

PHOTOVOLTAIC ROOF MOUNT SYSTEM

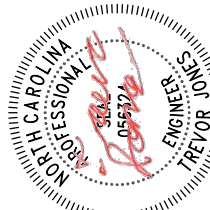
16 MODULES-ROOF MOUNTED - 6.480 kW DC, 5.700 kW AC

1591 OAKRIDGE DUNCAN RD, FUQUAY-VARINA, NC 27526

TOP TIER
SOLAR SOLUTIONS

TOP TIER SOLAR SOLUTIONS
1530 CENTER PARK DR #2911,
CHARLOTTE, NC 28217,
UNITED STATES

REVISIONS			
DESCRIPTION	DATE	REV	
INITIAL DESIGN	07/09/2025		



STRUCTURAL ONLY
07/10/2025

PROJECT NAME & ADDRESS

PATTY SCARDINO
RESIDENCE
1591 OAKRIDGE DUNCAN RD,
FUQUAY-VARINA, NC 27526

DRAWN BY

ESR

SHEET NAME

COVER SHEET

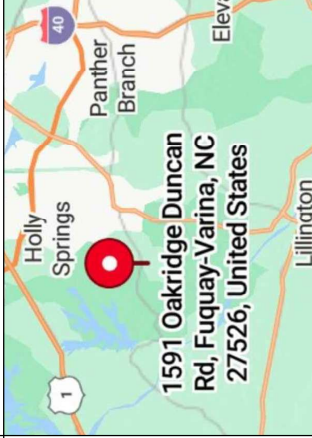
SHEET SIZE

ANSI B
11" X 17"

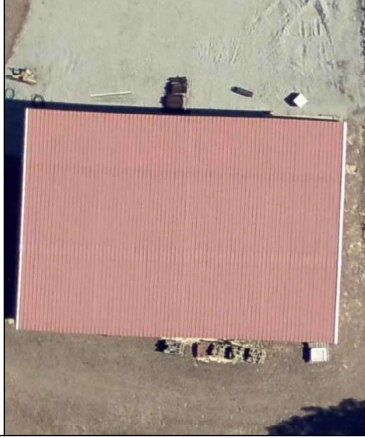
SHEET NUMBER

PV-1

VICINITY MAP



HOUSE PHOTO



CODE REFERENCES

2018 NORTH CAROLINA BUILDING CODE
2018 NORTH CAROLINA RESIDENTIAL CODE
2018 NORTH CAROLINA FIRE CODE
2017 NATIONAL ELECTRICAL CODE



GENERAL NOTES

1. ALL COMPONENTS ARE UL LISTED AND CEC CERTIFIED, WHERE WARRANTED.
2. THE SOLAR PV SYSTEM WILL BE INSTALLED IN ACCORDANCE WITH ARTICLE 690 OF THE NEC 2017.
3. THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION.
4. ALL CONDUCTORS OF A CIRCUIT, INCLUDING THE EGC, MUST BE INSTALLED IN THE SAME RACEWAY, OR CABLE, OR OTHERWISE RUN WITH THE PV ARRAY CIRCUIT CONDUCTORS WHEN THEY LEAVE THE VICINITY OF THE PV ARRAY.
5. WHERE METALLIC CONDUIT CONTAINING DC CONDUCTORS IS USED INSIDE THE BUILDING, IT SHALL BE IDENTIFIED AS "CAUTION: SOLAR CIRCUIT" EVERY 10FT.
6. HEIGHT OF THE AC DISCONNECT SHALL NOT EXCEED 6'-7" PER NEC CODE 240.24.
7. A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH CEC 690.47 AND 250.50 THROUGH 60 AND 250-186 SHALL BE PROVIDED. PER NEC GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE OR INADEQUATE A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT. GROUND ROD WITH ACORN CLAMP. GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO LARGER THAN #6 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE FOR A COMPLETE SYSTEM.
8. PHOTOVOLTAIC MODULES ARE TO BE CONSIDERED NON-COMBUSTIBLE.
9. PHOTOVOLTAIC INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
10. ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE. WIRING MUST BE PERMANENTLY AND COMPLETELY HELD OFF THE ROOF SURFACE.
11. ALL SINAGE TO BE PLACED IN ACCORDANCE WITH THE LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SINAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.
12. INVERTER(S) USED IN UNGROUNDED SYSTEM SHALL BE UL 1741 LISTED.
13. THE INSTALLATION OF EQUIPMENT AND ALL ASSOCIATED WIRING AND INTERCONNECTION SHALL BE PERFORMED ONLY BY QUALIFIED PERSONS [NEC 690.4(C)]
14. ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R RATED (OR BETTER), INCLUDING ALL ROOF MOUNTED TRANSITION BOXES AND SWITCHES.
15. ALL EQUIPMENT SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH NEC ARTICLE 250.
16. SYSTEM GROUNDING SHALL BE IN ACCORDANCE WITH NEC 690.41.
17. PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION IN ACCORDANCE WITH NEC 690.12
18. DISCONNECTING MEANS SHALL BE LOCATED IN A VISIBLE, READILY ACCESSIBLE LOCATION WITHIN THE PV SYSTEM EQUIPMENT OR A MAXIMUM OF 10 FEET AWAY FROM THE SYSTEM [NEC 690.13(A)]
19. ALL WIRING METHODS SHALL BE IN ACCORDANCE WITH NEC 690.31
20. WORK CLEARANCES AROUND ELECTRICAL EQUIPMENT WILL BE MAINTAINED PER NEC 110.26(A)(1), 110.26(A)(2) AND 110.26(A)(3).
21. ROOFTOP MOUNTED PHOTOVOLTAIC PANELS AND MODULES SHALL BE TESTED, LISTED & IDENTIFIED IN ACCORDANCE WITH UL1703
22. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.

