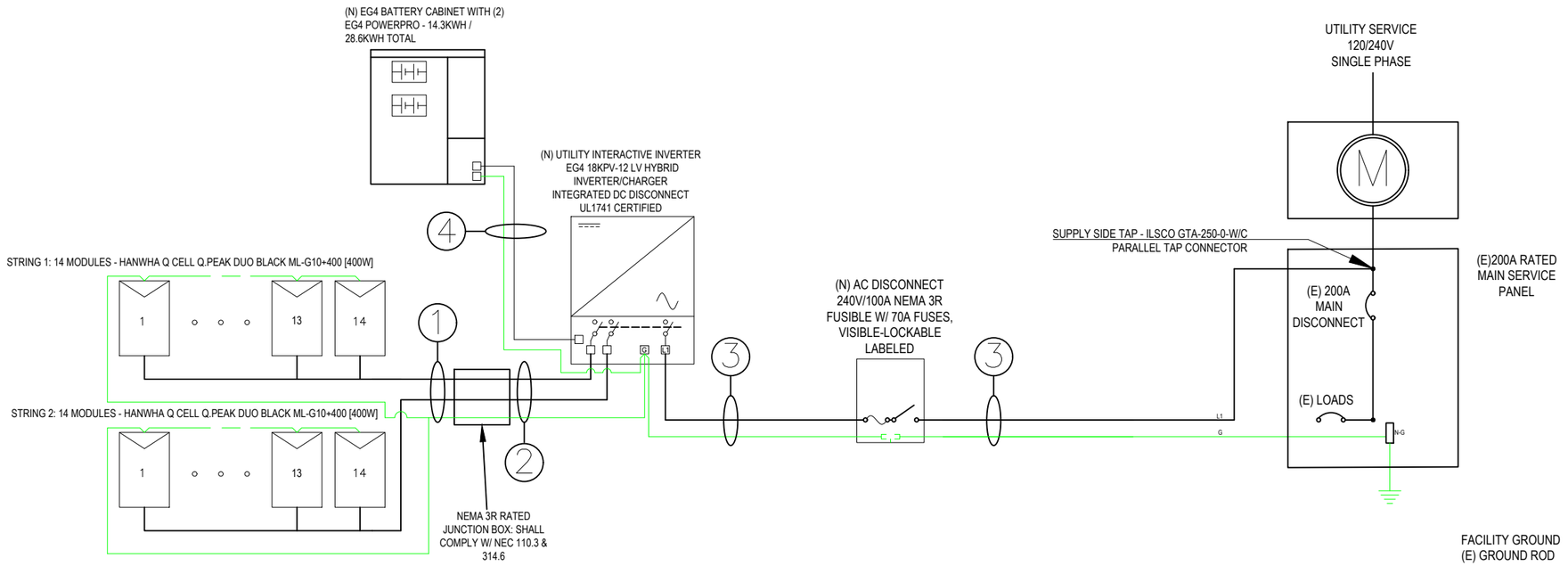
ROOF PLAN

DATE: 12/9/2023
DRAWN BY: AN

PV-3.1

NOTE: ALL DC CONNECTOR TO MODULES OR INVERTERS MUST BE OF MATCHING MANUFACTURING BRAND AND STYLE. DO NOT USE 'COMPATIBLE' CONNECTORS WHICH HAVE NOT BEEN UL TESTED FOR COMPATIBILITY. PERFORMANCE AND FIRE DAMAGE MAY RESULT FROM MISMATCHED CONNECTOR USAGE.

CONDUCTOR AND CONDUIT SCHEDULE					
TAG	WIRE TYPE	WIRE SIZE	# OF CONDUCTORS	CONDUIT TYPE	MIN. CONDUIT SIZE
1	PV WIRE	#10	4 - L1 L2	FREE AIR	N/A
1	BARE COPPER	#6	1 - BARE	FREE AIR	N/A
2	THWN-2	#8	2 - L1 L2	LFMC	3/4"
2	THWN-2 EGC	#6	1 - GND	LFMC	3/4"
3	THWN-2	#6	3 - L1 L2 N	EMT	3/4"
3	THWN-2 EGC	#6	1 - GND	EMT	3/4"
4	THWN-2	(2)#2 /0	2 - L1 L2	EMT	2"
4	THWN-2 EGC	#4	1 - GND	EMT	2"



PV MODULE ELECTRICAL SPECIFICATIONS	
MODULE TYPE	HANWHA Q CELL Q.PEAK DUO BLACK ML-G10+400 [400W]
POWER MAX (P_{MAX})	400W
OPEN CIRCUIT VOLTAGE (V_{OC})	45.30V
SHORT CIRCUIT CURRENT (I_{SC})	11.14A
MAX POWER-POINT VOLTAGE (V_{MP})	37.13V
MAX POWER-POINT CURRENT (I_{MP})	10.77A
SERIES FUSE RATING	20A

INVERTER ELECTRICAL SPECIFICATIONS	
INVERTER TYPE	EG4 18KPV-12 LV HYBRID INVERTER/CHARGER
NOMINAL INPUT AN VOLTAGE	240V
MAX CONTINUOUS AC CURRENT	50A
STARTING VOLTAGE	180V
MAXIMUM OUTPUT POWER	12000W
NOMINAL AC OUTPUT VOLTAGE	240V
MAXIMUM CONT. OUTPUT CURRENT	50A
CEC EFFICIENCY	97.5%

