

FAITH, PAMELA

EXISTING AND NEW GRID-INTERACTIVE PHOTOVOLTAIC SYSTEM

DC SYSTEM SIZE (6.72 KW)

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY KIMANDY LAWRENCE, PE ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED, AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

GENERAL NOTES

SCOPE OF WORK

1. THE PROJECT IS NEW PHOTOVOLTAIC SYSTEM CONSISTING OF SOLAR ARRAY(S) AND ASSOCIATED POWER CONDITIONING EQUIPMENT.

2. ALL CONSTRUCTION SHALL COMPLY WITH THE ADOPTED EDITION OF THE FLORIDA BUILDING CODE AND NATIONAL ELECTRICAL CODE AS SPECIFIED IN THE PROJECT-SPECIFIC NOTES. ALL CONSTRUCTION SHALL ALSO COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE AND LOCAL ELECTRICAL UTILITY CODES, RULES AND REGULATIONS.

3. THE SYSTEM WILL BE INTERCONNECTED TO THE ELECTRICAL UTILITY GRID IN ACCORDANCE WITH THE REQUIREMENTS OF THE ADOPTED ELECTRIC AND THE ELECTRICAL UTILITY COMPANY.

4. THE CONTRACTOR SHALL PROVIDE LABOR FOR CONSTRUCTION OF THE ARRAY AND INSTALLATION OF ALL ELECTRICAL EQUIPMENT. THE CONTRACTOR WILL PROVIDE COMPETENT SUPERVISION FOR THE WORK TO BE ACCOMPLISHED. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL BY OWNER AS REQUESTED.

5. THERE WILL BE NO SUBMISSION FOR ANY EQUIPMENT WITH THE VENDOR PART NUMBER ON THE DRAWING WITHOUT WRITTEN APPROVAL OF THE PROFESSIONAL ENGINEER. COMMON ITEMS SUCH AS CONDUITS, WIRE, FITTINGS, ETC. ARE NOT SPECIFIED BY VENDOR BUT THE SIZES CANNOT BE REDUCED.

6. THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS AGREE THAT IN ACCORDANCE WITH THE GENERALLY ACCEPTED CONSTRUCTION PRACTICES CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE SAFETY OF ALL PERSON AND PROPERTY, AND THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS.

7. CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS FURTHER AGREE TO DEFEND, INDEMNIFY AND HOLD HARMLESS THE DESIGN PROFESSIONAL FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PERSONNEL.

8. CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS WILL BE REQUIRE TO REPAIR ANY DAMAGE DONE TO BUILDINGS, GROUNDS OR UTILITIES AT NO ADDITIONAL COST TO THE CUSTOMER. DEFECTIVE MATERIAL OR WORKMANSHIP WILL NOT BE ALLOWED ON THIS PROJECT. REASONABLE HOUSEKEEPING AND CLEAN UP SHALL BE CONDUCTED BOTH DURING THE EXECUTION OF AND AT THE CONCLUSION OF THE PROJECT.

9. CONTRACTOR SHALL LOCATE ALL POST TENSION CABLES ON CONCRETE ROOFS AND SHALL VERIFY THAT SUCH CABLES DO NOT INTERFERE WITH THE LOCATIONS OF FASTENERS AS SHOWN IN THE ATTACHMENT DETAILS.

GENERAL

1. THE ACTUAL SYSTEM EQUIPMENT SPECIFICATIONS FOR THE PHOTOVOLTAIC SYSTEM ARE INCLUDED IN THE PV SYSTEM SPECIFICATION ON THE TITLE PAGE AND THROUGHOUT THE DRAWING AS NECESSARY FOR CLARITY. IN ADDITION THE ACTUAL VENDOR SPECIFICATION DATA SHEETS WILL BE INCLUDED AS PART OF THE PERMIT SUBMITTAL.

2. ONLY NEW MATERIAL WILL BE INSTALLED AS PART OF THE PROJECT. ALL NEW INSTALLED EQUIPMENT WILL BE APPROPRIATELY LISTED AND NEMA RATED. ALL NEW EQUIPMENT SHALL HAVE PERMANENT PLASTIC ENGRAVED IDENTIFICATION TAGS INSTALLED.

3. ALL CUTTING AND PATCHING REQUIRED FOR INSTALLATION OF NEW RACEWAYS AND EQUIPMENT SHALL BE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL WORK SHALL BE PERFORMED BY TRADESMAN EXPERIENCED IN WORK REQUIRED. ALL FINISHES SHALL MATCH THE EXISTING ADJACENT FINISHES. OPENING IN FIRE RATED WALLS WILL BE PATCHED IN A MANNER MAINTAINING THE ORIGINAL FIRE AND SMOKE RATING.

4. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND CANNOT SHOW EVERY CONNECTION, JUNCTION BOX, WIRE, CONDUIT, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEM.

5. CONTRACTOR SHALL COORDINATE ALL POWER OUTAGES WITH THE OWNER'S REPRESENTATIVE IN ADVANCE.

6. PANEL DESIGNATIONS SHOWN ON THESE DRAWINGS ARE GIVEN FOR CLARIFICATION OF THE CIRCUITING ONLY AND MAY NOT CORRESPOND TO THE DESIGNATIONS FOUND IN THE FIELD.

7. ELECTRICAL TESTING SHALL BE IN COMPLIANCE WITH NFPA 70E.

8. SMOKE ALARMS SHALL BE INSTALLED INSIDE ALL SLEEPING ROOMS AND OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF BEDROOMS. ADDITIONALLY, EACH STORY WITHIN THE DWELLING, INCLUDING BASEMENTS AND HABITABLE ATTICS, SHALL CONTAIN A SMOKE ALARM. SMOKE ALARMS SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTIVATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT. PHYSICAL INTERCONNECTION OF SMOKE ALARMS SHALL NOT BE REQUIRED WHERE LISTED WIRELESS ALARMS ARE INSTALLED AND ALL ALARMS SOUND UPON ACTIVATION OF ONE ALARM. INSTALL CARBON MONOXIDE ALARMS WITHIN 10 FEET OF EACH ROOM USED FOR SLEEPING PURPOSES WHEN THE HOME CONTAINS AN ATTACHED GARAGE OR FUEL-BURNING APPLIANCES. SMOKE ALARMS AND CARBON MONOXIDE ALARMS THAT ARE NOT HARDWIRED SHALL BE POWERED BY 10-YEAR, NON- REMOVABLE BATTERIES. FBCR 314.3, FBCR 314.6 [EXCEPTION 2], FBCR 315.1.

CONDUIT AND WIRE

1. ALL EXISTING CONDUIT RUNS ARE NOT SHOWN. CONTRACTOR SHALL VERIFY EXISTING CONDUIT LOCATIONS IN FIELD.

2. ALL CONDUCTORS SHALL BE INSTALLED IN A RACEWAY AS SPECIFIED IN THE DRAWINGS. THE EXCEPTION IS PV SOURCE CIRCUIT CONDUCTORS MADE OF PV WIRE CABLE. THESE CONDUCTORS MAY BE EXPOSED WITHIN THE PV ARRAY.

3. INDOOR EMT FITTINGS MAY BE COMPRESSION TYPE OR STEEL SET SCREW TYPE. OUTDOOR EMT FITTINGS MUST BE COMPRESSION RAIN TIGHT TYPE.

4. A PULL ROPE SHALL BE INSTALLED IN ALL EMPTY CONDUITS.

5. CONDUCTORS MATERIAL, EITHER COPPER OR ALUMINUM IN SPECIFIED IN THE DRAWINGS. CONDUCTOR INSULATION TYPE SHALL BE THWN - 2 UNLESS OTHERWISE NOTED.

EQUIPMENT

1. ALL ELECTRICAL COMPONENTS INSTALLED OUTDOORS, EXPOSED TO WEATHER OR IN DAMP LOCATIONS SHALL BE RATED FOR NEMA 3R OR GREATER. INSTALLATION OF THESE COMPONENTS MUST COMPLY WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

2. ALL RACEWAYS, CABINETS, BOXES, FIXTURES SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN AN APPROVED MANNER.

3. AT THE COMPLETION OF THE PROJECT NEATLY TYPED ACCURATE PANEL BOARD DIRECTORIES INDICATING ALL BRANCH CIRCUITS AND SPARES WILL BE PROVIDED. ALL SPARES SHALL BE LEFT IN THE OFF POSITION.

4. ALL SAFETY SWITCHES SHALL BE HEAVY DUTY TYPE WITH COVER INTERLOCK AND HANDLE LOCK OFF PROVISIONS. SWITCHES SHALL BE MANUFACTURED BY A COMPANY CONSISTENT WITH OTHER INSTALLED EQUIPMENT WHENEVER POSSIBLE. PART NUMBERS, RATING AND FUSING SHALL BE AS SHOWN ON THE DRAWINGS.

5. CONTRACTOR SHALL ENSURE ALL NEC AND MAINTENANCE CLEARANCE REQUIREMENTS ARE MET FOR NEW EQUIPMENT AND MAINTAINED FOR EXISTING EQUIPMENT.

6. CONTRACTOR SHALL FIELD VERIFY EQUIPMENT CLEARANCE AND PLACEMENTS WHILE COORDINATING LOCATORS WITH OTHER TRADES, CONSTRUCTION MANAGERS, AND SITE SUPERVISORS PRIOR TO PURCHASING AND INSTALLING EQUIPMENT.

7. EVERY STRUCTURE AND PORTION THEREOF, INCLUDING NONSTRUCTURAL COMPONENTS THAT ARE PERMANENTLY ATTACHED TO STRUCTURES AND THEIR SUPPORTS AND ATTACHMENTS, SHALL BE DESIGNED AND CONSTRUCTED TO RESIST THE EFFECTS OF EARTHQUAKE MOTIONS IN ACCORDANCE WITH ASCE 7, EXCLUDING CHAPTER 14 AND APPENDIX 11A. THE SEISMIC DESIGN CATEGORY FOR A STRUCTURE IS PERMITTED TO BE DETERMINED IN ACCORDANCE WITH SECTION 1613 OR ASCE 7.

8. ALL CONTROLS AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCE AND COOLING, HEATING AND VENTILATING EQUIPMENT, SHALL BE LOCATED NO MORE THAN 48 INCHES MEASURED FROM THE TOP OF THE JUNCTION OR DEVICE BOX NOR LESS THAN 15 INCHES MEASURED TO THE BOTTOM OF THE JUNCTION OR DEVICE BOX ABOVE THE FINISHED FLOOR.

9. ALL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30 - AMPERES OR LESS AND COMMUNICATION SYSTEM RECEPTACLES SHALL BE LOCATED NO MORE THAN 48 INCHES MEASURED FROM THE TOP OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING NOR LESS THAN 15 INCHES MEASURED TO THE BOTTOM OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING ABOVE FINISHED FLOOR.

GROUNDING

1. THE GROUNDING SYSTEM SHALL MEET THE REQUIREMENTS OF THE NEC AND THE LOCAL ADOPTED CODE. ALL ELECTRICAL EQUIPMENT AND RACEWAYS SHALL BE PROPERLY GROUNDED.

2. AN INSULATED EQUIPMENT GROUNDING CONDUCTOR, IN ACCORDANCE WITH NEC CODE, SHALL BE PROVIDED IN ALL CONDUITS WITH CURRENT CARRYING CONDUCTORS. ALL LUGS AND CONNECTORS SHALL BE RATED FOR THE CONDUCTOR MATERIAL AND THE CONDITIONS OF USE.

3. THE GROUNDING RESISTIVITY WILL BE TESTED AFTER INSTALLATION TO CONFIRM 5 OHM OR LESS RESISTANCE FROM RACKING TO GROUND. IF GROUND RESISTANCE IS GREATER THAN 5 OHMS ADDITIONAL GROUNDING WILL BE INSTALLED UNTIL RESISTANCE IS LESS THAN 5 OHMS.

WIRING DEVICES

1. RECEPTACLES SHALL BE AS DESIGNED ON THE DRAWINGS AND SHOULD BE A BRAND CONSISTENT WITH OTHERS IN THE VICINITY WHENEVER POSSIBLE.

2. ALL WIRING DEVICES SHALL BE PROVIDED WITH APPROPRIATE COVER-PLATES. ANY EMPTY BOXES SHALL HAVE BLANK COVER PLATES. COVER-PLATES SHALL BE LEXAN, PLASTIC OR STAINLESS STEEL IN FINISHED AREA. GALVANIZED COVER-PLATES MAY BE USED IN EQUIPMENT ROOMS.

LABELING AND PHASING

1. FOR LABELING USE NUMBERED UV RATED LABELS TO INDICATE STRING NUMBER.

2. AS A SUBSTITUTE FOR LABELS YELLOW TAPE MAY BE USED FOR PHASING.

3. EACH METHOD DESCRIBED ABOVE WILL NEED TO BE PERFORMED ON BOTH POSITIVE AND NEGATIVE AT POINTS WHERE CONDUCTORS ARE TERMINATED.