PROJECT DATA

PROJECT: 1591 OAKRIDGE DUNCAN RD,
ADDRESS: FUQUAY-VARINA, NC 27526

OWNER: PATTY SCARDINO

DESIGNER: ESR

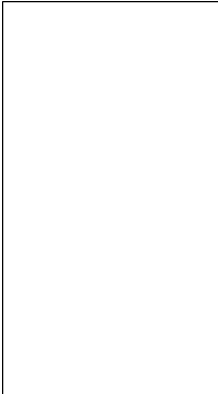
SCOPE: 6.480 kW DC ROOF MOUNT
SOLAR PV SYSTEM WITH
16 JA SOLAR: JAM64S31-405/MR 405W
PV MODULES WITH
16 SOLAREEDGE: S440 POWER OPTIMIZERS AND
01 SOLAREEDGE: SE5700H-US (240V/5700W)
INVERTER

AUTHORITIES HAVING JURISDICTION:
BUILDING: HARNETT COUNTY
ZONING: HARNETT COUNTY
UTILITY: DUKE ENERGY PROGRESS

SHEET INDEX

- PV-1 COVER SHEET
- PV-2 SITE PLAN
- PV-3 ROOF PLAN & MODULES
- PV-4 ELECTRICAL PLAN
- PV-5 STRUCTURAL DETAIL
- PV-6 ELECTRICAL LINE DIAGRAM
- PV-7 WIRING CALCULATIONS
- PV-8 LABELS
- PV-9+ EQUIPMENT SPECIFICATIONS

SIGNATURE



PROJECT DESCRIPTION:

16 X JA SOLAR: JAM54S31-405/MR 405W MONO MODULES
ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES
DC SYSTEM SIZE: 6.480 KW DC
AC SYSTEM SIZE: 5.700 KW AC

EQUIPMENT SUMMARY

16 JA SOLAR: JAM54S31-405/MR 405W MONO MODULES
16 SOLAREEDGE: S440 POWER OPTIMIZERS
01 SOLAREEDGE: SE5700H-JUS (240V/5700W) INVERTER

ROOF ARRAY AREA #1: - 336.16 SQ. FT.

NOTE: VISIBLE, LOCKABLE, LABELED AC DISCONNECT
LOCATED WITHIN 10' OF UTILITY METER

DESIGN SPECIFICATION

OCCUPANCY: IT

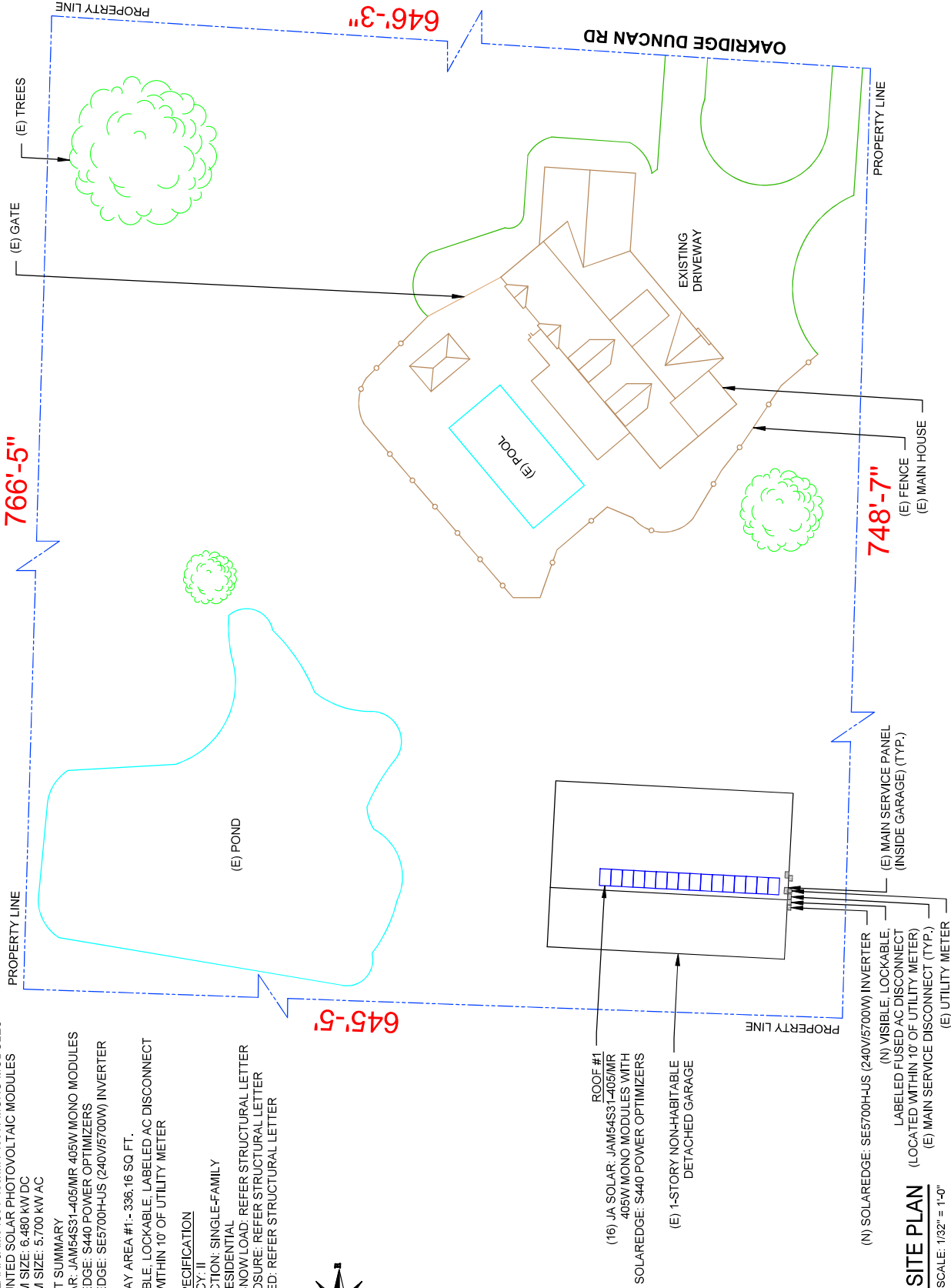
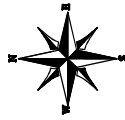
CONSTRUCTION: SINGLE-FAMILY