OVER-CURRENT PROTECTION DEVICE (OCPD) CALCULATIONS	
GENERATION EQUIPMENT TYPE	EG4 18KPV-12 LV HYBRID INVERTER/CHARGER
# OF GENERATION EQUIPMENT	1
MAX CONTINUOUS OUTPUT CURRENT	50A
(# OF INVERTERS) X (MAX CONT. OUTPUT CURRENT) X 125% <= OCPD RATING	
(1 x 50A x 1.25)= 62.50A <= 70A, OK	

PHOTOVOLTAIC SYSTEM:
DC SYSTEM SIZE: 11.20 kW
AC SYSTEM SIZE: 12.00 kW
INVERTER: (1) EG4 18KPV-12 LV HYBRID INVERTER/CHARGER
MODULE: (28) HANWHA Q CELL Q.PEAK DUO BLACK ML-G10+400 [400W]

NOTES:
1. MODULES ARE BONDED TO RAIL USING UL 2703 RATED BONDING SYSTEM - INTEGRATED BONDING MID-CLAMPS + DIRECT-BURIAL LAY-IN-LUGS; SEE ATTACHED FOR SPECIFICATIONS IF APPLICABLE
2. PV DC SYSTEM IS UNGROUNDED
3. PV ARRAY WILL HAVE A GROUNDING ELECTRODE SYSTEM IN COMPLIANCE WITH NEC 250.58 AND 690.47(A)
4. BACKFED PV BREAKER WILL BE INSTALLED AT OPPOSITE END OF THE BUS BAR FROM THE MAIN BREAKER. A PERMANENT WARNING LABEL TO BE INSTALLED PER SYSTEM SIGNAGE, PAGE
5. BARE COPPER IS TRANSITIONED TO THWN-2 VIA IRREVERSIBLE CRIMP; WHEN PRESENT, THE GEC TO BE CONTINUOUS
6. INVERTER(S) TO BE COMPLIANT WITH UL 1741 SUPPLEMENT A
7. CONDUIT AND CONDUCTOR SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS

SCOTT E. WYSSLING LICENSE No. 81551 STATE OF FLORIDA PROFESSIONAL ENGINEER

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PUNTA GORDA, FL 33950

AHJ: PUNTA GORDA CITY

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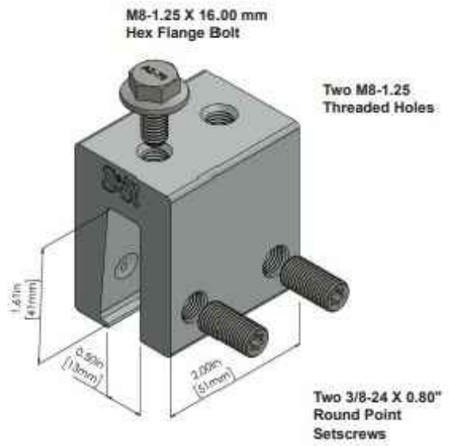
TEL. NO.:- 2392001081, LIC NO EC13011008/CVC57233

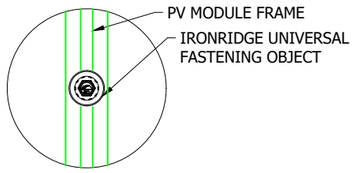
1-LINE DIAGRAM & CALCULATIONS

DATE: 12/9/2023
DRAWN BY: AN

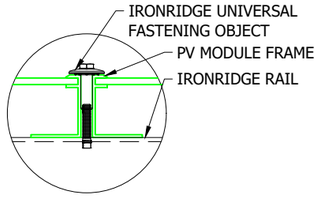
PV-4

S-5-N 1.5 Clamp

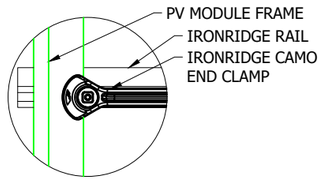




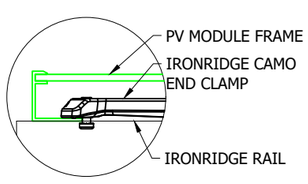
DETAIL, MID CLAMP PLAN



DETAIL, MID CLAMP FRONT



DETAIL, END CLAMP (CAMO) PLAN



DETAIL, END CLAMP (CAMO) FRONT

1 ATTACHMENT DETAILS
(N.T.S.)

ATTACHMENT TYPE: S-5! N 1.5 CLAMP WITH L-FOOT
WITH IRONRIDGE XR-100 RAILS
ROOF TYPE: STANDING SEAM METAL ROOF, ROOF TILT: 27°

MODULE WEIGHT: 48.5 LBS
MODULE DIMENSIONS: 6.16' X 3.42'
MODULE WEIGHT/ SQ. FOOT: 2.29 LBS

TOTAL NO. OF MODULES: 28
TOTAL MODULE WEIGHT: 1,358 LBS

BILL OF MATERIAL		
EQUIPMENT	**MAKE**	**QUANTITY**
MODULE	HANWHA Q CELL Q.PEAK DUO Black ML-G10+400 [400W]	28
INVERTER	EG4 18KPV-12 LV HYBRID INVERTER/CHARGER	1
END CLAMPS	MODULE END CLAMP STANDARD	12
MID CLAMPS	MODULE MIDDLE CLAMP SET STANDARD(INTEGRATED GROUNDING)	50
MOUNTING POINTS	S-5! N 1.5 CLAMP WITH L-FOOT	72
MOUNTING RAILS	IRONRIDGE XR-100 RAILS	20
AC DISCONNECT	PV SYSTEM FUSED DISCONNECT 100A RATED WITH 70A FUSES	1
BATTERY CABINET	EG4 BATTERY CABINET WITH (2) EG4 POWERPRO - 14.3KWH / 28.6KWH TOTAL	1