SYSTEM DETAILS

DESCRIPTION	EXISTING AND NEW GRID-INTERACTIVE PHOTOVOLTAIC SYSTEM.
(E) DC RATING OF SYSTEM	SYSTEM SIZE :5.580KW DC STC
(N) DC RATING OF SYSTEM	SYSTEM SIZE : 6.72KW DC STC
(E) AC RATING OF SYSTEM	3.8KW
(N) AC RATING OF SYSTEM	4.64KW
MAX. AC OUT. CURRENT	19.36 A
(E) NO. OF MODULES	(18)MSE 310SQ8T (310W) SOLAR MODULE MODULE
(N) NO. OF MODULES	(16) JKM420N-54HL4-B (420W) JINKO SOLAR MODULE
(E) NO. OF INVERTERS	(1) (SMA) SUNNY BOY 3800-US INVERTER
(N) NO. OF INVERTERS	(16) ENPHASE IQ8PLUS-72-M-US MICROINVERTERS
POINT OF CONNECTION	BACKFEED BREAKER IN THE MSP
ARRAY STRINGING	(2) BRANCHES OF 08 MODULES
UTILITY COMPANY	CLAY ELECTRIC COOPERATIVE
AC GROSS POWER RATING (GPR)	10.455 KW
PV SYSTEM TIER	II (10 KW AC < GPR ≤ 100 KW AC)

SITE DETAILS

ASHRAE EXTREME LOW	-5°C
ASHRAE 2% HIGH	34°C
GROUND SNOW LOAD	3 PSF
WIND SPEED	130 MPH (ASCE 7-22)
RISK CATEGORY	II
WIND EXPOSURE CATEGORY	C

GOVERNING CODES

FLORIDA RESIDENTIAL CODE, 8TH EDITION 2023 (FRC)
FLORIDA BUILDING CODE, 8TH EDITION 2023 (FBC)
FLORIDA FIRE PREVENTION CODE, 8TH EDITION 2023 (FFPC)
NATIONAL ELECTRICAL CODE, NEC 2020 CODE BOOK

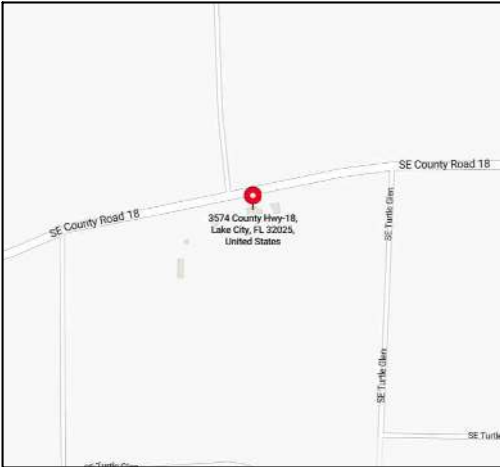
SHEET INDEX

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SITE MAP (N.T.S)



VICINITY MAP



WIND FLOW MAP



BUILDING DEPARTMENT SEAL STAMP



CONTACT: (561) 660-5200
6801 LAKE WORTH ROAD SUITE 302
LAKE WORTH, FL 33467
FLORIDA REGISTRY# 33809



CONTACT: 561-609-2664
1225 NW BROKEN SOUND PKWY SUITE F
BOCA RATON, FL 33487
ELECTRICAL CONTRACTOR LICENSE: EC13005324

FAITH, PAMELA

3574 SE COUNTY ROAD 18
LAKE CITY, FL 32025
29.951249, -82.547266

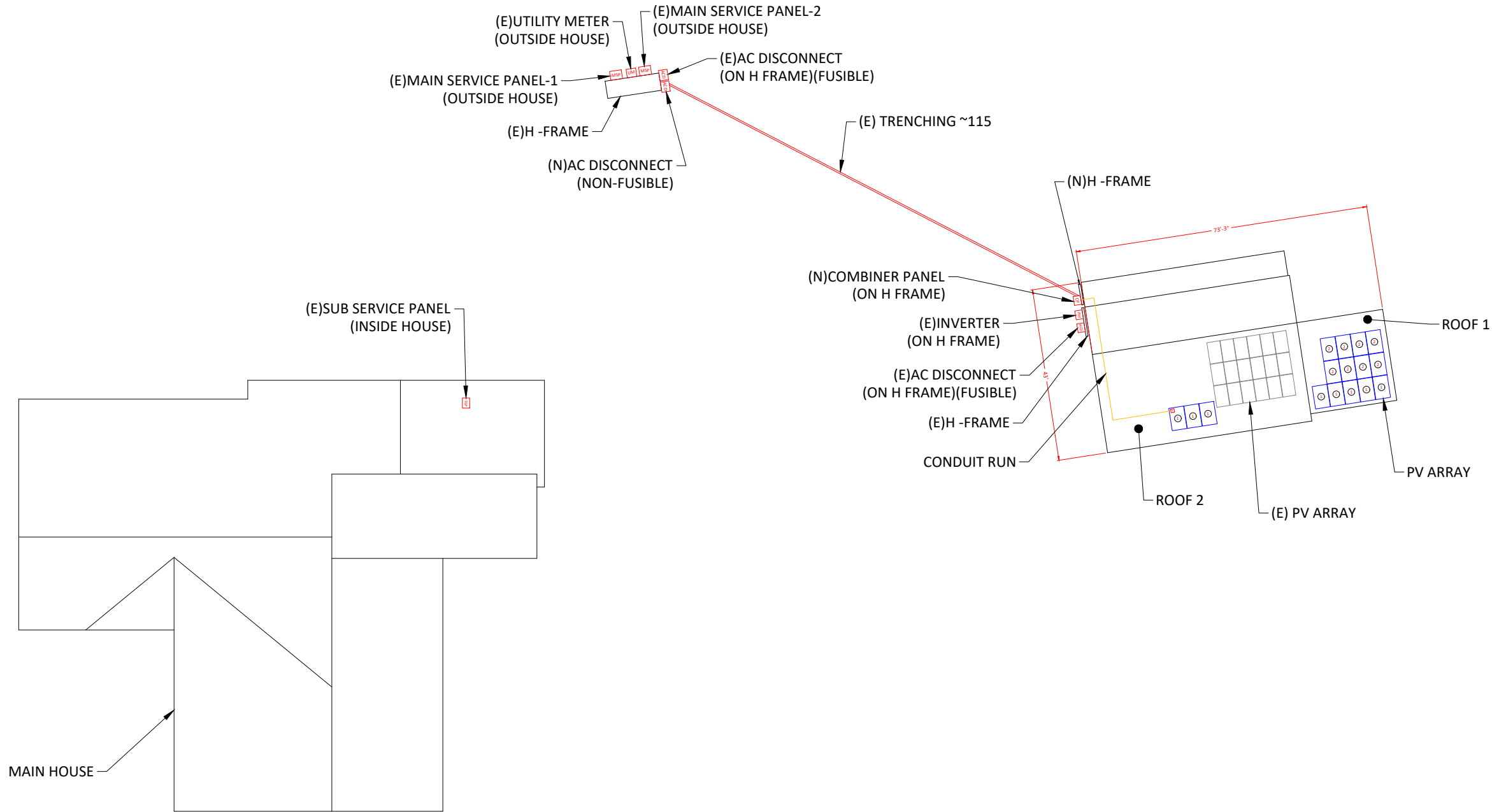
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COVER PAGE

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EQUIPMENT SPECIFICATIONS		
EQUIPMENT	DESCRIPTION	QUANTITY
MODULE	JKM420N-54HL4-B (420W) JINKO SOLAR MODULE	16
INVERTER	ENPHASE IQ8PLUS-72-M-US MICROINVERTERS	16
JUNCTION BOX	600V, NEMA 3R UL LISTED	01
COMBINER PANEL	80A ENPHASE IQ COMBINER 5C	01
AC DISCONNECT	AC DISCONNECT 240V, 30 AMP, NON-FUSED, NEMA 3R, UL LISTED	01
ATTACHMENT	QUICKMOUNT (QMLSH)	40
RACKING SYSTEM	IRONRIDGE (XR100) RAILS	-

ROOF SPECIFICATIONS	
ROOF MATERIAL	METAL
ROOF CONDITION	GOOD
TRUSSES	2" X 6" @24" O.C.

SYSTEM INFORMATION	
DC SYSTEM SIZE	6.72 KW
AC SYSTEM SIZE	4.64 KW

ROOF INFORMATION			
ROOF	QUANTITY	SLOPE	AZIMUTH
ROOF 1	13	14.04°(3/12)	175°
ROOF 2	03	14.04°(3/12)	175°

NOTES:

1. LOCATION OF JUNCTION BOX(ES), AC DISCONNECTS(S), AC COMBINER PANEL(S), AND OTHER ELECTRICAL EQUIPMENT(S) RELEVANT TO PV INSTALLATION SUBJECT TO CHANGE BASED ON SITE CONDITIONS.

2. ROOF ACCESS (POINTS), PATHWAYS, AND FIRE ACCESS PATHWAY SETBACKS NOT REQUIRED IN ACCORDANCE WITH 2023 FBC R 8TH EDITION SECTION 324.6 EXCEPTION 3 AS ROOF SLOPE IS 2/12 (9.46 DEGREES) OR LESS.

LEGENDS

- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- SSP - SUB SERVICE PANEL
- JB - JUNCTION BOX
- ACD - AC DISCONNECT
- CP - COMBINER PANEL
- INV - INVERTER
- RAP - ROOF ACCESS POINT
- 1 - STRING TAG
- CONDUIT RUN
- ROOF OBSTRUCTION

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6801 LAKE WORTH ROAD SUITE 302
LAKE WORTH, FL 33467
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1225 NW BROKEN SOUND PKWY SUITE F
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3574 SE COUNTY ROAD 18
LAKE CITY, FL 32025
29.951249, -82.547266

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FIRE SAFETY PLAN

PV-2

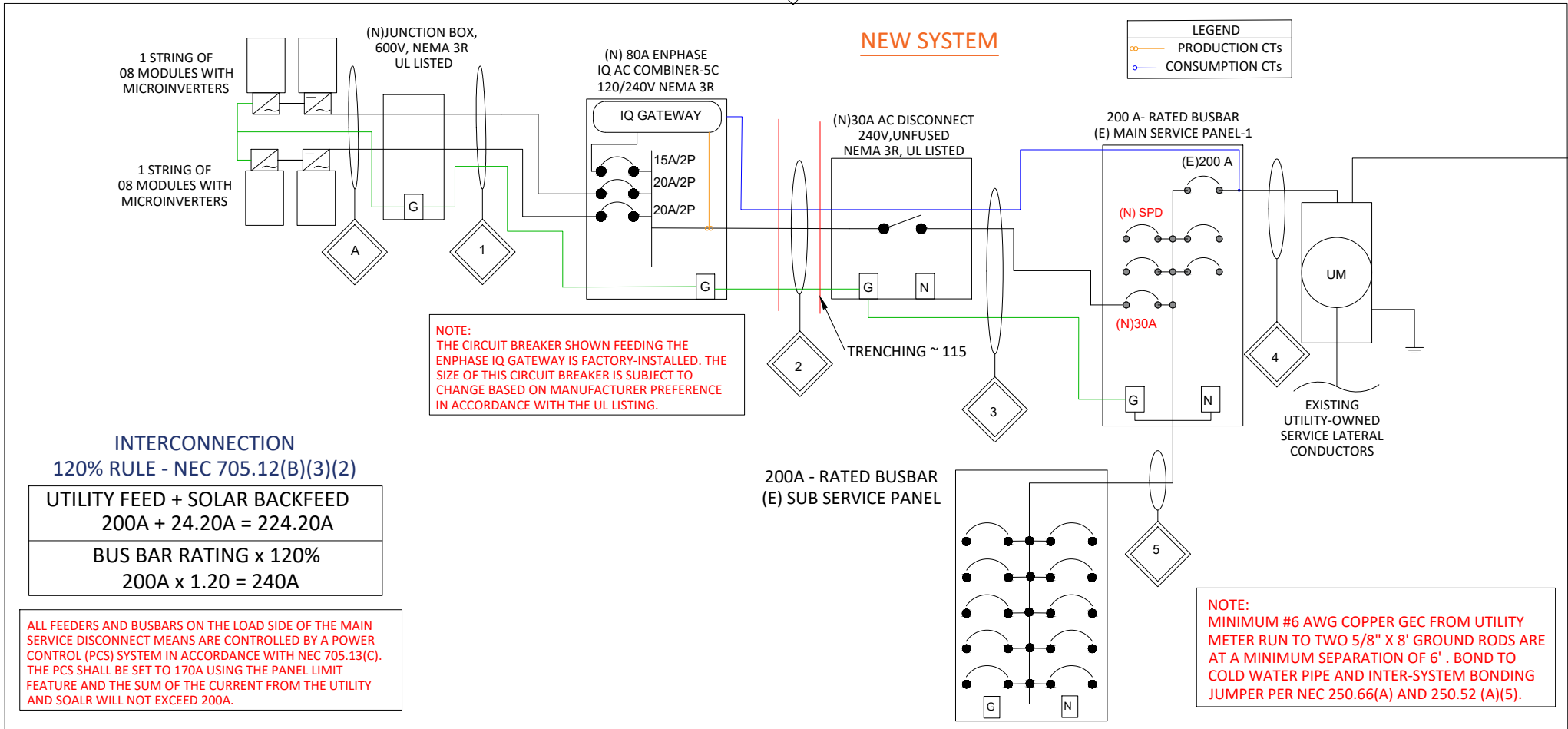
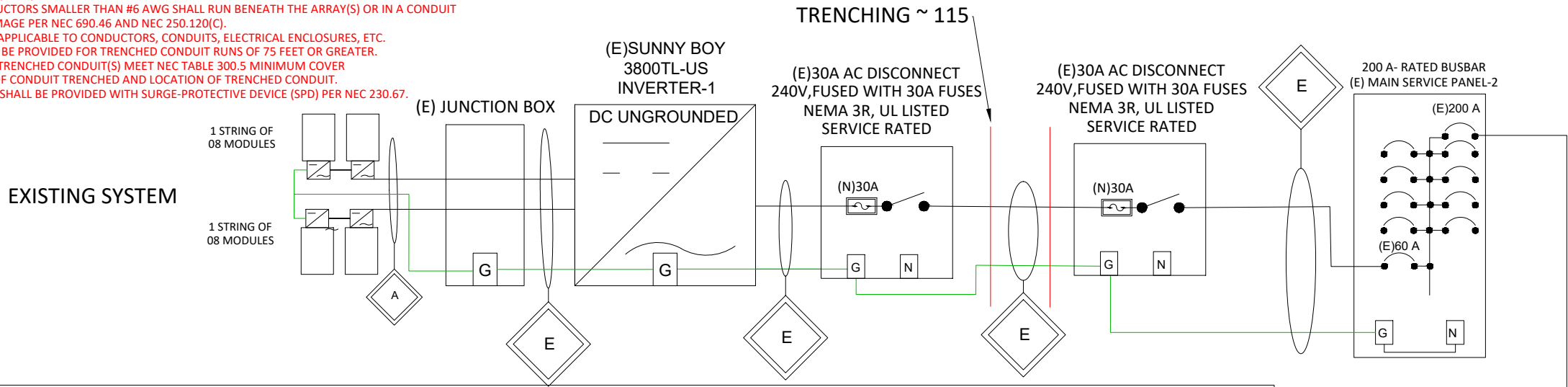
CONDUCTOR AND CONDUIT SCHEDULE		
SR. NO.	DESCRIPTION	CONDUIT SIZE
(A)	ENPHASE Q CABLES, (1) #10 AWG THWN-2 (G)	
(1)	(2) #10 AWG THWN-2 (L1),(2) #10 AWG THWN-2 (L2) , (1) #10 AWG THWN-2 (G)	IN 3/4" CONDUIT RUN
(2)	(3) #8 AWG THWN-2 (L1,L2,N) , (1) #10 AWG THWN-2 (G)	IN 1" PVC CONDUIT
(3)	(3) #8 AWG THWN-2 (L1,L2,N) , (1) #10 AWG THWN-2 (G)	IN 3/4" CONDUIT RUN
(4)	(E) (3) 2/0 AWG THWN-2 (L1,L2,N)	EXISTING CONDUIT
(5)	(E)(3) 4/0 AWG XHHW-AL (L1,L2,N), (1) #4 BARE AL (G)	EXISTING CONDUIT