ZONING: RESIDENTIAL

GROUND SNOW LOAD: REFER STRUCTURAL LETTER

WIND EXPOSURE: REFER STRUCTURAL LETTER

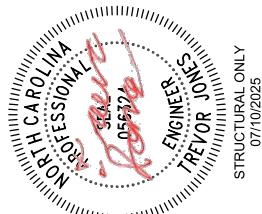
WIND SPEED: REFER STRUCTURAL LETTER



TOP TIER
SOLAR SOLUTIONS

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PATTY SCARDINO
RESIDENCE
1591 OAKRIDGE DUNCAN RD,
FUQUAY-VARINA, NC 27526

DRAWN BY

ESR

SHEET NAME

SITE PLAN

SHEET SIZE

ANSI B

11" X 17"

SHEET NUMBER

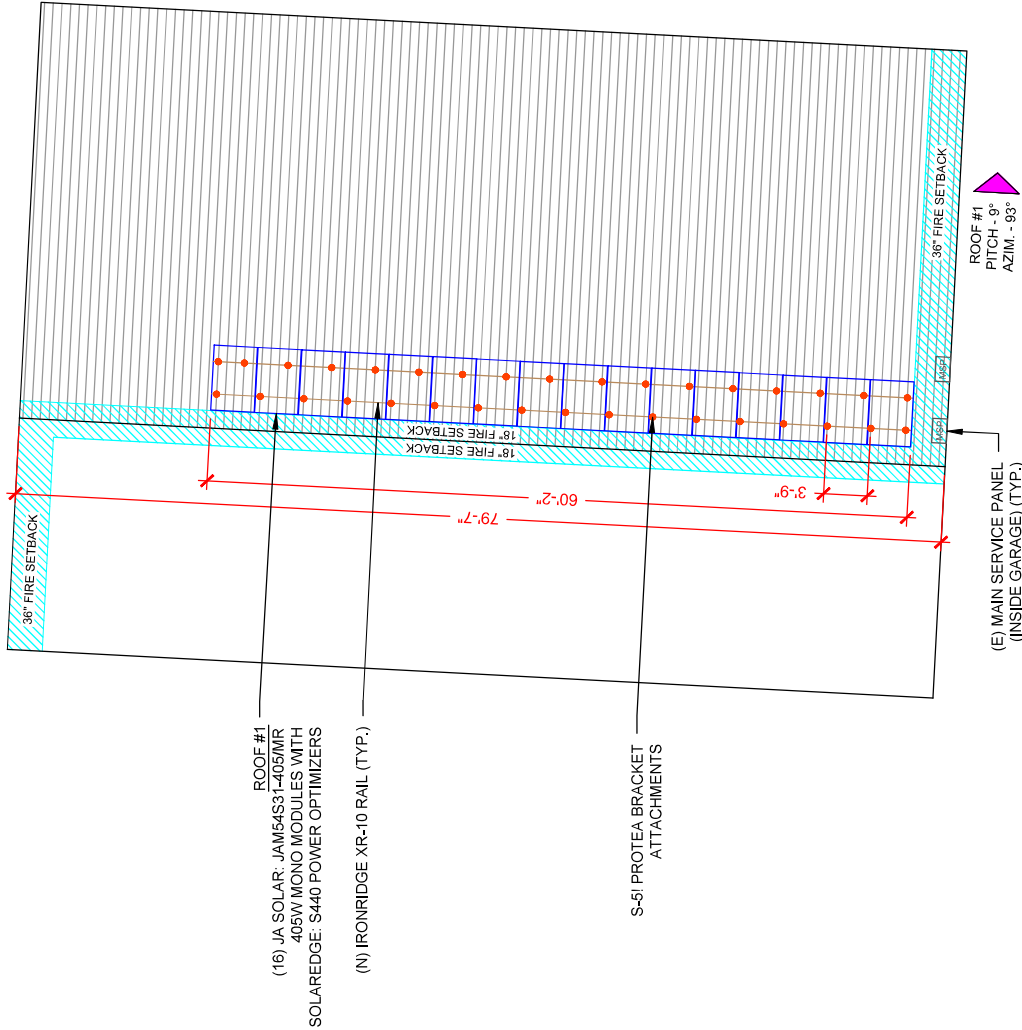
PV-2

1 SITE PLAN

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

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 16 MODULES
MODULE TYPE = JA SOLAR: JAM54S31-405/MR 405W MONO MODULES
MODULE WEIGHT = 47.39 LBS / 21.5 kg.
MODULE DIMENSIONS = (67.79" x 44.65")/144 = 21.01 SF