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PUNTA GORDA, FL 33950

AHJ: PUNTA GORDA CITY

POSITIVE ENERGY SOLAR LLC.
12713 MCGREGOR BLVD SUITE 2, FORT MYERS, FLORIDA 33919
TEL. NO.:- 2392001081, LIC NO EC13011008/CVC57233

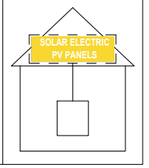
MOUNTING DETAILS AND BOM

DATE: 12/9/2023
DRAWN BY: AN

PV-5

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWICH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY



LABEL 1
AT RAPID SHUTDOWN SYSTEM
[NEC 690.56(C)(1)(A)].

! WARNING !
ELECTRIC SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.
DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPLOSED TO SUNLIGHT

LABEL 2
AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT
[NEC 690.15]

! WARNING !
ELECTRIC SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.

LABEL 3
AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT
[NEC 690.13 AND 690.15]

MAXIMUM VOLTAGE: -- V DC
MAXIMUM CIRCUIT CURRENT: -- A DC
MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-TO-DC CONVERTER (IF INSTALLED): -- A DC

LABEL 4
AT EACH DC DISCONNECTING MEANS
[NEC 690.53]

PHOTOVOLTAIC AC DISCONNECT
OPERATING CURRENT: 50 A AC
OPERATING VOLTAGE: 240 V AC

LABEL 5
AT POINT OF INTERCONNECTION, MARKED AT DISCONNECTING MEANS
[NEC 690.54]

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL 6
AT RAPID SHUTDOWN DISCONNECT SWITCH
[NEC 690.56(C)(3)].

! WARNING !
DUAL POWER SOURCES.
SECOND SOURCE IS PV SYSTEM

LABEL 7

! CAUTION !
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL 8

AT POINT OF INTERCONNECTION; LABEL, SUCH AS LABEL 7 OR LABEL 8 MUST IDENTIFY PHOTOVOLTAIC SYSTEM
[NEC 705.12(B)(4)]

BI-DIRECTIONAL METER

LABEL 9
AT UTILITY METER
[NEC 690.56(B)]

PHOTOVOLTAIC DC DISCONNECT

LABEL 10
AT EACH DC DISCONNECTING MEANS
[NEC 690.13(B)]

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

LABEL 11
AT RAPID SHUTDOWN SWITCH
[NEC 690.56(C)].
LETTERS AT LEAST 3/8 INCH; WHITE ON RED BACKGROUND; REFLECTIVE
[IFC 605.11.1.1]

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL 12
AT EXPOSED RACEWAYS, CABLE TRAYS, AND OTHER WIRING METHODS; SPACED AT MAXIMUM 10 FT SECTION OR WHERE SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS.
[NEC 690.31(G)]
LETTERS AT LEAST 3/8 INCH; WHITE ON RED BACKGROUND; REFLECTIVE
[IFC 605.11.1.1]

VISIBLE LOCKABLE LABELED DISCONNECT

LABEL 13
AT EACH AC DISCONNECTING MEANS
[NEC 690.13(B)]

! WARNING !
POWER SOURCE OUTPUT CONNECTION - DO NOT RELOCATE THIS OVERCURRENT DEVISE

LABEL 14
AT POINT OF INTERCONNECTION
OVERCURRENT DEVICE
[NEC 705.12(B)(2)(3)(B)]

#03-359 LOCAL CODES

WARNING
THIS SERVICE METER IS ALSO SERVED BY A PHOTOVOLTAIC SYSTEM

Wyssling Consulting, PLLC
76 N Meadowbrook Drive Alpine UT 84004
Florida License # RT34912
Signed 12/18/2023

THIS PLAN HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY SCOTT WYSSLING, PE USING A DIGITAL SIGNATURE AND DATE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

ALL SIGNAGE MUST BE PERMANENTLY ATTACHED AND BE WEATHER RESISTANT/SUNLIGHT RESISTANT AND CANNOT BE HAND-WRITTEN PER CEC 110.21(B)

PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS IF NOT IN THE SAME LOCATION
[CEC 690.56(B)]

WHERE THE PV SYSTEMS ARE REMOTELY LOCATED FROM EACH OTHER, A DIRECTORY IN ACCORDANCE WITH 705.10 SHALL BE PROVIDED AT EACH PV SYSTEM DISCONNECTING MEANS.
PV SYSTEM EQUIPMENT AND DISCONNECTING MEANS SHALL NOT BE INSTALLED IN BATHROOMS
[CEC 690.4(D),(E)]

LABELING NOTES
1.1 LABELING REQUIREMENTS BASED ON THE 2017 NATIONAL ELECTRICAL CODE,FIRE CODE 605.11, OSHA STANDARD 1910.145, ANSI Z535
1.2 MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
1.3 LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
1.4 LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8" AND PERMANENTLY AFFIXED.
1.5 ALERTING WORDS TO BE COLOR CODED. "DANGER" WILL HAVE RED BACKGROUND; "WARNING" WILL HAVE ORANGE BACKGROUND; "CAUTION" WILL HAVE YELLOW BACKGROUND. [ANSI Z535]