NOTE:
1.CONDUIT RUN - EMT, PVC, IMC, RMC, FMC, LFMC OR EQUIVALENT AS PER NEC.
2.ALL EQUIPMENT GROUNDING CONDUCTORS SMALLER THAN #6 AWG SHALL RUN BENEATH THE ARRAY(S) OR IN A CONDUIT RUN TO PROTECT FROM PHYSICAL DAMAGE PER NEC 690.46 AND NEC 250.120(C).
3. LEGEND: (E) = EXISTING, (N) = NEW; APPLICABLE TO CONDUCTORS, CONDUITS, ELECTRICAL ENCLOSURES, ETC.
4.VOLTAGE DROP CALCULAIONS SHALL BE PROVIDED FOR TRENCHED CONDUIT RUNS OF 75 FEET OR GREATER.
5.SOLAR CONTRACTOR SHALL ENSURE TRENCHED CONDUIT(S) MEET NEC TABLE 300.5 MINIMUM COVER REQUIREMENTS RESPECTIVE TO TYPE OF CONDUIT TRENCHED AND LOCATION OF TRENCHED CONDUIT.
6.SERVICE SUPPLYING DWELLING UNIT SHALL BE PROVIDED WITH SURGE-PROTECTIVE DEVICE (SPD) PER NEC 230.67.

MODULE SPECIFICATION	
MANUFACTURER	JINKO SOLAR
MODEL NO.	JKM420N-54HL4-B
PEAK POWER (Pmpp)	420 W
PEAK VOLTAGE (Vmpp)	32.16 V
PEAK CURRENT (Impp)	13.06 A
OPEN CIRCUIT VOLTAGE (Voc)	38.74 V
SHORT CIRCUIT CURRENT (Isc)	13.51 A
TOTAL QUANTITY	16

INVERTER SPECIFICATION	
MANUFACTURER	ENPHASE
MODEL NO.	IQ8PLUS-72-M-US
MAX. DC INPUT VOLTAGE	60 V
MAX. CONT. OUTPUT POWER	290 VA
NOMINAL AC OUTPUT VOLTAGE	240V
MAX. CONT. OUTPUT CURRENT	1.21 A
TOTAL QUANTITY	16

ARRAY DETAILS	
DC SYSTEM SIZE	6.72 KW
AC SYSTEM SIZE	4.64 KW
TOTAL NO. OF MODULES	16
NO. OF MODULE PER STRING	02@08
NO. OF STRING	02



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CONTACT: (561) 660-5200
6801 LAKE WORTH ROAD SUITE 302
LAKE WORTH, FL 33467
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1225 NW BROKEN SOUND PKWY SUITE F
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ELECTRICAL LINE DIAGRAM

PV-3

ELECTRICAL CALCULATIONS:

1. CURRENT CARRYING CONDUCTOR

(A) BEFORE IQ COMBINER PANEL :

AMBIENT TEMPERATURE = 34°C
CONDUIT INSTALLED AT MINIMUM DISTANCE OF 7/8 INCHES ABOVE ROOFNEC 310.15(B)(2)

TEMPERATURE DERATE FACTOR - (0.96)NEC 310.15(B)(1)
GROUPING FACTOR - (0.8)NEC 310.15(C)(1)

CONDUCTOR AMPACITY:

= (INV O/P CURRENT) x 1.25 / A.T.F / G.FNEC 690.8(B)
= (08 x 1.21) X1.25/ 0.96 / 0.8
= 15.76 A
SELECTED CONDUCTOR - #10 THWN-2 ...NEC 310.16

(B) AFTER IQ COMBINER PANEL:

TEMPERATURE DERATE FACTOR - (0.96)
GROUPING FACTOR - (1)

CONDUCTOR AMPACITY
(TOTAL INV O/P CURRENT) x 1.25 / 0.96 / 1NEC 690.8(B)
= [(16 x 1.21) x 1.25] / 0.96 / 1
= 25.21 A
SELECTED CONDUCTOR - #8 THWN-2 ...NEC 310.16

2. PV OVER CURRENT PROTECTION ...NEC 690.9(B)

= TOTAL INVERTER O/P CURRENT x 1.25
= (16 x 1.21) x 1.25 = 24.20 A
SELECTED OCPD IS 30A

SELECTED EQUIPMENT GROUNDING CONDUCTOR (EGC) = #10 THWN-2 ...NEC 250.122

MAX VOLTAGE DROP CALCULATION						
CABLE SIZE	CABLE DESCRIPTION	ONE WAY DISTANCE IN FEET (D)	BRANCH CURRENT (I)	RESISTANCE OF CONDUCTOR(R)	VOLTAGE (V)	% VOLTAGE DROP =(0.2*D*I*R)/V
#8 THWN-2	AC DISCONNECT TO COMBINER PANEL	115	19.36	0.778	240	1.44

GENERAL ELECTRICAL NOTES:

- THE DC AND AC CONNECTORS OF THE ENPHASE IQ8PLUS-72-M-US MICROINVERTERS ARE LISTED TO MEET REQUIREMENTS AN EQUIPMENT DISCONNECTING MEANS SHALL BE PERMITTED TO BE REMOTE FROM THE EQUIPMENT WHERE THE EQUIPMENT DISCONNECTING MEANS CAN BE REMOTELY OPERATED FROM WITHIN 3 M (10 FT) OF THE EQUIPMENT BY NEC 690.15(A).
- MICROINVERTER BRANCH CIRCUIT CONDUCTORS ARE MANUFACTURED ENPHASE Q CABLES LISTED FOR USE IN 20A OR LESS CIRCUITS OF ENPHASE IQ MICROINVERTERS. THEY ARE ROHS, OIL RESISTANT, AND UV RESISTANT. THEY CONTAIN AWG CONDUCTORS OF TYPE THHN/THWN-2 DRY/WET AND CERTIFIED TO UL3003 AND UL 9703. THE CABLE'S DOUBLE INSULATED RATING REQUIRES NO NEUTRAL OR GROUNDED CONDUCTOR.
- ALL METAL ENCLOSURES, RACEWAYS, CABLES AND EXPOSED NONCURRENT-CARRYING METAL PARTS OF EQUIPMENT SHALL BE GROUNDED TO EARTH AS REQUIRED BY NEC 250.4(B) AND PART III OF NEC ARTICLE 250 AND EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 690.45. THE GROUNDING ELECTRODE SYSTEM SHALL ADHERE TO 690.47(A).
- PV SYSTEM DISCONNECT SHALL BE READILY ACCESSIBLE.
- POINT-OF-CONNECTION SHALL BE MADE IN COMPLIANCE WITH NEC 705.11 or 705.12
- UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS LOCATED AT THE SERVICE ENTRANCE.
- MODULES CONFORM TO AND ARE LISTED UNDER UL 1703, UL 61730 , 61730-1 AND 61730-2. MICROINVERTERS CONFORM TO AND ARE LISTED UNDER UL 1741 AND IEEE 1547 - 2018.
- CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC ARTICLE 300.6(C)(1) AND ARTICLE 310.10 (D).
- CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC ARTICLE 310.10 (C).
- ALL PHOTOVOLTAIC SYSTEM DC CIRCUITS RAN INSIDE OR ON ALL BUILDINGS AND STRUCTURES SHALL BE ENCLOSED IN METALLIC CONDUIT IN COMPLIANCE WITH NEC 690.31(D). THIS REQUIREMENT SHALL APPLY TO OPTIMIZER-BASED SYSTEMS, BUT SHALL NOT APPLY TO MICROINVERTER-BASED SYSTEMS.
- A 10 AWG COPPER EQUIPMENT GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH NEC 690.45 SHALL BE USED TO BOND RAILS AND OTHER ROOFTOP EQUIPMENT. THE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE IN ACCORDANCE WITH NEC 250.120(C) BY RUNNING WITHIN THE HOLLOW SPACE BENEATH THE SOLAR STRUCTURE OR BY RUNNING WITHIN AN IDENTIFIED RACEWAY OR CABLE ARMOR. IF THE EQUIPMENT GROUNDING CONDUCTOR IS UNPROTECTED FROM PHYSICAL DAMAGE AT ANY POINT IN ITS CONDUCTOR RUN THE CONDUCTOR SHALL BE INCREASED TO A MINIMUM OF 6 AWG COPPER IN ACCORDANCE WITH NEC 250.120(C).

GROUNDING NOTES:

PV MODULE AND RACKING GROUNDING AS PER APPROVED INSTALLATION PRACTICE AND IN LINE WITH MANUFACTURE'S GUIDELINES.

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6801 LAKE WORTH ROAD SUITE 302
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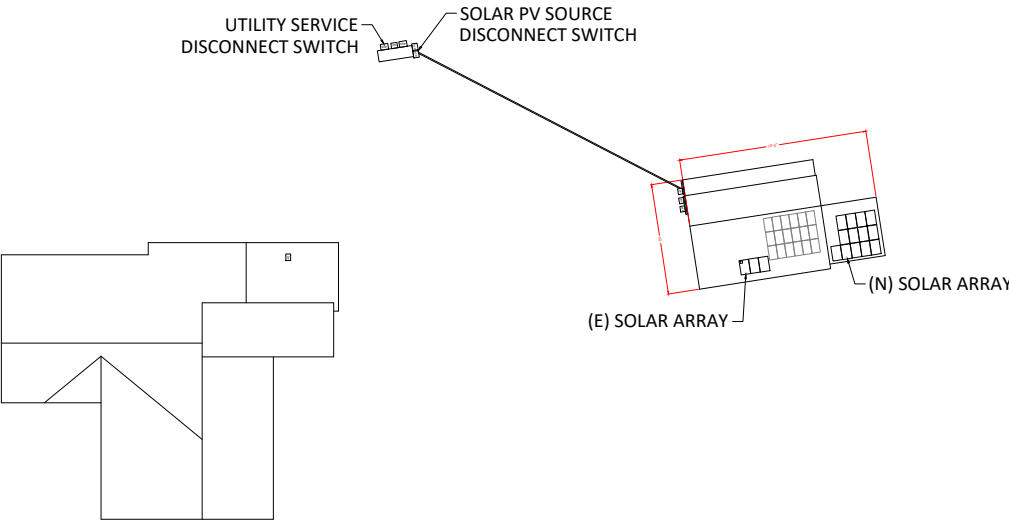
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ELECTRICAL CALCULATIONS

PV-4

CAUTION:MULTIPLE SOURCES OF POWER

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



SITE-SPECIFIC DIRECTORY PLACARD(S) SHALL BE INSTALLED AT THE FOLLOWING LOCATION(S):
UTILITY SERVICE DISCONNECT SWITCH (MSP) AND SOLAR PV SOURCE DISCONNECT SWITCH (ACD)
NEC 2020 EDITION 705.10

SOLAR AC DISCONNECT

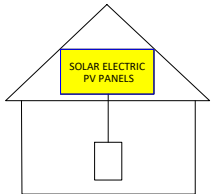
NOTICE

RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM

NEC 2020 EDITION 690.56 (C)(2)

SOLAR PV SYSTEM IS EQUIPPED
WITH RAPID SHUTDOWN

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



NEC 2020 EDITION 690.56 (C)

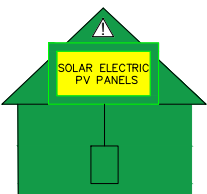
MAIN SERVICE PANEL

WARNING

INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

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

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



FLORIDA FIRE PREVENTION CODE EIGHTH EDITION 11.12.2.1.1.1.1
NFPA 1 2021 EDITION 11.12.2.1.1.1.1 AND FIGURE A.11.12.2.1.1.1(a)

AC COMBINER PANEL

NOTICE

AC COMBINER AND DATA ACQUISITION
FOR SOLAR PV SYSTEM ONLY.
DO NOT ADD LOADS.