ROOF DESCRIPTION					
ROOF TYPE			METAL ROOF		
ROOF	# OF MODULES	ROOF PITCH	TRUSS SIZE	TRUSS SPACING	SEAM
#1	16	9°	2"x4"	24"	9"

ARRAY AREA & ROOF AREA CALC'S			
TOTAL PV ARRAY AREA (SQ. FT.)	TOTAL ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)	
336.16	4426.48	8	

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PROFESSIONAL SEAL

05632

TREVOR JOHNS

ENGINEER

07/10/2025

STRUCTURAL ONLY

NORTH CAROLINA

PATTY SCARDINO
RESIDENCE
1591 OAKRIDGE DUNCAN RD,
FUQUAY-VARINA, NC 27526

PROJECT NAME & ADDRESS

DRAWN BY
ESR

SHEET NAME
ROOF PLAN & MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

LEGEND

J.B

INV

ACD

UM

MSP

SUB

- JUNCTION BOX

- INVERTER

- AC DISCONNECT

- UTILITY METER

- MAIN SERVICE PANEL

- SUB PANEL

○

●

—

- VENT, ATTIC FAN (ROOF OBSTRUCTION)

- ROOF ATTACHMENT

- SEAM

- CONDUIT

DC SYSTEM SIZE: 6,400 kW/DC
AC SYSTEM SIZE: 6,400 kW/AC
(16) JA SOLAR JAM54S31-405/MR 405W MONO MODULES
WITH (16) SOLAREDDGE-S440 POWER OPTIMIZERS
LOCATED UNDER EACH PANEL AND
01 SOLAREDDGE-SE5700H-US (240V/5700W) INVERTER

STRING LEGENDS	
—	STRING #1
---	STRING #2



BILL OF MATERIALS	
EQUIPMENT DESCRIPTION	QTY
SOLAR PV MODULES: JA SOLAR: JAM54S31-405/MR 405W MODULE	16
OPTIMIZERS: SOLAREDDGE: S440 POWER OPTIMIZERS	16
INVERTER: SOLAREDDGE: SE5700H-US (240V/5700W) INVERTER	01
JUNCTION BOX: 6"X6"X4" UL LISTED, STEEL WATER TIGHT NEMA TYPE 3R, UL LISTED	1
AC DISCONNECT: FUSED AC DISCONNECT, 60A FUSED, (2) 30A FUSES 240V NEMA 3R, UL LISTED	1
IRONRIDGE XR10 RAIL (RAIL 168" (14 FEET) CLEAR) (XR-10-168A)	9
BONDED SPLICE: XR10 (XR10-BOSS-01-IM1)	8
UNIVERSAL MODULE CLAMP, CLEAR (UFO-CL-01-A1)	30
END FASTENING OBJECT (END CLAMP, 30-40MM), MILL (UFO-END-01-A1)	4
GROUNDING LUG (XR-LUG-03-A1)	1
S-51 PROTEA BRACKET ATTACHMENTS	35
T-BOLT BONDING HARDWARE (BHW-TB-02-A1) (PRODUCT CODE 590-0116)	35
OPTIMIZER BONDING HARDWARE T-BOLT (BHW-MI-01-A1) (PRODUCT CODE 270-0152)	16



LEGEND	
JB	- JUNCTION BOX
INV	- INVERTER
ACD	- AC DISCONNECT
MSD	- MAIN SERVICE DISCONNECT
UM	- UTILITY METER
MSP	- MAIN SERVICE PANEL
SUB	- SUB PANEL
○	- VENT, ATTIC FAN (ROOF OBSTRUCTION)
●	- ROOF ATTACHMENT
—	- SEAM
- - -	- CONDUIT

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FUQUAY-VARINA, NC 27526

DRAWN BY

ESR

SHEET NAME

ELECTRICAL PLAN

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-4

REVISIONS		
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INITIAL DESIGN	07/09/2025	1



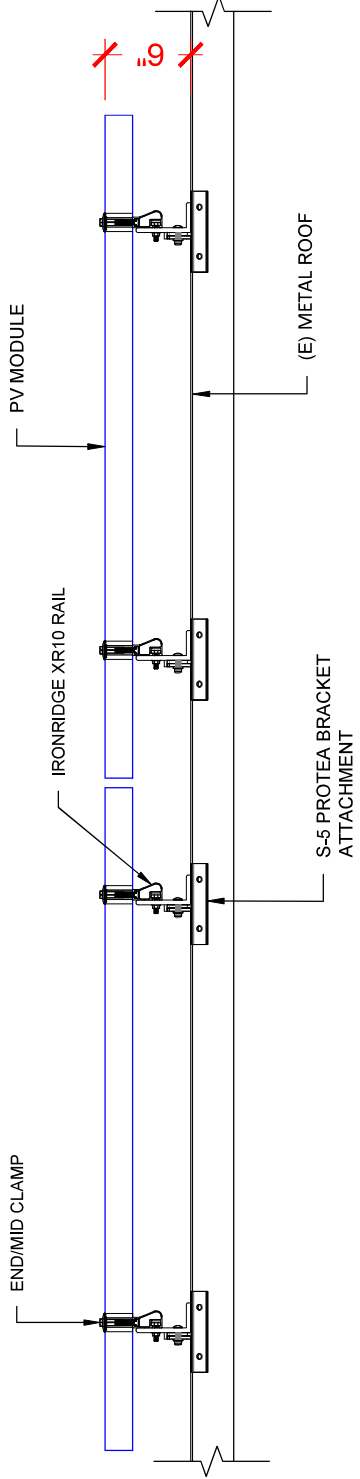
PROJECT NAME & ADDRESS
**PATTY SCARDINO
RESIDENCE**
1591 OAKRIDGE DUNCAN RD,
FUQUAY-VARINA, NC 27526