LABELS ARE NOT DRAWN TO SCALE

WOODS,
410 COLONY POINT DRIVE,
PUNTA GORDA, FL 33950

AHJ: PUNTA GORDA CITY

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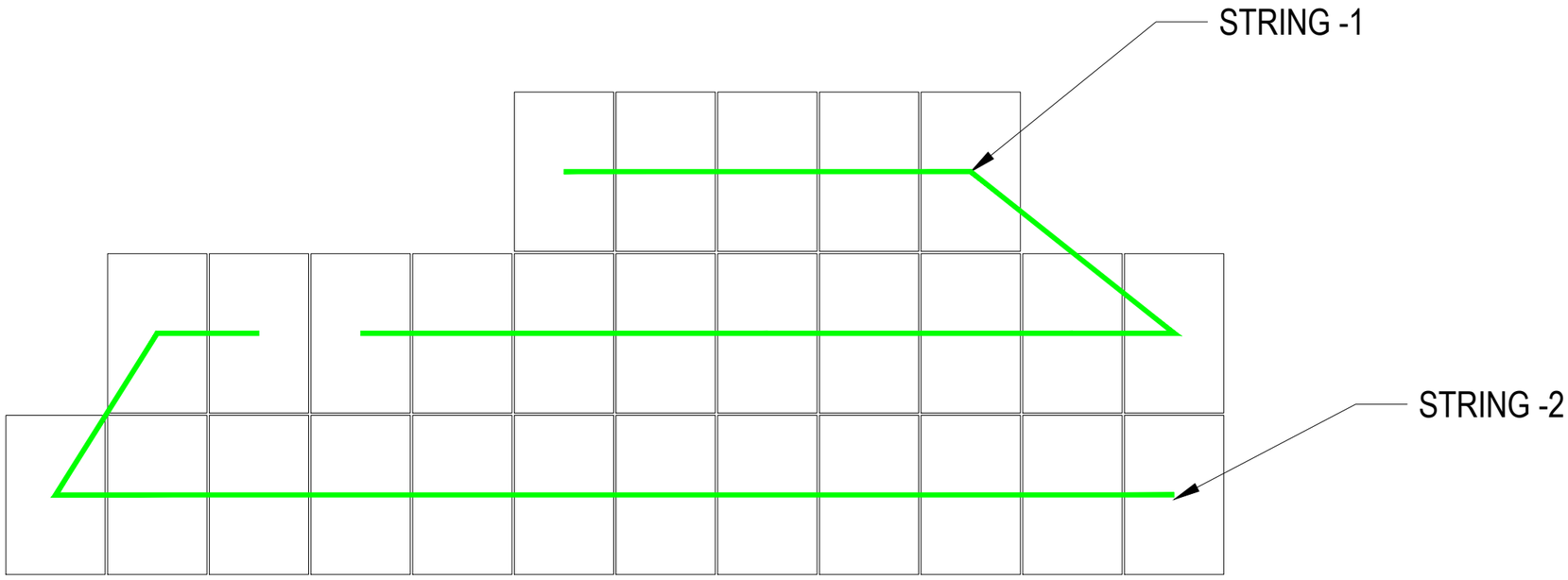
ELECTRICAL LABELS

DATE: 12/9/2023
DRAWN BY: AN

PV-6

STRING DETAIL
EG4 INVERTER STRINGS
STRING # 1: 14 MODULES
STRING # 2: 14 MODULES



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LICENSE
No. 81558
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Wyssling Consulting, PLLC
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Florida License # RY34912

Signed 12/18/2023

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TEL. NO.:- 2392001081, LIC NO EC13011008/CVC57233

STRING MAP

DATE: 12/9/2023
DRAWN BY: AN

PV-7

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 Yield 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:

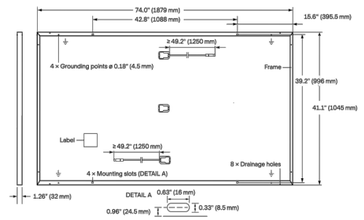
Rooftop arrays on residential buildings

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

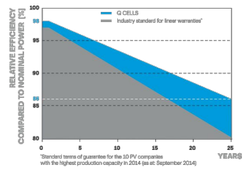


ELECTRICAL CHARACTERISTICS

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[1]	P_{MPP}	[W]	385	390	395	400	405
	Short Circuit Current[1]	I_{SC}	[A]	11.04	11.07	11.10	11.14	11.17
	Open Circuit Voltage[1]	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]	36.36	36.62	36.88	37.13	37.39
	Efficiency[1]	η	[%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]								
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	42.76
	Current at MPP	I_{MPP}	[A]	8.35	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

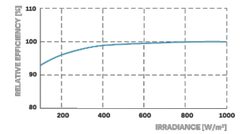
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% 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.

PERFORMANCE AT LOW IRRADIANCE



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	[°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

UL 61730, CE-compliant, Quality Controlled PV - TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells), QCPV Certification ongoing.

C SP US Certified UL 61730 · CE · TÜVRheinland CERTIFIED www.tuv.com ID 1111220277

PACKAGING INFORMATION

Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	48.0 in 1220 mm	1656 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

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TEL. NO.:- 2392001081, LIC NO EC13011008/CVC57233

MODULE DATASHEET

DATE: 12/9/2023
DRAWN BY: AN

PV-8.1

EG4® 18KPV-12LV

Hybrid Inverter/Charger

The EG4® 18KPV is a 48V split phase, hybrid inverter/charger capable of utilizing 18kW of PV and efficiently outputting 12kW of power while charging your battery bank. You can parallel up to 10 units for 120kWs of AC power and control multiple stations and units using the new EG4® monitoring software.