WARNING

AC VOLTAGE : 240V
MAX. CURRENT:19.36 A

EMERGENCY CONTACT

URBAN SOLAR

561-609-2664

FLORIDA FIRE PREVENTION CODE EIGHTH EDITION 11.12.2.1.5

UTILITY METER

WARNING

⚠ DUAL POWER SOURCE ⚠

MAIN SERVICE PANEL

WARNING

⚠ DUAL POWER SOURCE ⚠

NOTES:
1.THE MATERIAL USED FOR THE PHOTOVOLTAIC SYSTEM LABELS SHALL BE REFLECTIVE, WEATHER RESISTANT, AND CONSTRUCTED OF DURABLE ADHESIVE MATERIAL OR ANOTHER APPROVED MATERIAL SUITABLE FOR THE ENVIRONMENT IN COMPLIANCE WITH NFPA 1-11.12.
2. FONT, TEXT HEIGHT , CAPITALIZATION , FONT COLOR(S), BACKGROUND COLOR(S), DIAGRAM COLOR(S)AND CONTEXT OF PHOTOVOLTAIC SYSTEMS LABELS SHALL COMPLY WITH NFPA 1-11.12 AND NEC 2020 690.56 AS APPLICABLE FOR THE PHOTOVOLTAIC SYSTEM TO BE INSTALLED.

BUILDING DEPARTMENT SEAL STAMP



CONTACT: (561) 660-5200
6801 LAKE WORTH ROAD SUITE 302
LAKE WORTH, FL 33467
FLORIDA REGISTRY# 33809



CONTACT: 561-609-2664
1225 NW BROKEN SOUND PKWY SUITE F
BOCA RATON, FL 33487
ELECTRICAL CONTRACTOR LICENSE: EC13005324

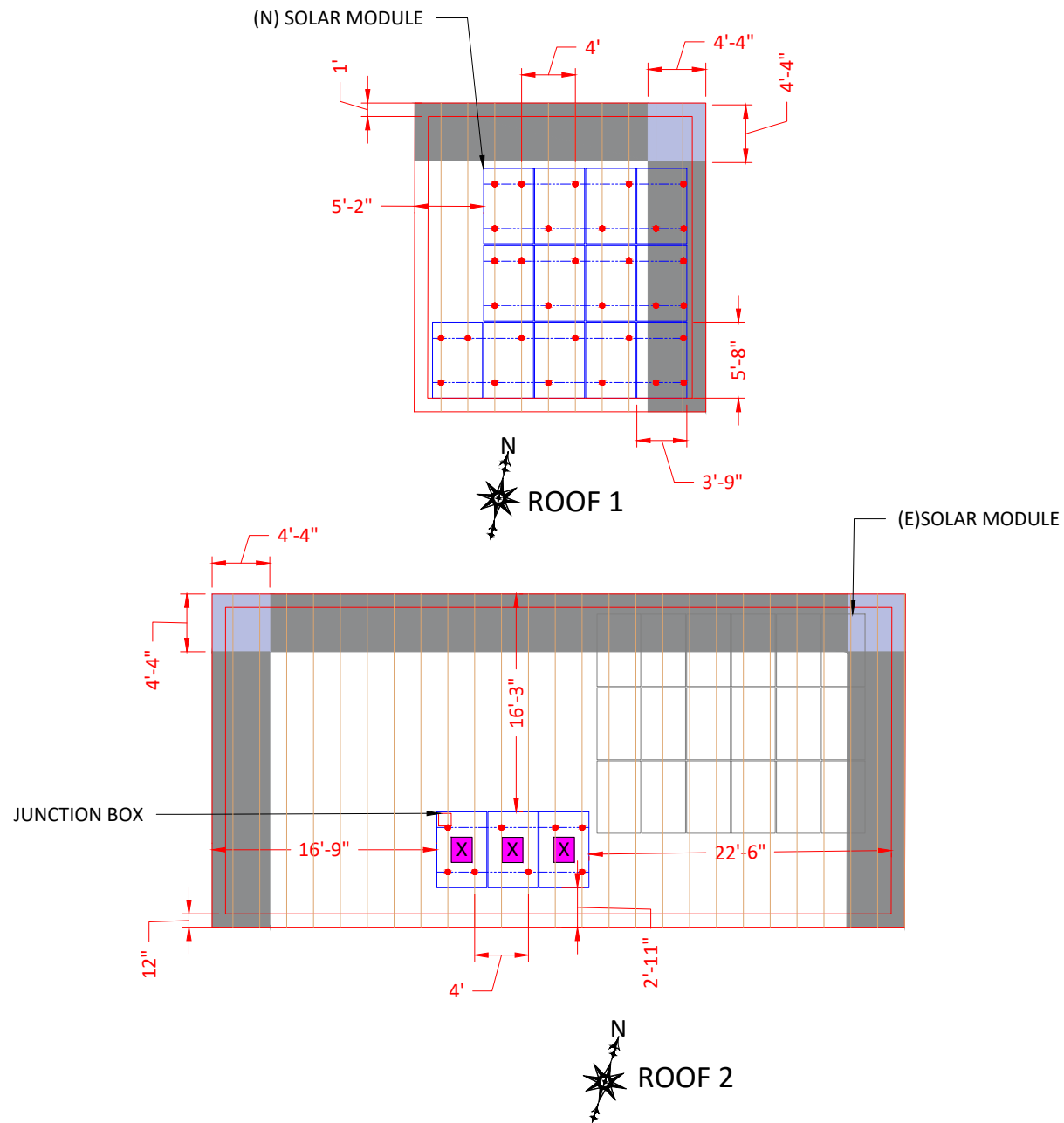
FAITH, PAMELA

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LAKE CITY, FL 32025
29.951249, -82.547266

SIGNATURE WITH SEAL

LABELS

PV-5



LEGENDS

- WIND ZONE 1

- WIND ZONE 1'

WIND ZONE 2

- WIND ZONE (2)

WIND ZONE 3

- WIND ZONE (3)

WIND LOAD INFORMATION:
THIS SYSTEM HAS BEEN DESIGN TO MEET THE REQUIREMENTS OF THE 8TH EDITION OF THE FLORIDA BUILDING CODE AND USED THE FOLLOWING DESIGN PARAMETERS:
ULTIMATE WIND SPEED: 130 MPH
EXPOSURE CATEGORY: C
RISK CATEGORY: II
MEAN ROOF HEIGHT: 15 FT
ROOF SLOPE: 7°-20°

EQUIPMENT SPECIFICATIONS		
EQUIPMENT	DESCRIPTION	QUANTITY
MODULE	JKM420N-54HL4-B (420W) JINKO SOLAR MODULE	16
INVERTER	ENPHASE IQ8PLUS-72-M-US MICROINVERTERS	16
JUNCTION BOX	600V, NEMA 3R UL LISTED	01
COMBINER PANEL	80A ENPHASE IQ COMBINER 5C	01
AC DISCONNECT	AC DISCONNECT 240V, 30 AMP, NON-FUSED, NEMA 3R, UL LISTED	01
ATTACHMENT	QUICKMOUNT (QMLSH)	40
RACKING SYSTEM	IRONRIDGE (XR100) RAILS	-

ROOF SPECIFICATIONS	
ROOF MATERIAL	METAL
ROOF CONDITION	GOOD
SEAMS	2" X 6" @24" O.C.

SYSTEM INFORMATION	
DC SYSTEM SIZE	6.72 KW
AC SYSTEM SIZE	4.64 KW

ROOF INFORMATION			
ROOF	QUANTITY	SLOPE	AZIMUTH
ROOF 1	13	14.04°(3/12)	175°
ROOF 2	03	14.04°(3/12)	175°

- NOTES:
- LOCATION OF JUNCTION BOX(ES), AC DISCONNECTS(S), AC COMBINER PANEL(S), AND OTHER ELECTRICAL EQUIPMENT(S) RELEVANT TO PV INSTALLATION SUBJECT TO CHANGE BASED ON SITE CONDITIONS.
 - TRUSS LOCATIONS ARE APPROXIMATE. ACTUAL LOCATIONS MAY DIFFER AND CONTRACTOR MAY NEED TO ADJUST MOUNT LOCATIONS. IN NO CASE SHALL THE MOUNT SPACING EXCEED "MAX. MOUNT SPACING"

LEGENDS

- PV ROOF ATTACHMENT

- RAILS

- RAFTERS/TRUSSES

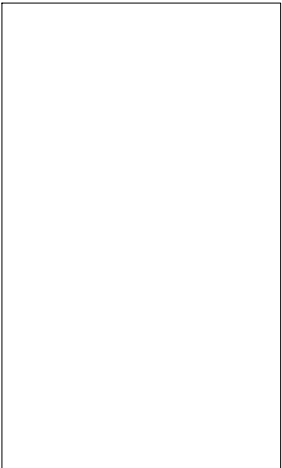
- ROOF OBSTRUCTION

- JUNCTION BOX

- FIRE SETBACK

- EXPOSED MODULE

- EDGE MODULES



BUILDING DEPARTMENT SEAL STAMP

LORD & LAWRENCE
CONSULTING ENGINEERS

CONTACT: (561) 660-5200
6801 LAKE WORTH ROAD SUITE 302
LAKE WORTH, FL 33467
FLORIDA REGISTRY# 33809

UrbanSolar

CONTACT: 561-609-2664
1225 NW BROKEN SOUND PKWY SUITE F
BOCA RATON, FL 33487
ELECTRICAL CONTRACTOR LICENSE: EC13005324

FAITH, PAMELA

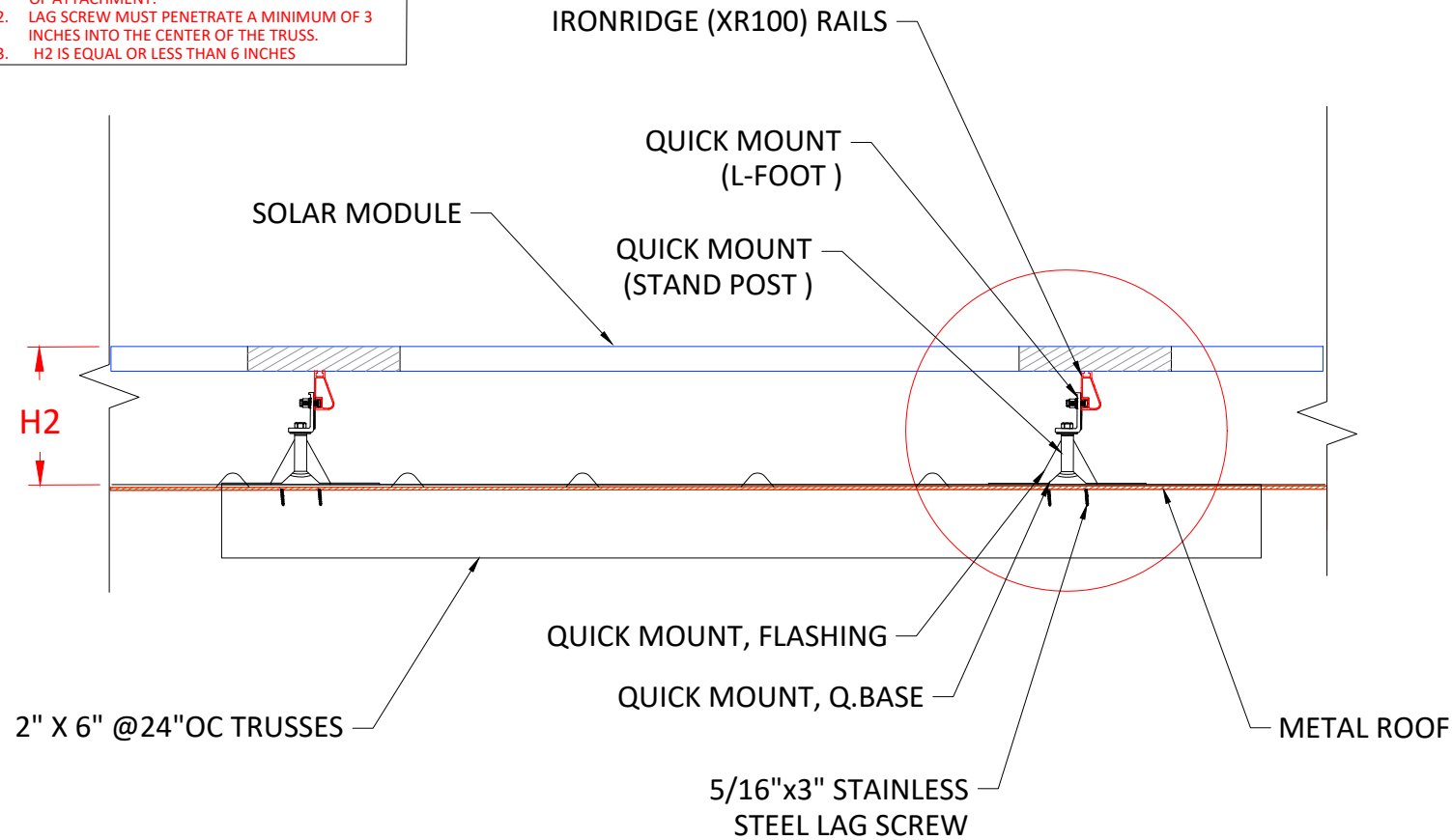
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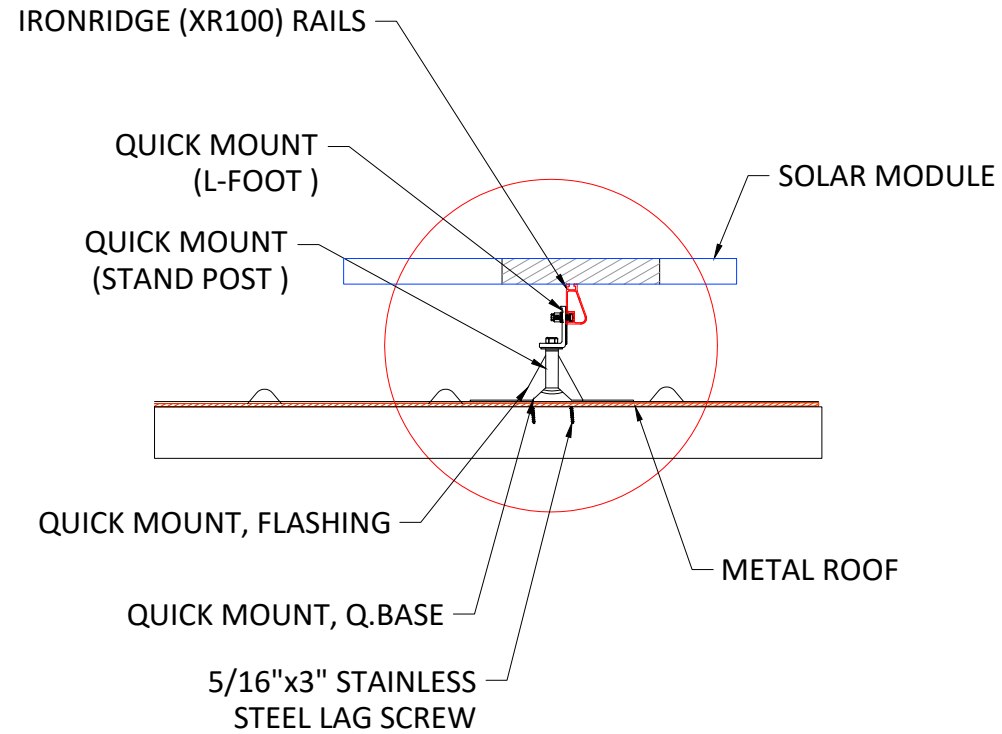
RACKING LAYOUT