DRAWN BY
ESR

SHEET NAME
STRUCTURAL DETAIL

SHEET SIZE
**ANSI B
11" X 17"**

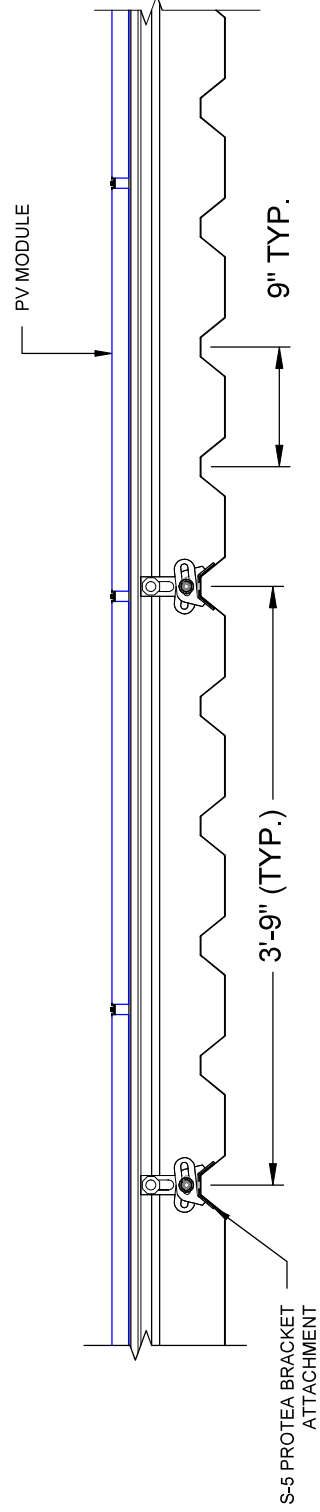
SHEET NUMBER
PV-5



1 ATTACHMENT DETAIL (side view)

PV-5

SCALE: N.T.S.



2 ATTACHMENT DETAIL (front view)

PV-5

SCALE: N.T.S.

(16) JA SOLAR: JAM54S31-405/MR 405W MONO MODULES WITH (16) SOLAREGE: S440 POWER OPTIMIZERS LOCATED UNDER EACH PANEL (240V) AND
(01) SOLAREGE: SE5700H-US (240V/5700W) INVERTER
(02) STRINGS OF 08 MODULES ARE CONNECTED IN SERIES

1. INTERSECTION SIZING, LIMITATIONS AND COMPLIANCE DETERMINED IN ACCORDANCE WITH [NEC 705.12], AND [NEC 690.59] [NEC 230.95].
2. GROUND FAULT PROTECTION IN ACCORDANCE WITH [NEC 215.9] [NEC 230.95].
3. ALL EQUIPMENT TO BE RATED FOR BACKFEEDING.
4. PV BREAKER TO BE POSITIONED AT THE OPPOSITE END OF THE BUSBAR RELATIVE TO THE MAIN BREAKER.

1. DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINAL)
2. AC CIRCUIT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
3. DISCONNECT MEANS AND THEIR LOCATION SHALL BE IN ACCORDANCE WITH (NEC 225.31) AND (NEC 225.32).

1. PV CONDUIT AND WIRING CONNECTED TO THE PV SYSTEM NEEDS TO BE INSTALLED IN ACCORDANCE WITH (NEC 690.43)
2. PV INVERTER IS UNGROUNDED, TRANSFORMERLESS TYPE.
3. DC GEC AND AC GEC TO REMAIN UNSPLICED, OR SPLICED TO EXISTING ELECTRODE
4. ANY EXISTING WIRING INVOLVED WITH PV SYSTEM CONNECTION THAT IS FOUND TO BE INADEQUATE PER CODE SHALL BE CORRECTED PRIOR TO FINAL INSPECTION.

RACKING NOTE:

1. BOND EVERY OTHER RAIL WITH #6 BARE COPPER



NOTE: CONDUIT TO BE UL LISTED FOR WET LOCATIONS AND UV PROTECTED

PV-6

SCALE: NTS

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------------------------	--

DRAWN BY
ESB

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	JA SOLAR- JAM64S31-405MR 405W MODULE
VMP	31.21V
IMP	12.98A
VOC	37.23V
ISC	13.87A
TEMP. COEFF. VOC	-0.275%/°C
MODULE DIMENSION	67.79" L x 44.65" W x 1.18" D (In Inch)

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	SOLAREDGE- SE5700H-US (240V/5700W)
NOMINAL AC POWER	5,700 kW
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	24.00A
PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
	4-6
	7-9
	10-20

AMBIENT TEMPERATURE SPECS	
AMBIENT TEMP (HIGH TEMP 2%)	37°
RECORD LOW TEMPERATURE	-12°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.275%/°C