AC Coupling Capability	Remote Adjustments via EG4® Software	10-Year Warranty

All-In-One Hybrid Inverter

Capable of running entirely off the grid, using grid electricity, or selling power back to the grid.

600VDC Max

The extra high voltage enables lower cable sizing for the 3 MPPTs and a maximum recommended PV input of 21,000W. Eliminating the need for a combiner box.

Mountable Wi-Fi Device

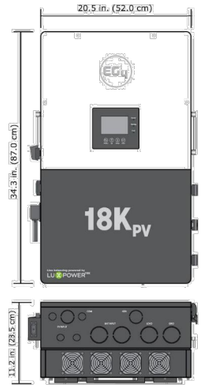
Enables wireless connection between our new monitoring platform and the 18KPV through the app or online website.

Closed-Loop Communications

Able to communicate with EG4® 48V batteries and other battery brands.

High Frequency, Split Phase Output

Allows for 120/240V with a single unit or 120/208VAC service operation.



EG4® Electronics | Specification Sheet

EG4® 18KPV-12LV

Hybrid Inverter/Charger

AC Input Data	
Nominal AC Voltage	240 | 208VAC
Frequency	50/60Hz
Max. Continuous AC Current	50A
AC Grid Output Data	
Max. Continuous Output Current	50A
AC Bypass (Grid)	200A
Rated Voltage	240VAC
Operating Voltage Range	180–270VAC
Nominal Power Output (W)	@240V 12kW/@208V 10.4kW
Operating Frequency	50/60Hz
Phase Shift	0.99@ full load
Reactive Power Adjust Range	(-0.8) – (+0.8) leading adjustable
Sync Inrush Current	35A
Backup/UPS AC Output Data	
Rated Output Current (240V/208V)	50A
AC Bypass (Generator)	90A
Nominal Output Voltage (V)	240 | 120/240 | 120/208 VAC
Rated Output Power (W)	@240VAC 12kW/@208VAC 10.4kW
Max Cont. Line Wattage	8kW per 120V
Peak Power (W)	With PV: 14.7kW (10 min), 15.5kW (5 min) Without PV: 13.5kW (10 min)
Operating Frequency	50/60Hz
THDV (Total Harmonic Distortion Voltage)	<5%
Switching Time	<20ms
PV Input Data	
Number of MPPTs	3
Inputs per MPPT	2/1/1
Max. Usable Input Current	25/15/15A
Max. Short Circuit Input Current	31/19/19A
DC Input Voltage Range	100–600 VDC
Unit Startup Voltage	100 VDC
Load Output Minimum Voltage	>140 VDC
MPP Operating Voltage Range	120–500 VDC
Full Power MPPT Voltage Range	230–500 VDC
Nominal MPPT Voltage	360 VDC
Maximum Utilized Solar Power	18kW
Recommended Maximum Solar Input	21kW

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EG4® Electronics | Specification Sheet

EG4® 18KPV-12LV

Hybrid Inverter/Charger

Efficiency	
Max. Efficiency @ PV to Grid	97.5%
Max. Efficiency @ Battery to Grid	94%
MPPT Efficiency	99.9%
Battery Charging Efficiency	95%
Battery Discharging Efficiency	94.5%
Idle Consumption (Normal mode)	≈70W
Idle Consumption (Standby mode)	≈18W
Battery Data	
Type	Lead-acid battery/Lithium battery
Max. Charge/ Discharge Current	250A
Nominal Voltage	48 VDC
Voltage Range	40–60 VDC
General Data	
Integrated Disconnect	DC switch
PV Reverse Polarity Protection	Yes
DC Switch Rating for each MPPT	Yes
Output Over-Voltage Protection Varistor	Yes
Output Over-Current Protection	Yes
Grid Monitoring	Yes
Anti-islanding Protection (Fast Zero Export)	Yes
Pole Sensitive Leakage Current Monitoring Unit	Yes
Surge Protection Device	Yes
Dimensions H×W×D	34.3×20.5×11.2 in. (87×52×28.5 cm)
Weight	121.25 lbs (55kg) 132.28 lbs (60kg) with the packaging
Cooling Concept	Fan
Topology	TL (Transformerless)
Relative Humidity	0-100%
Altitude	<2,000m
Operating Temperature Range	-25~60°C, >45° derating
Noise Emission	68dB @3ft
Display	Color touchscreen
Communication Interface	RS485/Wi-Fi/CAN
Standard Warranty	10* year standard warranty
	*See EG4® Warranty Registration for terms and conditions

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EG4® Electronics | Specification Sheet

EG4® 18KPV-12LV

Hybrid Inverter/Charger

Standards and Certifications	
Safety	
UL1741SB Rule 21	Yes
Rapid Shut Down (RSD) NEC 2020:690.12	Yes
Arc-Fault Circuit Interrupter (AFCI) NEC 2020:690.11 / UL1699B	Yes
Ground Fault Monitoring (GFDI) NEC 2020:690.41(B)	Yes
CSA 22.2.107.1	Yes
CSA 22.2.330	Yes
Grid Connection	
IEEE 1547.1:2020; IEEE 1547:2018	Yes
Hawaii Rule 14H	Yes
California Rule 21 Phase I, II, III	Yes
EMC	
FCC Part 15 Class B	Yes
Outdoor Rating	
NEMA 4X / IP65	Yes

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TEL. NO.:- 2392001081, LIC NO EC13011008/CVC57233