PV-6

- NOTE:
1. FILL TRUSS PILOT HOLES WITH BOSTIK 915 OR ASTM C920 COMPLIANT SEALANT PRIOR TO INSTALLATION OF ATTACHMENT.
 2. LAG SCREW MUST PENETRATE A MINIMUM OF 3 INCHES INTO THE CENTER OF THE TRUSS.
 3. H2 IS EQUAL OR LESS THAN 6 INCHES



NOTE:MAX. RAIL CANTILIVER SHALL BE 16 INCHES (L/3) PER APPROVAL DETAILS ON SHEET 1/9 of XR-Q8 FROM FL PRODUCT APPROVAL FL41858.4



I CERTIFY THAT THE EXISTING ROOF AND BUILDING STRUCTURE CAN WITHSTAND ALL DEAD LOADS IMPOSED BY THE PHOTOVOLTAIC SYSTEM AND ALL WIND LOADS OF SPECIFIED INTENSITY IN ACCORDANCE WITH THE FLORIDA BUILDING CODE.

BUILDING DEPARTMENT SEAL STAMP



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6801 LAKE WORTH ROAD SUITE 302
LAKE WORTH, FL 33467
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CONTACT: 561-609-2664
1225 NW BROKEN SOUND PKWY SUITE F
BOCA RATON, FL 33487
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FAITH, PAMELA

3574 SE COUNTY ROAD 18
LAKE CITY, FL 32025
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STRUCTURAL DETAILS

PV-7

WIND LOAD CALCULATIONS FOR MODULES INSTALLED ON ROOFS WITH A HEIGHT LESS THAN 60'
BASED ON ASCE 7-22

SITE INFORMATION				
BUILDING CODE VERSION	2023 FLORIDA BUILDING CODE	RISK CATEGORY	II	PITCH 3 / 12
MEAN ROOF HEIGHT (ft)	15	EXPOSURE CATEGORY	C	
LEAST HORIZONTAL DIMENSION (ft)	43	ROOF SLOPE (°)	14.0	
PARAPET HEIGHT (ft)	0	ROOF TYPE	GABLE	
MODULE	JINKO JKMxxxN-54HBL4-B (Two Rails)	ULTIMATE WIND SPEED	130 mph	
MODULE LENGTH (in)	67.79	NOMINAL WIND SPEED	101 mph	
MODULE WIDTH (in)	44.65	K _D	0.85	
MODULE DEPTH (mm)	35	K _{ZT}	1.00	
MODULE DEPTH (in)	1.38	K _Z	0.85	
MODULE VERTICAL AREA = A _f (ft ²)	21.02	K _e	1.00	
MODULE HORIZONTAL AREA = A _s (ft ²)	0.65	V _E	1.0 OR 1.5	
HIGH VELOCITY HURRICANE ZONE?	NO	V _a	0.67	
RACKING SYSTEM	IRONRIDGE: XR100	BUILDING TYPE	NON-RESIDENTIAL	
MIN. MODULE SPACING (in)	0.37			

DESIGN CALCULATIONS PER ASCE 7-22 SECTION 29.4.4

VELOCITY PRESSURE (q _h) = .00256*K _Z K _{ZT} K _D V ²		VELOCITY PRESSURE (ASD) = 18.7		psf
WIDTH OF PRESSURE COEFFICIENT	43' * 10% = 4.3'	ZONE WIDTH 'a'	4.3	
	15' * 40% = 6'			
EXTERNAL PRESSURE COEFFICIENT				
	Zone 1	0.53	-1.67	
	Zone 2	0.53	-2.28	
	Zone 3	0.53	-3.02	

MODULE DESIGN PRESSURES

	EDGE OR EXPOSED MODULES?	DOWN	UP NORMAL	UP EXPOSED	
Zone 1	YES	16.0	-20.9	-31.3	(psf)
Zone 2	YES	16.0	-28.4	-42.7	(psf)
Zone 3	YES	16.0	-37.7	-56.5	(psf)
MODULE ALLOWABLE PRESSURE		69.4 psf			

RAILS

RAIL ORIENTATION	PORTRAIT
PV SYSTEM TOTAL WEIGHT	907.38 (lb)
PV SYSTEM DISTRIBUTED WEIGHT	2.7 (psf)
SEE RAIL MANUFACTURER TABLES FOR MAXIMUM RAIL SPANS. IN NO CASE SHALL THE ATTACHMENT SPACING SHOWN ABOVE EXCEED THE MAX RAIL SPAN.	

ATTACHMENTS

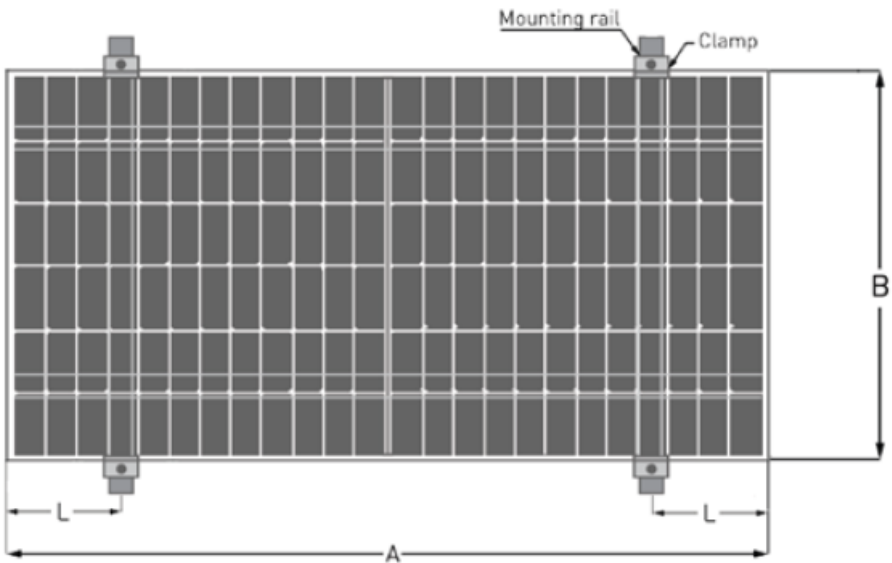
ATTACHMENT TYPE	QUICKMOUNT QBASE LOW SLOPE POST				
NOMINAL RAFTER SPACING	24" O.C.				
	NORM. MODULES	# RALS NORM.	EXP. MODULES	# RAILS EXP.	CLAMP UPLIFT
MAX DISTANCE BETWEEN ATTACHMENTS ZONE 1 (in)	48	2-RAIL SYSTEM	48	2-RAIL SYSTEM	NORM. 219.4
MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 1 (lb)	235.8		353.7		EXP. 329.1
MAX DISTANCE BETWEEN ATTACHMENTS ZONE 2 (in)	48	2-RAIL SYSTEM	48	2-RAIL SYSTEM	NORM. 298.9
MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 2 (lb)	321.3		482.0		EXP. 448.3
MAX DISTANCE BETWEEN ATTACHMENTS ZONE 3 (in)	48	2-RAIL SYSTEM	48	2-RAIL SYSTEM	NORM. 396.0
MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 3 (lb)	425.8		638.6		EXP. 594.1
ALLOWABLE UPLIFT FORCE PER ATTACHMENT	750.0	(lb)			
MIN. LAG PENETRATION INTO TRUSS	2.50	(in)	WITHDRAWAL = 8100*G^(3/2)*D^(3/4)*L		
SCREW WITHDRAWAL RESISTANCE	2302	(lb)	G = Specific gravity of wood (0.55 for Southern Pine)		
MAX LATERAL FORCE PER ATTACHMENT	23	(lb)	L = Depth of penetration		
ALLOWABLE LATERAL FORCE PER ATTACHMENT	657	(lb)	D = Diameter of lag screw		
ALLOWABLE UPLIFT PER MID/END CLAMP	945	(lb)			

NOTES

1. MODULE ALLOWABLE WIND PRESSURE OBTAINED FROM MANUFACTURER DATASHEET.
2. SEE ATTACHMENT PLAN FOR ACTUAL ATTACHMENT SPACING IN EACH ZONE
3. HVHZ DEFINED AS MIAMI-DADE AND BROWARD COUNTIES
4. LAG SCREW WITHDRAWAL RESISTANCE OBTAINED FROM THE USDA WOOD HANDBOOK, WOOD AS AN ENGINEERING MATERIAL.
5. ROOF TRUSSES ARE #2 SOUTHERN YELLOW PINE
6. USE INCLUDED 5/16" x 3" LAG SCREWS TO SECURE MOUNT TO CENTER OF EACH TRUSS. MINIMUM SCREW PENETRATION ITO TRUSS IS 2.5" USE TWO SCREWS PER ATTACHMENT.
7. RAIL SPANS OBTAINED FROM MANUFACTURER'S PUBLISHED DATA.
8. ANY EDGE AND/OR EXPOSED MODULES PRESENT IN PROPOSED INSTALLATION WHERE ANY WIND ZONE'S DESIGN PRESSURE EXCEEDS THE MODULE ALLOWABLE PRESSURE SHALL BE VERIFIED WITH WEIGHTED AVERAGE PRESSURE CALCULATIONS RESPECTIVE TO EACH MODULE CASE, AS APPLICABLE.

2. Mounting System Types and Approved Loads

a. Top Clamps or Bottom Flange with Two Rails – Location and Ratings



Installation method of clamps on rails on long side of module

Module Type	Model Number	Clamp Position	Approved Test Load (Pa)
Eagle G6R	JKMxxxN-54HL4-B	A/5±50 mm	5400/-5000
Eagle G6T	JKMxxxN-72HL4-TV	A/5±50 mm	5400/-4200
Eagle G6B	JKMxxxN-72HL4-BDV	A/5±50 mm	5400/-4200

BUILDING DEPARTMENT SEAL STAMP



CONTACT: (561) 660-5200
6801 LAKE WORTH ROAD SUITE 302
LAKE WORTH, FL 33467
FLORIDA REGISTRY# 33809



CONTACT: 561-609-2664
1225 NW BROKEN SOUND PKWY SUITE F
BOCA RATON, FL 33487
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FAITH, PAMELA

3574 SE COUNTY ROAD 18
LAKE CITY, FL 32025
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WIND LOAD CALCULATION

PV-8



THE MOST DEPENDABLE SOLAR PRODUCT

EAGLE® 54 G6R

420-440 WATT • N-TYPE TOPCON

Positive power tolerance of 0~+3%

- NYSE-listed since 2010, Bloomberg Tier 1 manufacturer
- Top performance in the strictest 3rd party labs
- Automated manufacturing utilizing artificial intelligence
- Vertically integrated, tight controls on quality
- Premium solar factories in USA, Vietnam, and Malaysia

KEY FEATURES

- Superior Aesthetics**
Black backsheet and black frame create ideal look for residential applications.
- N-Type Technology**
N-type cells with Jinko's in-house TOPCon technology offers better performance and improved reliability.
- Thick and Tough**
Fire Type 1 rated module engineered with a thick frame, 3.2mm front side glass, and thick backsheet for added durability.
- Shade Tolerant**
Twin array design allows continued performance even with shading by trees or debris.
- Protected Against All Environments**
Certified to withstand humidity, heat, rain, marine environments, wind, hailstorms, and packed snow.
- Warranty**
25-year product and 30-year linear power warranty.