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DC FEEDER CALCULATIONS

CIRCUIT ORIGIN	CIRCUIT DESTINATION	VOLTAGE (V)	FULL LOAD AMPS "FLA" (A)	FLA*1.25 (A)	OCPD SIZE (A)	GROUND SIZE	CONDUCTOR SIZE	75°C AMPACITY (A)	AMPSITY CHECK #1	AMBIENT TEMP. (°C)	TOTAL CC CONDUCTORS IN RACEWAY	90°C AMPACITY (A)	DERATION FACTOR FOR AMBIENT TEMPERATURE NEC 310.15(B)(2)(a)	DERATION FACTOR FOR CONDUCTORS PER RACEWAY NEC 310.15(B)(3)(a)	90°C AMPACITY DERATED (A)	AMPSITY CHECK #2	FEEDER LENGTH (FEET)	CONDUCTOR RESISTANCE (OHM/KFT)	VOLTAGE DROP AT FLA (%)	CONDUIT SIZE	CONDUIT FILL (%)
STRING 1	JUNCTION BOX	380	15.00	18.75	20	BARE COPPER #6 AWG	CU #10 AWG	35	PASS	37	2	40	0.91	1	36.4	PASS	5	1.24	0.049	N/A	#N/A
STRING 2	JUNCTION BOX	380	15.00	18.75	20	BARE COPPER #6 AWG	CU #10 AWG	35	PASS	37	2	40	0.91	1	36.4	PASS	5	1.24	0.049	N/A	#N/A
JUNCTION BOX	INVERTER	380	15.00	18.75	20	CU #10 AWG	CU #10 AWG	35	PASS	37	4	40	0.91	0.8	29.12	PASS	20	1.24	0.196	3/4" EMT	13.75%

String 1 Voltage Drop	0.245
String 2 Voltage Drop	0.245

AC FEEDER CALCULATIONS

CIRCUIT ORIGIN	CIRCUIT DESTINATION	VOLTAGE (V)	FULL LOAD AMPS "FLA" (A)	FLA*1.25 (A)	COPD SIZE (A)	NEUTRAL SIZE	GROUND SIZE	CONDUCTOR SIZE	75°C AMPACITY (A)	AMPSITY CHECK #1	AMBIENT TEMP. (°C)	TOTAL CC CONDUCTORS IN RACEWAY	90°C AMPACITY (A)	DERATION FACTOR FOR AMBIENT TEMPERATURE NEC 310.15(B)(2)(a)	DERATION FACTOR FOR CONDUCTORS PER RACEWAY NEC 310.15(B)(3)(a)	90°C AMPACITY DERATED (A)	AMPSITY CHECK #2	FEEDER LENGTH (FEET)	CONDUCTOR RESISTANCE (OHM/KFT)	VOLTAGE DROP AT FLA (%)	CONDUIT SIZE	CONDUIT FILL (%)
INVERTER	AC DISCONNECT	240	24	30	30	CU #6 AWG	CU #6 AWG	CU #6 AWG	65	PASS	37	2	75	0.91	1	68.25	PASS	5	0.049	0.049	3/4" EMT	38.05%
AC DISCONNECT	POI	240	24	30	30	CU #6 AWG	CU #6 AWG	N/A	65	PASS	37	2	75	0.91	1	68.25	PASS	5	0.049	0.049	3/4" EMT	28.54%
																		CUMULATIVE VOLTAGE DROP		0.098		

ELECTRICAL NOTES

- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- ALL CONDUCTORS SHALL BE RATED UPTO 600V FOR RESIDENTIAL AND 1000V FOR COMMERCIAL AND 90 DEGREE C WET ENVIRONMENT.
- WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- WHERE SIZES OF JUNCTION BOX, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- TEMPERATURE RATINGS OF ALL CONDUCTORS, TERMINATIONS, BREAKERS, OR OTHER DEVICES ASSOCIATED WITH THE SOLAR PV SYSTEM SHALL BE RATED FOR AT LEAST 75 DEGREE C.

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ESR

SHEET NAME

WIRING CALCULATIONS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-7

PHOTOVOLTAIC POWER SOURCE

EVERY 10' ON CONDUIT & ENCLOSURES

LABEL- 1:
LABEL LOCATION:
SCHEM CONDUIT RACEWAY
SOURCE: UTILITY GRID AND
PV SOLAR ELECTRIC SYSTEM (D)(1)
CODE REF: NEC 690.31 (D)(2)

WARNING

ELECTRIC SHOCK HAZARD

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

LABEL- 2:
LABEL LOCATION:
AC DISCONNECT
CODE REF: NEC 690.13(B)

WARNING

DUAL POWER SUPPLY

SOURCE: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

LABEL- 3:
LABEL LOCATION:
MAIN SERVICE PANEL
CODE REF: NEC 705.12(C) & NEC 690.59

SOLAR PV BREAKER:

BREAKER IS BACKFED

DO NOT RELOCATE

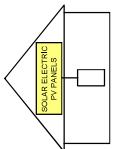
LABEL- 4:
LABEL LOCATION:
MAIN SERVICE PANEL
CODE REF: NEC 705.12(C) & NEC 690.59

WARNING

POWER SOURCE OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL- 5:
LABEL LOCATION:
MAIN SERVICE PANEL (ONLY IF SOLAR IS BACK-FED)
SUBPANEL (ONLY IF SOLAR IS BACK-FED)
CODE REF: NEC 705.12(B)(3)(2)

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN



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

LABEL- 6:
LABEL LOCATION:
AC DISCONNECT
CODE REF: NEC 690.56(C)(1)(A)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL- 7:
LABEL LOCATION:
AC DISCONNECT
MAIN SERVICE PANEL (ONLY IF SOLAR IS BACK-FED)
CODE REF: NEC 690.56(C)(2)

DC DISCONNECT

LABEL- 8:
LABEL LOCATION:
INVERTER
CODE REF: NEC 690.13(B)