INVERTER DATASHEET

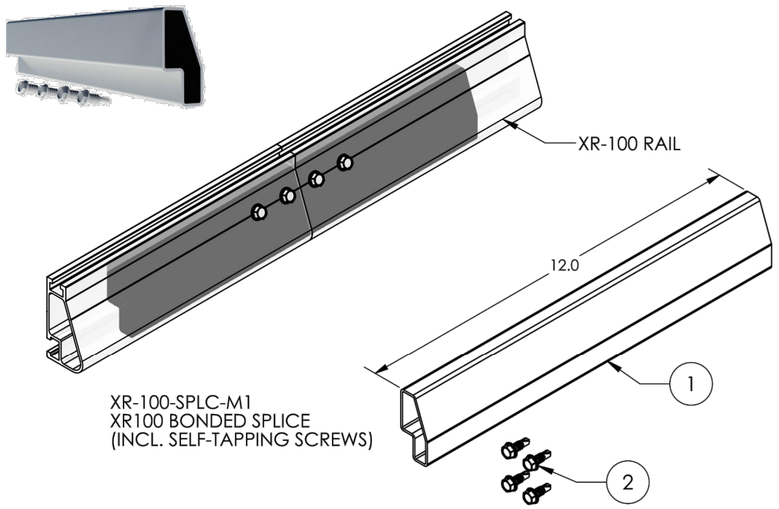
DATE: 12/9/2023
DRAWN BY: AN

PV-8.2

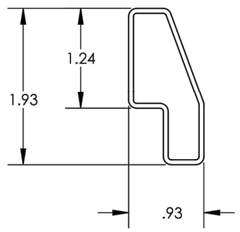
Cut Sheet

IRONRIDGE

XR100 Bonded Splice

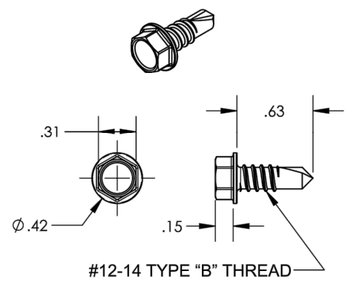


1) Splice, XR100, Mill 12" long



Property	Value
Material	6000 Series Aluminum
Finish	Mill

2) Screw, Self Drilling



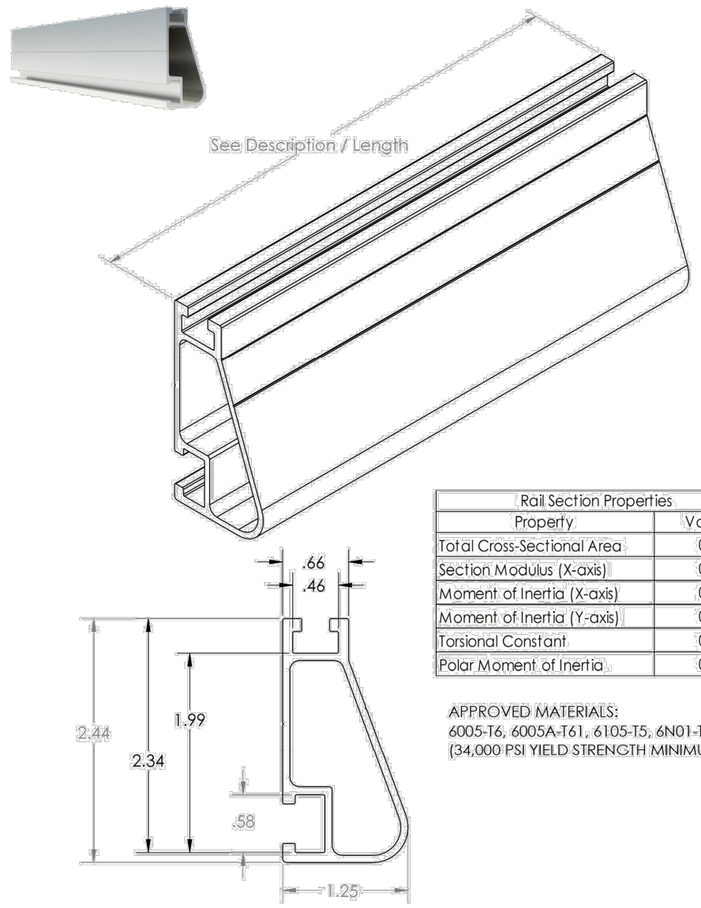
Property	Value
Material	300 Series Stainless Steel
Finish	Clear

v1.0

Cut Sheet

IRONRIDGE

XR100 Rail



Rail Section Properties	
Property	Value
Total Cross-Sectional Area	0.582 in^2
Section Modulus (X-axis)	0.297 in^3
Moment of Inertia (X-axis)	0.390 in^4
Moment of Inertia (Y-axis)	0.085 in^4
Torsional Constant	0.214 in^3
Polar Moment of Inertia	0.126 in^4

APPROVED MATERIALS:
6005-T6, 6005A-T61, 6105-T5, 6N01-T6
(34,000 PSI YIELD STRENGTH MINIMUM)

Clear Part Number	Black Part Number	Description / Length	Material	Weight
XR-100-168A	XR-100-168B	XR100, Rail 168" (14 Feet)	6000-Series Aluminum	9.55 lbs.
XR-100-204A	XR-100-204B	XR100, Rail 204" (17 Feet)		11.60 lbs.

v1.10

ESID:

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TEL. NO.:- 2392001081, LIC NO EC13011008/CVC57233

RACKING DATASHEET

DATE: 12/9/2023
DRAWN BY: AN

PV-8.3

S-5!®
The Right Way!®

S-5-N 1.5 Clamp

S-5-N 1.5 and S-5-N 1.5 Mini clamps were designed with patented S-5!® zero-penetration technology for application on the popular 1.5" nail strip metal roof profiles and roofing types with similar profiles. The clamp boasts an angular throat that accommodates most nail strip profiles, minimizing the need to field crimp. An angled wall with a nose permits the S-5-N 1.5 to engage the triangle type profiles during the installation process—there is no longer a need to hold the clamp in place while setscrews are tensioned. The combination of these two features allows the clamp to sit straighter on the seam. Nail strip profiles just got a whole lot simpler!