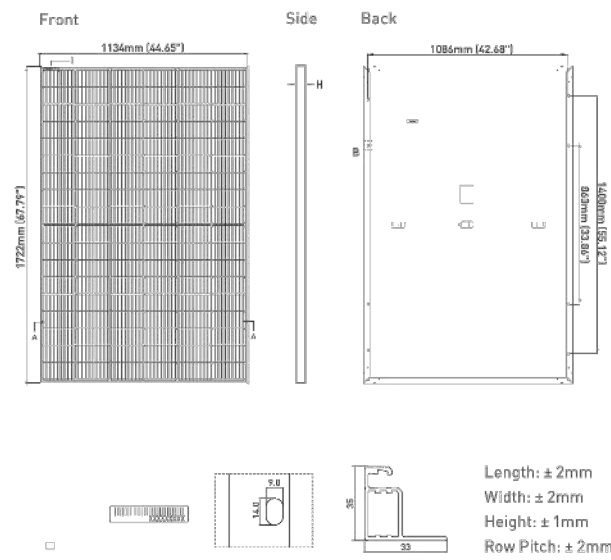
- ISO9001:2015 Quality Standards
- ISO14001:2015 Environmental Standards
- IEC61215, IEC61730 certified products
- ISO45001:2018 Occupational Health & Safety Standards
- UL61730 certified products



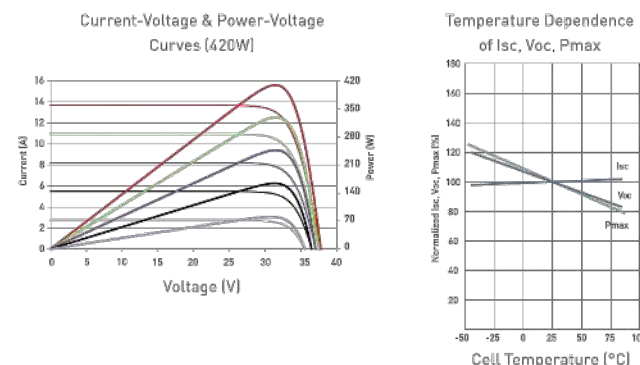
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ENGINEERING DRAWINGS



ELECTRICAL PERFORMANCE & TEMPERATURE DEPENDENCE



MECHANICAL CHARACTERISTICS

No. of Half Cells	108 (2 x 54)
Dimensions	1722 × 1134 × 35mm [67.79 × 44.65 × 1.38 inch]
Weight	22.0kg (48.5lbs)
Front Glass	3.2mm, Anti-Reflection Coating High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminum Alloy
Junction Box	IP68 Rated
Output Cables	12 AWG, 1400mm (55.12in) or Customized Length
Connector	Staubli MC4
Fire Type	Type 1
Pressure Rating	5400Pa (Snow) & 2400Pa (Wind)*

*see Supplemental Installation Manual for higher wind pressure rating solutions

TEMPERATURE CHARACTERISTICS

Temperature Coefficients of Pmax	-0.29%/°C
Temperature Coefficients of Voc	-0.25%/°C
Temperature Coefficients of Isc	0.045%/°C
Nominal Operating Cell Temperature (NOCT)	45±2°C

MAXIMUM RATINGS

Operating Temperature [°C]	-40°C~+85°C
Maximum System Voltage	1000VDC
Maximum Series Fuse Rating	25A

PACKAGING CONFIGURATION

(Two pallets = One stack)
31pcs/pallets, 62pcs/stack, 806pcs/40 HQ Container

WARRANTY

25-year product and 30-year linear power warranty
1st year degradation not to exceed 1%, each subsequent year not to exceed 0.4%, minimum power at year 30 is 87.4% or greater.

ELECTRICAL CHARACTERISTICS

Module Type	JKM420N-54HL4-B		JKM425N-54HL4-B		JKM430N-54HL4-B		JKM435N-54HL4-B		JKM440N-54HL4-B	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power [Pmax]	420Wp	316Wp	425Wp	320Wp	430Wp	323Wp	435Wp	327Wp	440Wp	331Wp
Maximum Power Voltage [Vmp]	32.16V	29.95V	32.37V	30.19V	32.58V	30.30V	32.78V	30.50V	32.99V	30.73V
Maximum Power Current [Imp]	13.06A	10.55A	13.13A	10.60A	13.20A	10.66A	13.27A	10.72A	13.34A	10.77A
Open-circuit Voltage [Voc]	38.74V	36.80V	38.95V	37.00V	39.16V	37.20V	39.36V	37.39V	39.57V	37.59V
Short-circuit Current [Isc]	13.51A	10.91A	13.58A	10.96A	13.65A	11.02A	13.72A	11.08A	13.80A	11.14A
Module Efficiency STC [%]	21.51%		21.76%		22.02%		22.28%		22.53%	

*STC: ☀ Irradiance 1000W/m²
NOCT: ☀ Irradiance 800W/m²

🌡 Cell Temperature 25°C
🌡 Ambient Temperature 20°C

☁ AM = 1.5
☁ AM = 1.5 🌬 Wind Speed 1m/s

*Power measurement tolerance: ±3%

The company reserves the final right for explanation on any of the information presented hereby. JKM400-420N-54HL4-B-F3-US

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CONTACT: (561) 660-5200
6801 LAKE WORTH ROAD SUITE 302
LAKE WORTH, FL 33467
FLORIDA REGISTRY# 33809



CONTACT: 561-609-2664
1225 NW BROKEN SOUND PKWY SUITE F
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FAITH, PAMELA

3574 SE COUNTY ROAD 18
LAKE CITY, FL 32025
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MODULE DATASHEET

PV-9



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 using advanced 55-nm technology with high-speed digital logic and has superfast 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.



Connect PV modules quickly and easily to the IQ8 Series Microinverters that have integrated MC4 connectors.



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.



IQ8 Series Microinverters are UL Listed as PV rapid shutdown equipment and conform with various regulations when installed according to manufacturer's instructions.

* Meets UL 1741 only when installed with IQ System Controller 2 or 3.
** IQ8 and IQ8+ support split-phase, 240 V installations only.

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IQ8SP-MC4-DSH-00206-3.0-EN-US-2024-02-09

Easy to install

- Lightweight and compact with plug-and-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) and IEEE 1547:2018 (UL 1741-SB)

NOTE:

- IQ8 Microinverters cannot be mixed together with previous generations of Enphase microinverters (IQ7 Series, IQ6 Series, and so on) in the same system.
- IQ Microinverters ship with default settings that meet North America's IEEE 1547 interconnection standard requirements. Region-specific adjustments may be requested by an Authority Having Jurisdiction (AHJ) or utility representative according to the IEEE 1547 interconnection standard. An IQ Gateway is required to make these changes during installation.

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)	UNITS	IQ8-60-M-US	IQ8PLUS-72-M-US
Commonly used module pairings ¹	W	235–350	235–440
Module compatibility	—	To meet compatibility, PV modules must be within the following maximum input DC voltage and maximum module I_{sc} . Module compatibility can be checked at https://enphase.com/installers/microinverters/calculator .	
MPPT voltage range	V	27–37	27–45
Operating range	V	16–48	16–58
Minimum/Maximum start voltage	V	22/48	22/58
Maximum input DC voltage	V	50	60
Maximum continuous input DC current	A	10	12
Maximum input DC short-circuit current	A	25	
Maximum module (I_{sc})	A	20	
Overvoltage class DC port	—	II	
DC port backfeed current	mA	0	
PV array configuration	—	Ungrounded array; no additional DC side protection required; AC side protection requires max. 20 A per branch circuit	
OUTPUT DATA (AC)	UNITS	IQ8-60-M-US	IQ8PLUS-72-M-US
Peak output power	VA	245	300
Maximum continuous output power	VA	240	290
Nominal grid voltage (L-L)	V	240, split-phase (L-L), 180°	
Minimum and Maximum grid voltage ²	V	211–264	
Maximum continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	47–68	
AC short circuit fault current over three cycles	Arms	2	
Max units per 20 A (L-L) branch circuit ³	—	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	%	97.7	
CEC weighted efficiency	%	97	
Nighttime power consumption	mW	23	25
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		Stäubli MC4	
Dimensions (H × W × D)		212 mm (8.3") × 175 mm (6.9") × 30.2 mm (1.2")	
Weight		1.1 kg (2.43 lbs)	
Cooling		Natural convection—no fans	
Approved for wet locations		Yes	
Pollution degree		PD3	
Enclosure		Class II double-insulated, corrosion-resistant polymeric enclosure	
Environmental category/UV exposure rating		NEMA Type 6/outdoor	

(1) No enforced DC/AC ratio.
(2) Nominal voltage range can be extended beyond nominal if required by the utility.
(3) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-MC4-DSH-00206-3.0-EN-US-2024-02-09

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FAITH, PAMELA

3574 SE COUNTY ROAD 18
LAKE CITY, FL 32025
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SIGNATURE WITH SEAL

INVERTER DATASHEET

PV-10



DATA SHEET



X-IQ-AMI-240-5-HDK
X-IQ-AMI-240-5C-HDK
X-IQ-AMI-240-5
X-IQ-AMI-240-5C

IQ Combiner 5/5C

The IQ Combiner 5/5C consolidates interconnection equipment into a single enclosure and streamlines IQ Series Microinverters and IQ Gateway installation by providing a consistent, pre-wired solution for residential applications. IQ Combiner 5/5C uses wired control communication and is compatible with IQ System Controller 3/3G and IQ Battery 5P.

The IQ Combiner 5/5C, IQ Series Microinverters, IQ System Controller 3/3G, and IQ Battery 5P provide a complete grid-agnostic Enphase Energy System.



IQ Series Microinverters
The high-powered smart grid-ready IQ Series Microinverters (IQ6, IQ7, and IQ8 Series) simplify the installation process.



IQ System Controller 3/3G
Provides microgrid interconnection device (MID) functionality by automatically detecting grid failures and seamlessly transitioning the home energy system from grid power to backup power.



IQ Battery 5P
Fully integrated AC battery system. Includes six field-replaceable IQBD-BAT Microinverters.



IQ Load Controller
Helps prioritize essential appliances during a grid outage to optimize energy consumption and prolong battery life.



5-year limited warranty



*For country-specific warranty information, see the <https://enphase.com/installers/resources/warranty> page.
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IQC-5-5C-CSH-00007-S.D-EN-US-2024-09-30

IQ Combiner 5/5C

MODEL NUMBER	
IQ Combiner 5 (X-IQ-AMI-240-5/ X-IQ-AMI-240-5-HDK)	IQ Combiner 5 with IQ Gateway printed circuit board for integrated revenue-grade PV production metering (ANSI C12.20 ±0.5%), consumption monitoring (±2.5%), and IQ Battery monitoring (±2.5%). Includes a silver solar shield to deflect heat. IQ-AMI-240-5-HDK includes a factory installed hold-down kit compatible with all the circuit breakers mentioned in the Accessories and Replacement Parts section.
IQ Combiner 5C (X-IQ-AMI-240-5C/ X-IQ-AMI-240-5C-HDK)	IQ Combiner 5C with IQ Gateway printed circuit board for integrated revenue-grade PV production metering (ANSI C12.20 ±0.5%), consumption monitoring (±2.5%), and IQ Battery monitoring (±2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-MI-06-SP-05) ¹ . Includes a silver solar shield to deflect heat. IQ-AMI-240-5C-HDK includes a factory installed hold-down kit compatible with all the circuit breakers mentioned in the Accessories and Replacement Parts section.
WHAT'S IN THE BOX	
IQ Gateway printed circuit board	IQ Gateway is the platform for total energy management for comprehensive, remote maintenance, and management of the Enphase Energy System
Busbar	80 A busbar with support for one IQ Gateway breaker and four 20 A breakers for installing IQ Series Microinverters and IQ Battery 5P.
IQ Gateway breaker	Circuit breaker, 2-pole, 10 A/15 A
Production CT	Pre-wired revenue-grade solid-core CT, accurate up to ±0.5%
Consumption CT	Two consumption metering clamp CTs, shipped with the box, accurate up to ±2.5%
IQ Battery CT	One battery metering clamp CT, shipped with the box, accurate up to ±2.5%
CTRL board	Control board for wired communication with IQ System Controller 3/3G and the IQ Battery 5P
Enphase Mobile Connect (only with IQ Combiner 5C)	4G-based LTE-M1 cellular modem (CELLMODEM-MI-06-SP-05) with a 5-year T-Mobile data plan
Accessories kit	Spare control headers for the COMMS-KIT-2 board
ACCESSORIES AND REPLACEMENT PARTS (NOT INCLUDED, ORDER SEPARATELY)	
CELLMODEM-MI-06-SP-05	4G-based LTE-M1 cellular modem with a 5-year T-Mobile data plan
CELLMODEM-MI-06-AT-05	4G-based LTE-M1 cellular modem with a 5-year AT&T data plan
Circuit breakers (off-the-shelf)	Supports Eaton BR2XX, Siemens Q2XX, and GE/ABB THQL21XX Series circuit breakers (XX represents 10, 15, 20, 30, 40, 50, or 60). Also supports Eaton BR220B, BR230B, and BR249B circuit breakers compatible with the hold-down kit.
Circuit breakers (provided by Enphase)	BRK-10A-2-240V, BRK-15A-2-240V, BRK-20A-2P-240V, BRK-15A-2P-240V-B, and BRK-20A-2P-240V-B (more details in the "Accessories" section)
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 5/5C
XA-ENV2-PCBA-5	IQ Gateway replacement printed circuit board (PCB) for IQ Combiner 5/5C
X-IQ-NA-HD-125A	Hold-down kit compatible with Eaton BR-B Series circuit breakers (with screws). Not required for X-IQ-AMI-240-5-HDK/X-IQ-AMI-240-5C-HDK.
XA-COMMS2-PCBA-5	Replacement COMMS-KIT-2 printed circuit board (PCB) for IQ Combiner 5/5C
ELECTRICAL SPECIFICATIONS	
Rating	80 A
System voltage and frequency	120/240 VAC or 120/208 VAC, 60 Hz
Busbar rating	125 A
Fault current rating	10 kAIC
Maximum continuous current rating (input from PV/storage)	64 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR, Siemens Q, or GE/ABB THQL Series distributed generation (DG) breakers only (not included)
Maximum total branch circuit breaker rating (input)	80 A or distributed generation/95 A with IQ Gateway breaker included
IQ Gateway breaker	10 A or 15 A rating GE/Siemens/Eaton included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway

¹ A plug-and-play industrial grade cell modem for systems of up to 60 microinverters. Available in the United States, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.