AC DISCONNECT

PHOTOVOLTAIC SYSTEM POWER SOURCE

NOMINAL OPERATING AC VOLTAGE **240 V**

RATED AC OUTPUT CURRENT **24.00 A**

LABEL- 9:
LABEL LOCATION:
AC DISCONNECT
CODE REF: NEC 690.54

MAXIMUM VOLTAGE **480 V**

MAXIMUM CIRCUIT CURRENT **30.50 A**

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

LABEL- 10:
LABEL LOCATION:
ON THE RIGHT SIDE OF THE INVERTER (PRE-EXISTING ON THE INVERTER)
CODE REF: NEC 690.53



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INITIAL DESIGN	07/08/2025	

PROJECT NAME & ADDRESS

PATTY SCARDINO
RESIDENCE
1591 OAKRIDGE DUNCAN RD,
FUQUAY-VARINA, NC 27526

DRAWN BY
ESR

SHEET NAME
LABELS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-8

Harvest the Sunshine

DEEPBLUE 30Light

Mono

405W MBB
Half-cell Black Module
JAM54S31 380-405/MR Series

Introduction

Assembled with 1188 PERC cells, the half-cell configuration of the modules offers the advantages of higher power output, better temperature-dependent performance, reduced shading effect on the energy generation, lower risk of hot spot, as well as enhanced tolerance for mechanical loading.



Higher output power



Lower LCOE



Less shading and lower resistive loss



Better mechanical loading tolerance

Superior Warranty

- 25-year product warranty
- 25-year linear power output warranty

Comprehensive Certificates

- IEC 61215, IEC 61730, UL 61215, UL 61730
- ISO 9001: 2015 Quality management systems
- ISO 14001: 2015 Environmental management systems
- ISO 45001: 2018 Occupational health and safety management systems
- IEC TS 62941: 2016 Terrestrial photovoltaic (PV) modules – Guidelines for increased confidence in PV module design qualification and type approval

0.55% Annual Degradation
Over 25 years



New linear power warranty ■ Standard module linear power warranty

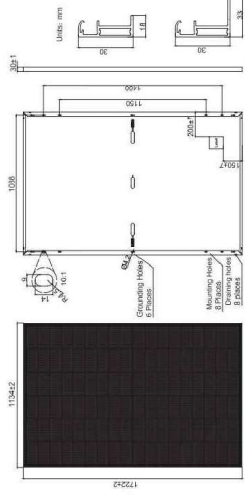


www.jasolar.com
Specifications subject to technical changes and tests.
JA Solar reserves the right of final interpretation.

JASOLAR

JASOLAR

MECHANICAL DIAGRAMS



JAM54S31 380-405/MR Series

SPECIFICATIONS

Cell	Mono
Weight	21.5kg±3%
Dimensions	1772±2mm×1134±2mm×30±1mm
Cable Cross Section Size	4mm ² IEC 12 AWG(G/L)
No. of cells	108 (6×18)
Junction Box	IP68, 3 diodes
Connector	MC4-EVO2 (150V)
Cable Length (Including Connector)	Portait: 300mm±400mm(-); Landscape: 1200mm±1200mm(-)
Packaging Configuration	36pcs/Pallet, 864cs/40ft Container

Remark: customized frame color and cable length available upon request.

ELECTRICAL PARAMETERS AT STC

TYPE	JAM54S31 -380/MR	JAM54S31 -385/MR	JAM54S31 -390/MR	JAM54S31 -395/MR	JAM54S31 -400/MR	JAM54S31 -405/MR
Rated Maximum Power(P _{max}) [W]	389	395	396	395	400	405
Open Circuit Voltage(V _{oc}) [V]	38.58	38.71	38.85	38.98	39.07	39.23
Maximum Power Voltage(V _{mp}) [V]	33.28	33.46	33.64	33.84	33.91	34.21
Short Circuit Current(I _{sc}) [A]	13.44	13.52	13.61	13.70	13.79	13.87
Maximum Power Current(I _{mp}) [A]	12.55	12.64	12.73	12.81	12.90	12.98
Module Efficiency [%]	20.5	20.7	20.8	20.9	21.0	21.2
Power Tolerance	±3%					
Temperature Coefficient of I _{sc} (α _{Isc})	+0.045%/°C					
Temperature Coefficient of V _{oc} (α _{Voc})	-0.275%/°C					
Temperature Coefficient of P _{max} (α _{Pmp})	-0.350%/°C					

STC Irradiance 1000W/m², cell temperature 25°C, AM1.5G

ELECTRICAL PARAMETERS AT NOCT

TYPE	JAM54S31 -380/MR	JAM54S31 -385/MR	JAM54S31 -390/MR	JAM54S31 -395/MR	JAM54S31 -400/MR	JAM54S31 -405/MR
Rated Max Power(P _{max}) [W]	286	290	294	298	302	306
Open Circuit Voltage(V _{oc}) [V]	34.36	34.49	34.62	34.75	34.88	35.12
Max Power Voltage(V _{mp}) [V]	28.51	28.68	28.87	29.08	29.26	29.47
Short Circuit Current(I _{sc}) [A]	10.75	10.82	10.96	11.03	11.10	11.16
Max Power Current(I _{mp}) [A]	10.03	10.11	10.18	10.25	10.32	10.38
NOCT	45±2°C					

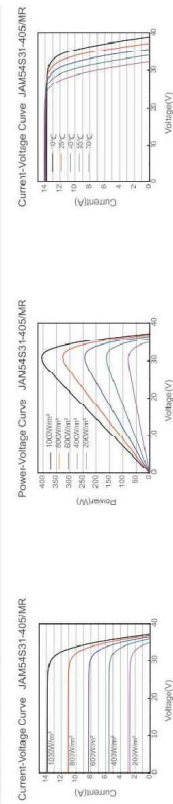
Irradiance 800W/m², ambient temperature 20°C, wind speed 1m/s, AM1.5G

Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer. They only serve for comparison among different module types.