S-5-N 1.5 Mini Clamp

The S-5-N 1.5 Mini is a bit shorter than the S-5-N 1.5 and has one setscrew rather than two. The mini is the choice for attaching all kinds of rooftop accessories: signs, walkways, satellite dishes, antennas, rooftop lighting, lightning protection systems, solar arrays, exhaust stack bracing, conduit, condensate lines, mechanical equipment—just about anything!*

*S-5! Mini clamps are not compatible with, and should not be used with, S-5! SnoRail™/SnoFence™ or ColorGard® snow retention systems.

The right way to attach almost anything to metal roofs!

S-5-N 1.5 and S-5-N 1.5 Mini

The S-5-N 1.5 clamp is designed for use on the most popular 1.5" nail strip metal roofs.

888-825-3432 | www.S-5.com |

MADE IN USA

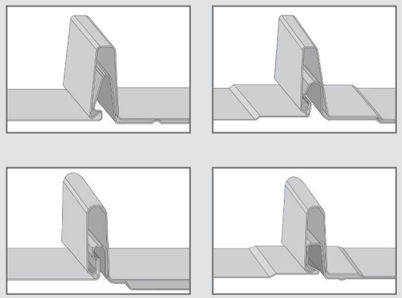
S-5!®
The Right Way!®

The S-5-N 1.5 boasts a angular throat that accommodates most nail strip profiles, minimizing the need to field crimp.

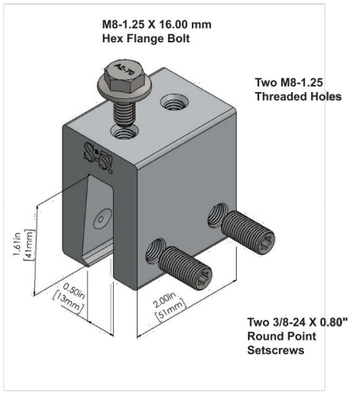
The **S-5-N 1.5 and S-5-N 1.5 Mini clamps** are each furnished with the hardware shown to the right. Each box also includes a bit tip for tightening setscrews using an electric screw gun. A structural aluminum attachment clamp, the S-5-N 1.5 is compatible with most common metal roofing materials excluding copper. All included hardware is 300 series stainless steel. Please visit **www.S-5.com** for more information including CAD details, metallurgical compatibilities, and specifications.

The S-5-N 1.5 clamp has been tested for load-to-failure results on most major brands of 1.5" nail strip profiles of standing seam roofing. The independent lab test data found at www.S-5.com can be used for load-critical designs and applications. S-5!® holding strength is unmatched in the industry.

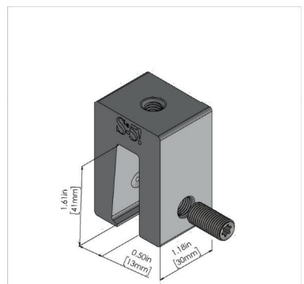
Example Profiles



S-5-N 1.5 Clamp



S-5-N 1.5 Mini Clamp



S-5!® Warning! Please use this product responsibly!

Products are protected by multiple U.S. and foreign patents. Visit the website at www.S-5.com for complete information on patents and trademarks. Consult the S-5! website at www.S-5.com for published data regarding installation instructions and holding strength.

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12713 MCGREGOR BLVD SUITE 2, FORT MYERS, FLORIDA 33919
TEL. NO.:- 2392001081, LIC NO EC13011008/CVC57233

ROOF ATTACHMENT DATASHEET

DATE: 12/9/2023
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PV-8.4

EG4® 14.3kWh PowerPro WallMount All Weather Battery

Built-In 200A BMS | **51.2V 280Ah (48V Nominal)** | **10 Year Warranty >8000 Cycles at 80% DOD** | **82.6MWh Lifetime Production***

On-Board LCD Touch Screen
Easy to see BMS monitoring, and selectable closed-loop communications with EG4, Schneider, Solark, Victron, Growatt, Megarevo, Luxpower, and Deye inverters.

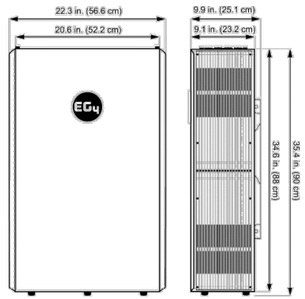
Dual On-Board Fire Arrestors
Offer fail-safe protection against thermal runaway.

Quick Connect Battery Cables
Included battery cables with outdoor rated connectors allowing for fast, safe, and reliable battery connections.

Integrated Self-Heating Feature
Heats the battery when the ambient temperature is low. A key feature for outdoor $LiFePO_4$ battery cell operation.

Innovative Emergency Stop Function
The optional ESS disconnect can shut down all batteries and inverters (if equipped with rapid shut down capability) with the push of a single button.

The perfect partner to the EG4® 18kPV
The optional conduit box mates directly up to the connection ports of the 18kPV inverter cable box for sleek installation. For other inverters or stand-alone battery installation, the conduit box plugs included with the conduit box should be installed.