IQC-5-5C-CSH-00007-S.D-EN-US-2024-09-30

ACCESSORIES AND REPLACEMENT PARTS (NOT INCLUDED, ORDER SEPARATELY)

Consumption monitoring CT (CT-200-CLAMP)	A pair of 200 A clamp-style current transformers is included with the box.
IQ Battery metering CT	200 A clamp-style current transformer for IQ Battery metering, included with the box.

MECHANICAL DATA

Dimensions (W × H × D)	37.5 cm × 49.5 cm × 16.8 cm (14.75" × 19.5" × 6.63"). Height is 53.5 cm (21.06") with mounting brackets.
Weight	7.5 kg (16.5 lb)
Ambient temperature range	-40°C to 46°C (-40°F 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 80 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

Communication (in-premise connectivity)	Built-in CTRL board for wired communication with the IQ Battery 5P and the IQ System Controller 3/3G. Integrated power line communication for IQ Series Microinverters.
Altitude	Up to 2,600 meters (8,530 feet)

COMMUNICATION INTERFACES

Integrated Wi-Fi	802.11b/g/n (dual band 2.4 GHz/5 GHz) for connecting the Enphase Cloud through the internet.
Wi-Fi range (recommended)	10 m (32.8 feet)
Bluetooth	BLE4.2, 10 m range to configure Wi-Fi SSID
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included) for connecting to the Enphase Cloud through the internet.
Cellular/Mobile Connect	CELLMODEM-MI-06-SP-05 or CELLMODEM-MI-06-AT-05 (included with the IQ Combiner 5C)
Digital I/O	Digital input/output for grid operator control
USB 2.0	Mobile Connect, COMMS-KIT-01 for IQ Battery 3/3T/10/10T, COMMS-KIT-02 for IQ Battery 5P
Access point (AP) mode	For connection between the IQ Gateway and a mobile device running the Enphase Installer App
Metering ports	Up to two Consumption CTs, one IQ Battery CT, and one Production CT
Power line communication	90–110 kHz
Web API	See https://developer-v4.enphase.com
Local API	See Guide for local API

COMPLIANCE

IQ Combiner with IQ Gateway	UL 1741 CAN/CSA C22.2 No. 107.1, Title 47 CFR, Part 15, Class B, ICES 003, NOM-208-SCFI-2016, IEC 61010-1, CAN/CSA 22.2 No. 61010-1, IEEE 1547:2018 (UL 1741-SB, 3rd Ed.), IEEE 2030.5/CSIP Compliant, Production metering: ANSI C12.20 accuracy class 0.5 (PV production)
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COMPATIBILITY

PV	Microinverters	IQ6, IQ7, and IQ8 Series Microinverters
COMMS-KIT-01 ¹	IQ System Controller	EP200G101-M240US00
	IQ System Controller 2	EP200G101-M240US01
	IQ Battery	ENCHARGE-3-1P-NA, ENCHARGE-10-1P-NA, ENCHARGE-3T-1P-NA, ENCHARGE-10T-1P-NA
COMMS-KIT-02 ²	IQ System Controller 3	SC200D111C240US01, SC200G111C240US01
	IQ Battery	IQBATTERY-5P-1P-NA

¹ For information about IQ Combiner 5/5C compatibility with the 2nd-generation batteries, refer to the [compatibility matrix](#).

² IQ Combiner 5/5C comes pre-equipped with COMMS-KIT-02.

IQC-5-5C-CSH-00007-S.D-EN-US-2024-09-30

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BOCA RATON, FL 33487
ELECTRICAL CONTRACTOR LICENSE: EC13005324

FAITH, PAMELA

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SIGNATURE WITH SEAL

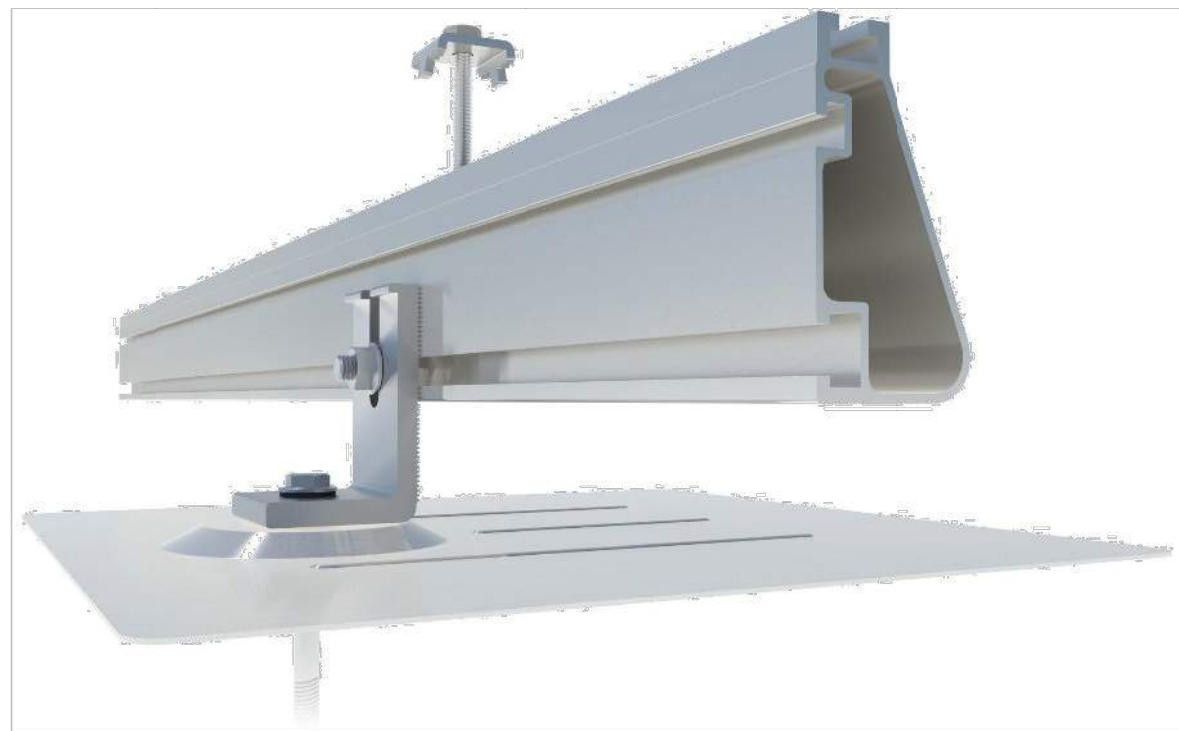
COMBINER PANEL DATASHEET

PV-11



Roof Mount System

Datasheet



Built for solar's toughest roofs.

IronRidge builds the strongest roof mounting system in solar. Every component has been tested to the limit and proven in extreme environments.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 20-year warranty.



Strength Tested

All components evaluated for superior structural performance.



Class A Fire Rating

Certified to maintain the fire resistance rating of the existing roof.



Integrated Grounding

UL 2703 system eliminates separate module grounding components.



PE Certified

Pre-stamped engineering letters available in most states.



Design Software

Online tool generates a complete bill of materials in minutes.



20 Year Warranty

Twice the protection offered by competitors.

XR Rails

XR10 Rail



A low-profile mounting rail for regions with light snow.

- 6' spanning capability
- Moderate load capability
- Clear & black anod. finish

XR100 Rail



The ultimate residential solar mounting rail.

- 8' spanning capability
- Heavy load capability
- Clear & black anod. finish

XR1000 Rail



A heavyweight mounting rail for commercial projects.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish

Internal Splices



All rails use internal splices for seamless connections.

- Self-tapping screws
- Varying versions for rails
- Grounding Straps offered

Attachments

FlashFoot



Anchor, flash, and mount with all-in-one attachments.

- Ships with all hardware
- IBC & IRC compliant
- Certified with XR Rails

Slotted L-Feet



Drop-in design for rapid rail attachment.

- High-friction serrated face
- Heavy-duty profile shape
- Clear & black anod. finish

Standoffs



Raise flush or tilted systems to various heights.

- Works with vent flashing
- Ships pre-assembled
- 4" and 7" Lengths

Tilt Legs



Tilt assembly to desired angle, up to 45 degrees.

- Attaches directly to rail
- Ships with all hardware
- Fixed and adjustable

Clamps & Grounding

End Clamps



Slide in clamps and secure modules at ends of rails.

- Mill finish & black anod.
- Sizes from 1.22" to 2.3"
- Optional Under Clamps

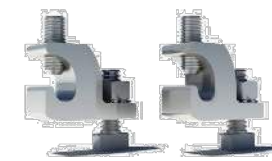
Grounding Mid Clamps



Attach and ground modules in the middle of the rail.

- Parallel bonding T-bolt
- Reusable up to 10 times
- Mill & black stainless

T-Bolt Grounding Lugs



Ground system using the rail's top slot.

- Easy top-slot mounting
- Eliminates pre-drilling
- Swivels in any direction

Accessories



Provide a finished and organized look for rails.

- Snap-in Wire Clips
- Perfected End Caps
- UV-protected polymer

Free Resources



Design Assistant

Go from rough layout to fully engineered system. For free.

[Go to IronRidge.com/rm](http://GoToIronRidge.com/rm)



NABCEP Certified Training

Earn free continuing education credits, while learning more about our systems.

[Go to IronRidge.com/training](http://GoToIronRidge.com/training)



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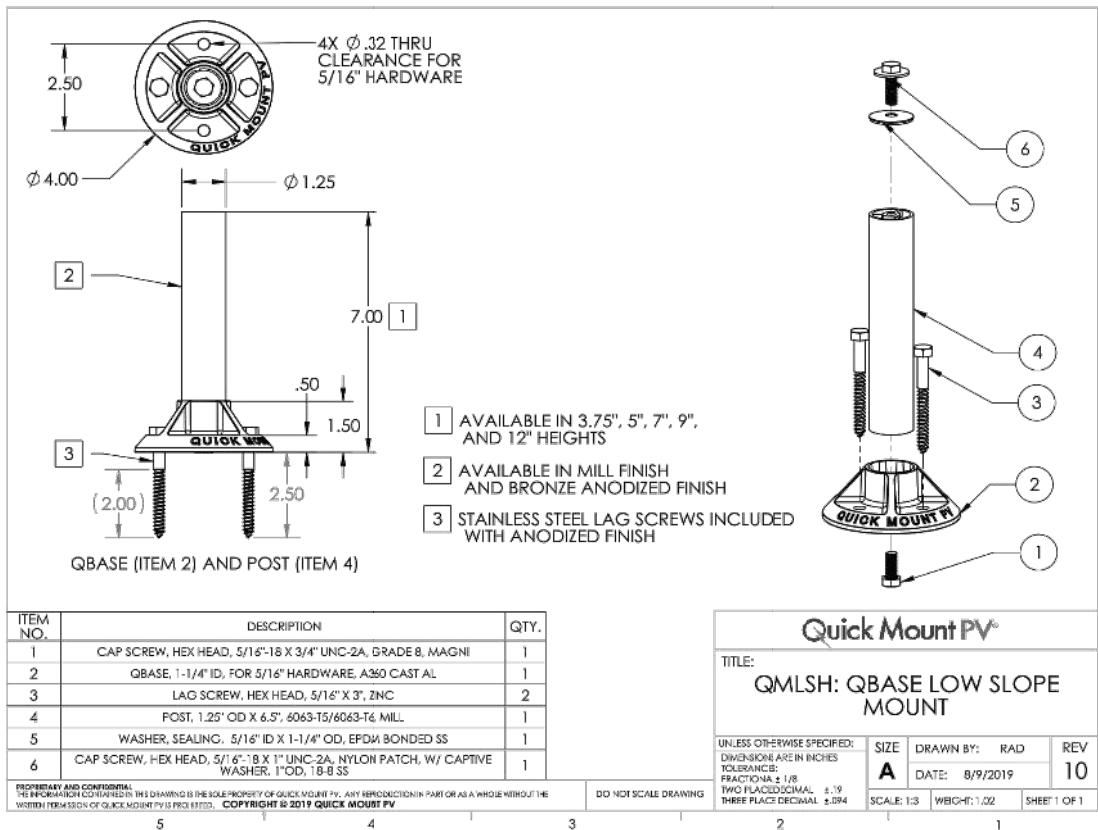
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RACKING DATASHEET

PV-12

QBase Low Slope Mount | QMLSH



Lag pull-out (withdrawal) capacities (lbs) in typical lumber:			
Lag Bolt Specifications			
	Specific Gravity	2/ea 5/16" shaft per 2.5" thread depth	5/16" shaft per 1" thread depth
Douglas Fir, Larch	.50	1330	266
Douglas Fir, South	.46	1175	235
Engelmann Spruce, Lodgepole Pine (MSR 1650 F & higher)	.46	1175	235
Hem, Fir	.43	1060	212
Hem, Fir (North)	.46	1175	235
Southern Pine	.55	1535	307
Spruce, Pine, Fir	.42	1025	205
Spruce, Pine, Fir (E of 2 million psi and higher grades of MSR and MEL)	.50	1330	266

Sources: American Wood Council, NDS 2005, Table 11.2 A, 11.3.2 A

Notes:

1) Thread must be embedded in a rafter or other structural roof member.

2) See IBC for required edge distances.



BI 7.2.3-5

Aug-2019, Rev 10

QBase Low Slope Mount Instructions

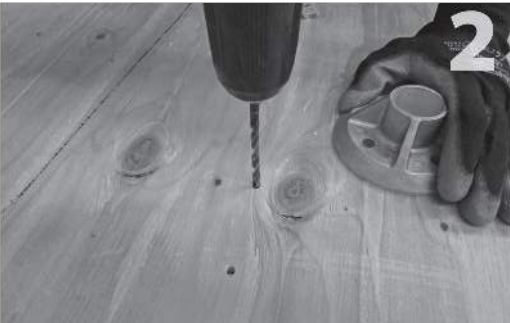
WARNING: Quick Mount PV products are NOT designed and should NOT be used to anchor fall protection equipment.