EG4® Electronics | Specification Sheet

Module Operating Parameters		
Parameter	**BMS**	**Recommended Charger Settings**
Total Energy Capacity	14.3kWh @25C, 100% state of charge	
Voltage	51.2V	–
Capacity	280Ah ±2%	@25°C ±2°C @ 0.5C
Charging Voltage (Bulk/Absorb)	56.0V (+/-0.8V)	56.2V (+/-0.2V)
Float	–	54V (+/-0.2V)
Low DC Cutoff	44.8V	47-45.6V (start high, lower as needed)
Charging Current	100/140/200A (Max. continuous)✱ *(see note below table)*	60A - 160A
Discharging Current	200A (Max. continuous)	160A
Environmental Parameters		
Charging Range	32° to ≈113°F (0°C to ≈45°C)	
Discharging Range	-4°F to ≈122°F (-20°C to ≈50°C)	
Storage Range	-4°F to ≈122°F (-20°C to ≈50°C)	
Ingress Protection	IP65	
Charging/Discharging Parameters		
Charge	**Spec**	**Delay**	**Recovery**
Cell Voltage Protection	3.8V	1 sec	3.45V
Module Voltage Protection	60.0V	1 sec	55.2V
Over Charging Current 1	>205A	10 sec	–
Over Charging Current 2	>225A	3 sec	–
Temperature Protection	<23°F or >158°F <-5°C or >70°C	1 sec	>32°F or <140°F >0°C or <60°C
Discharge	**Spec**	**Delay**	**Recovery**
Cell Voltage Protection	2.3V	1 sec	3.1V
Module Voltage Protection	44.8V	1 sec	48V
Over-Charging Current 1	>205A	10 sec	60 sec
Over-Charging Current 2	>300A	3 sec	60 sec
Short Circuit	>600A	<0.1 mS	–
Temperature Protection	<-4°F or >167°F <-20°C or >75°C	1 sec	>14°F or <149°F >-10°C or <65°C
PCB Temp Protection	>230°F (>110°C)	1 sec	@ <176°F (<80°C)

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EG4® Electronics | Specification Sheet

General Specifications			
Parameter	**Spec**		**Condition**
Cell Balance	120mA	Passive Balance	Cell Voltage Difference >40mV
Temperature Accuracy	3%	Cycle Measurement	Measuring Range -40°F to ≈212°F (-40°C to ≈100°C)
Voltage Accuracy	0.5%	Cycle Measurement	For Cells & Module
Current Accuracy	3%	Cycle Measurement	Measuring Range -200A - 200A
SOC	5%	–	Integral Calculation
Power Consumption	Sleep & Off Mode	<300uA	Storage/Transport/Standby
Power Consumption	Operating Mode	<25mA	Charging/Discharging
Communication Ports	RS485/CAN		Can be customized
Battery Heater Specifications			
Parameter	**Spec**		**Condition**
Voltage	56V		–
Power Consumption	224W		–
Internal Battery Temperature	≤32°F (0°C)/≥41°F (5°C)		Heat On/Heat Off
Physical Specifications			
Dimensions (H×W×D)	34.6 in.×22.3 in.×9.1 in. (88.0 cm×56.6 cm×23.2 cm)		
Weight	308.6 lbs. (140 kg) +/-1kg		
Design Life	>15 Years		
Cycle Life	>8000 Cycles, 0.5C 80% DOD		
Lifetime Production	82.6MWh*		

*(51.2V×280Ah/1000×80%×8000 cycles/1000)90%=MWh

✱*Note: The default BMS in the module allows for 100A charging current maximum. To achieve higher charging currents, please contact your distributor for optional firmware files, or navigate to https://eg4electronics.com/downloads/ for the most up to date firmware.*

Please also make note that if the battery firmware is updated to allow 200A maximum charge, the internal thermal sensors will throttle the charge current to what the BMS deems necessary to prevent overheating.

Scan the QR code for the most recent version of the unit's **manual!**

Scan the QR code for the most recent version of the unit's **spec sheet!**

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BATTERY DATASHEET

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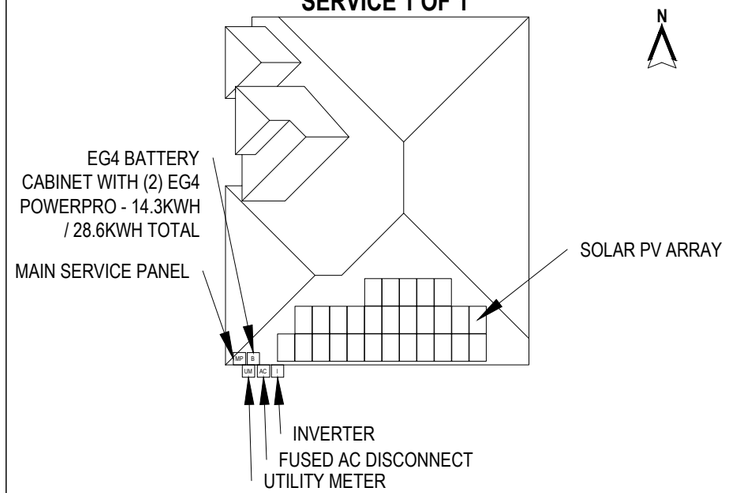
PV-8.5

⚠ CAUTION ⚠

POWER TO THIS BUILDING IS SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN

SERVICE 1 OF 1



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PLACARD

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PV-9