Installation Tools Required: Drill with 7/32" bit, impact gun with 1/2" socket, 1 tube of sealant compatible with roofing materials, pencil, chalk line

CAUTION: Prior to installation, check that proper screw embedment will be achieved for the necessary site load and roofing configurations.



Locate the desired mount placement over a rafter (or custom wood blocking). Using the base as a template, mark the two penetration points with either a pen or light drilling. Use two opposing holes on the base plate, parallel to the structural member.



Drill both pilot holes with a 7/32-inch bit. Make sure to hold the drill square to the rafter. The lag bolts must be anchored into a structural member, so it is very important to hit the center of the rafter with your pilot holes. Fill the pilot holes with a sealant compatible with roofing materials.



Prior to attaching the base to the roof, place the grade-8 hex bolt (item 1) in the bottom of the base (item 2) and screw the post (item 4) in. This is easier than adding the post after securing the base to the roof. Attach the base/post assembly to the roof with two lag bolts (item 3).



Attach the hardware (items 5-8) to the top of the post. (Be sure to seal off the post from weather exposure with the sealing washer (item 5), in the interim before racks are installed.) You are now ready to flash the mount, roof around it, and attach racking. Aluminum flashings for built-up roofs are available from Quick Mount PV in 4" and 8" cones (sold separately). For membrane roofs, be sure to use manufacturer-specified flashing and utilize the services of a certified roofer.

LA RESEARCH REPORTS (LARR): Approved for use in the City of Los Angeles per LARR #26194



925-478-8269 | www.quickmountpv.com | tech@quickmountpv.com
2700 Mitchell Dr. | Walnut Creek, CA 94598

BI 7.2.3-5

Aug-2019, Rev10

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BUILDING DEPARTMENT SEAL STAMP



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SIGNATURE WITH SEAL

ATTACHMENT DATASHEET

PV-13



915

POLYURETHANE SEALANT & ADHESIVE

KEY FEATURES

- Tenacious bond to difficult substrates
- Permanently flexible
- Miami-Dade approval NOA 17-0329.18, 15-0520.01

DESCRIPTION

915 sealant is a one-component, smooth polyurethane adhesive capable of dynamic joint movement totaling 70% of original joint geometry (+35%). The sealant cures to a tough, flexible rubber when exposed to moisture present in the atmosphere. Bostik 915 all seasons formula has physical properties that will remain relatively stable over time. The cured performance temperature range is -400F to 1500F. Where textured appearance is needed, please use Bostik 916.

APPLICABLE STANDARDS

- ASTM C920, TYPE S, GRADE NS, CLASS 35 USE NT, A AND M
- US Federal Specification TT-S 00230C (COMB-NBS) for one-component sealants as Class A, non-sag
- CARB, SCAQMD, and OTC compliant
- Canadian Specification CAN /CGSB 19.13-M87
- Miami-Dade County, Florida, NOA No.: 13.0423.10, 05/24/17
- Miami-Dade TAS 102- Static Uplift Resistance
- AAMA 808.3
- AAMA 100/200/300 Installation requirements

BASIC USES

915 is designed for applications from foundation to finish and is ideal for, sealing expansion and control joints, tilt up joints, perimeters of doors, windows, and other wall penetrations. It has tenacious sealing and bonding performance for many roofing applications, metal roofs, gutters, roof tile installations, flashing and sheet metal applications.

915 cures to form a durable, flexible bond with most building materials such as stone, foam, masonry, ceramic, wood, steel, Kynar® coated metals and copper and most other metals.

INSTALLATION PROTOCOL

Miami-Dade County Considerations: Mate or join adjacent surfaces prior to the Bostik 915 skinning and subsequent curing, to maximize wetting potential of the sealant to the substrates. Allow full-cure,



typically 7 days, prior to any mechanical stress testing procedures. It is recommended that adhesion testing be performed to capture batch control qualities of proposed substrates.

Joint Design: In general, more joint movement can be accommodated in a thin bead of sealant than a thick bead. Bostik 915 should be no thicker than 1/2" (12.7mm) and no thinner than 1/4" (6.4mm). In joints between 1/2" and 1", the ratio of sealant width to depth should be approximately 2:1. Sealant depth in joints between 1/4" and 1/2" should be 1/4" deep. Joints with dynamic movement should not be designed in widths less than 1/4".

Surface Preparation: Surfaces must be structurally clean, dry (no frost) and structurally sound, free of contaminants, including, but not limited to, dust, dirt, loose particles, tar, asphalt, rust, mill oil, etc. If substrate is painted or coated, scrape away all loose and weakly bonded paint or coating. Any paint or coating that cannot be removed must be tested to verify adhesion of the sealant or to determine the appropriate surface preparation if needed. (See ASP section on next page for details.)

Backer Rods and Bond Breaker Tapes: Bond breakers including, but not limited to, closed-cell polyethylene backer rods are used to control depth of the sealant bead, provide a firm tooling surface

This supersedes and replaces in its entirety all previously published versions of this document. T1470 (Last revised on 03.19.19)



DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

NOTICE OF ACCEPTANCE (NOA)

Bostik, Inc.
11320 W. Watertown Plank Road
Wauwatosa, WI 53226-3413

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION

11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
T (786)315-2590 F (786) 315-2599

www.miamidade.gov/economy

SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER -Product Control Section to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (in Miami-Dade County) and/or the AHJ (in areas other than Miami-Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the Florida Building Code including the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: Bostik 915/915RT

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA renews NOA# 15-0520.01 and consists of pages 1 through 3.
The submitted documentation was reviewed by Alex Tigera.

Alex Tigera



NOA No 21-0222.01
Expiration Date: 02/25/26
Approval Date: 03/04/21
Page 1 of 3

BUILDING DEPARTMENT SEAL STAMP



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SEALANT DATASHEET

PV-14



UFO® Family of Components

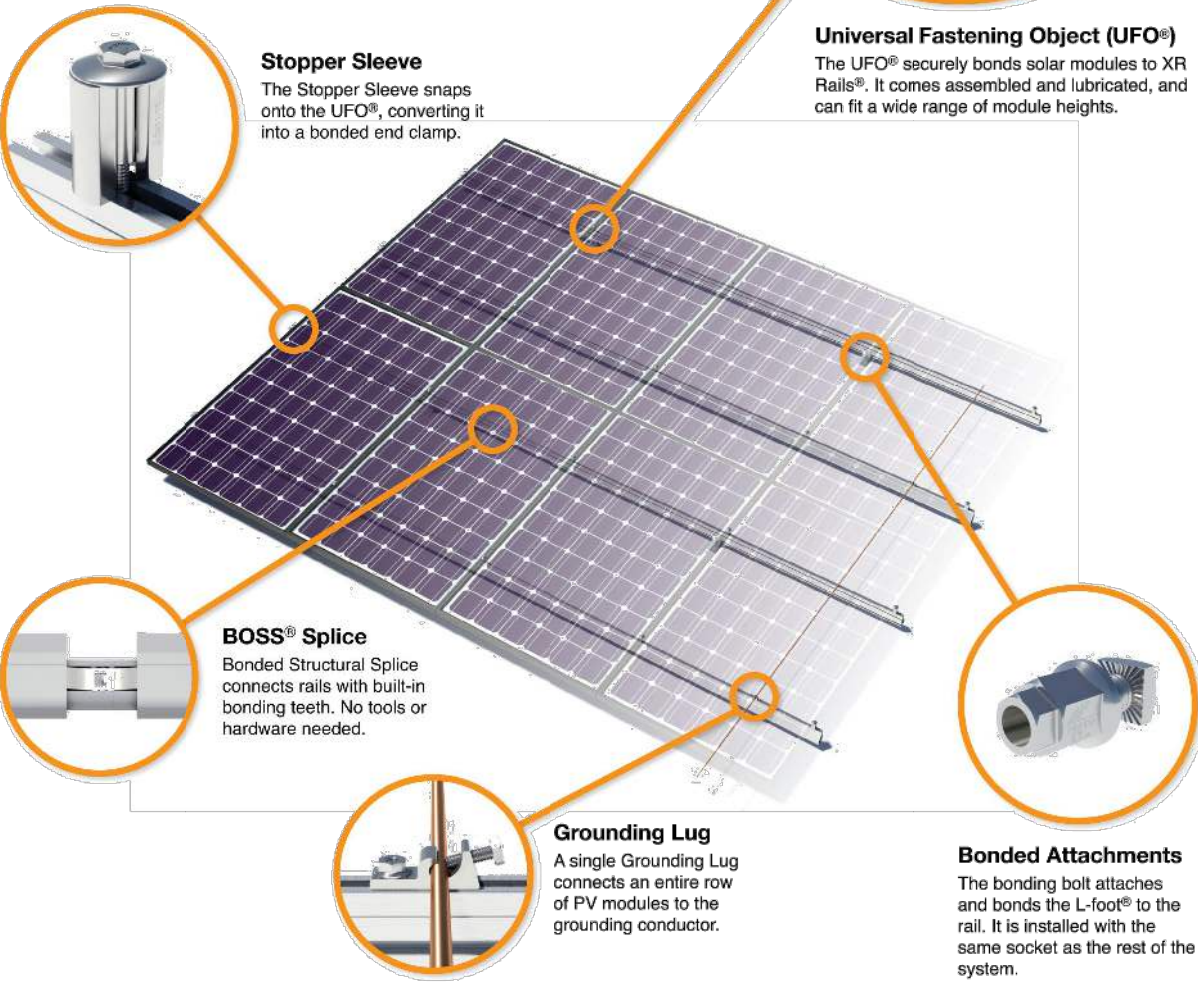
Tech Brief

Simplified Grounding for Every Application

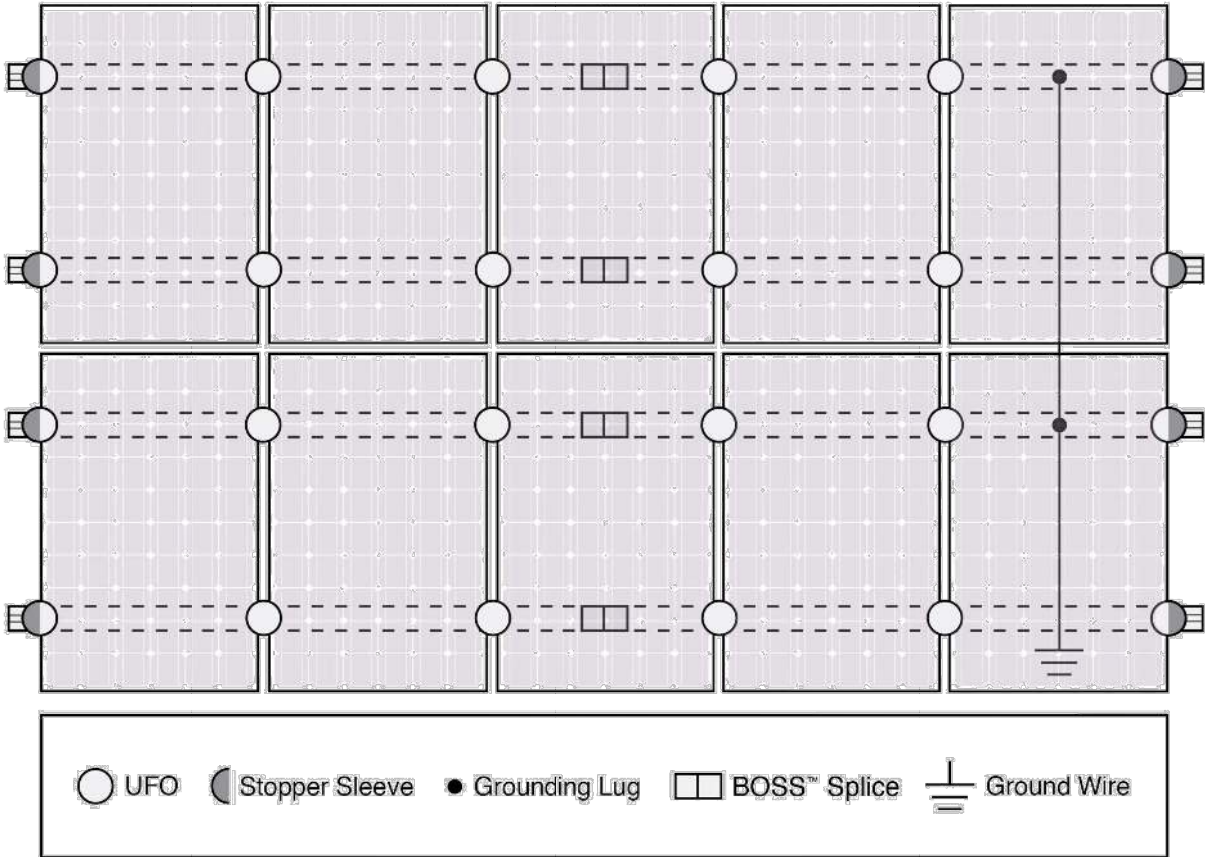
The UFO® family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge® XR Rails®. All system types that feature the UFO® family—Flush Mount®, Tilt Mount® and Ground Mount®—are fully listed to the UL 2703 standard.

UFO® hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.

Only for installation and use with IronRidge products in accord with written instructions. See IronRidge.com/UFO



System Diagram



⚡ Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge® Flush Mount®, Tilt Mount®, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

🔗 Go to [IronRidge.com/UFO](https://www.ironridge.com/UFO)

Cross-System Compatibility			
Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails®	✓	✓	XR100 & XR1000
UFO®/Stopper	✓	✓	✓
BOSS® Splice	✓	✓	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Compatible with most MLPE manufacturers. Refer to system installation manual.		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules. Refer to installation manuals for a detailed list.		

Tech Brief

BUILDING DEPARTMENT SEAL STAMP

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GROUNDING & BONDING
DATASHEET

PV-15