OPERATING CONDITIONS

Maximum System Voltage	1000V/1500V/DC
Operating Temperature	-40°C~+85°C
Maximum Series Fuse Rating	25A
Maximum Static Load Back	5400Pa (50N/m ²)
NOCT	45±2°C
Safety Class	Class II
Fire Performance	UL Type I

CHARACTERISTICS



Premium Cells, Premium Modules

Version No.: Global_ELT_20231130A

TOP TIER
SOLAR SOLUTIONS

TOP TIER SOLAR SOLUTIONS
1530 CENTER PARK DR #2911,
CHARLOTTE, NC 28217,
UNITED STATES

REVISIONS	DESCRIPTION	DATE	REV
INITIAL DESIGN		07/09/2025	

PROJECT NAME & ADDRESS

PATTY SCARDINO
RESIDENCE
1591 OAKRIDGE DUNCAN RD,
FUQUAY-VARINA, NC 27526

DRAWN BY

ESR

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-9



AUTHORIZATION TO MARK

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Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Intertek Testing Services Shanghai Limited



Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3851 or 847-439-5667 Fax 312-283-1672

Terrestrial Photovoltaic (PV) Modules • Design Qualification And Type Approval - Part 1-1: Special Requirements For Testing Of Crystalline Silicon Photovoltaic (PV) Modules IEC 61215-1-1:2017 Ed.1

Procedures [JL 61215-2:2017 Ed.1]

Photovoltaic (PV) Module Safety Qualification - Part 2: Requirements For Testing [UL 61730-2:2017]

Photovoltaic (PV) Module Safety Qualification - Part 1: Requirements for Construction [CSA C22.2#61730-1:2019 Ed.2]

Photovoltaic (PV) Module Safety Qualification - Part 2: Requirements for Testing [CSA C22.2#61730-2:2010, Ed. 01]

2019.09.27

Page 11 of 16

ATM Issued: 12-Jun-2024
ED 15.3.15 (1-Jul-2022) Mandatory

Page 12 of 16

ATM Issued: 12-Jun-2024
ED 13.15 (11-Jul-2022) Mandatory

AUTHORIZATION TO MARK

Brand Name: JA SO-AR 昌源

JAM72S10- followed by 395, 400, 405, 4
JAM6CS10- followed by 330, 335, 340 or

JAM6CS10- followed by 330, 335, 340 or
JAM72S09- followed by 370, 375, 380, 3

JAM6CS9- followed by 315 or 320 followed by 385, 390, 395 or 400

JAM6cS10 followed by 325, 323, 330

JAM6CS17- followed by 320, 325, or 330
JAM72S20- followed by 430, 435, 440, 4

JAM6ES30- followed by 490, 495 or 500
JAM6ES11- followed by 355, 360 or 365

Models:

JAM6tS30-followed by 445, 450, 455 or
JAM54S30-followed by 400, 405, 410, 4
JAM76S24 followed by 570

JAM6CS31-followed by 440, 445 or 450 1

JAM72S31-followed by 510, 515, 520, 525

JAM72S31-followed by 510, 515, 520, 515
JAM54S31-followed by 385, 390, 395, 400

JAM7&S30- followed by 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000, 1005, 1010, 1015, 1020, 1025, 1030, 1035, 1040, 1045, 1050, 1055, 1060, 1065, 1070, 1075, 1080, 1085, 1090, 1095, 1100, 1105, 1110, 1115, 1120, 1125, 1130, 1135, 1140, 1145, 1150, 1155, 1160, 1165, 1170, 1175, 1180, 1185, 1190, 1195, 1200, 1205, 1210, 1215, 1220, 1225, 1230, 1235, 1240, 1245, 1250, 1255, 1260, 1265, 1270, 1275, 1280, 1285, 1290, 1295, 1300, 1305, 1310, 1315, 1320, 1325, 1330, 1335, 1340, 1345, 1350, 1355, 1360, 1365, 1370, 1375, 1380, 1385, 1390, 1395, 1400, 1405, 1410, 1415, 1420, 1425, 1430, 1435, 1440, 1445, 1450, 1455, 1460, 1465, 1470, 1475, 1480, 1485, 1490, 1495, 1500, 1505, 1510, 1515, 1520, 1525, 1530, 1535, 1540, 1545, 1550, 1555, 1560, 1565, 1570, 1575, 1580 followed by /LR, /

[illegible]

JAM72S31-followed by 525, 530, 535, 540,
JAM72S30-followed by 535, 540, 545, 550

Page 12 of 16

ATM Issued: 12-Jun-2024
ED 13.15 (11-Jul-2022) Mandatory



REVISIONS		
DESCRIPTION	DATE	REV
INITIAL DESIGN	07/09/2025	

PROJECT NAME & ADDRESS

PATTY SCARDINO
RESIDENCE
1 OAKRIDGE DUNCAN F
QUAY-VARINA, NC 2752

1591 OAKRIDGE DUNCAN RD,
FUQUAY-VARINA, NC 27526

DRAWN BY

ESR

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

11" X 17"

SHEET NUMBER

PV-10

Residential Power Optimizer

For North America

S440 / S500B / S650B



PV power optimization at the module level

- Specifically designed to work with SolarEdge residential inverters
- Detects abnormal PV connector behavior, preventing potential safety issues
- Module-level voltage shutdown for installer and firefighter safety
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch loss, from manufacturing tolerance to partial shading
- Faster installations with simplified wire management and easy assembly using a single bolt
- Flexible system design for maximum space utilization
- Compatible with bifacial PV modules
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

solaredge.com



/ Residential Power Optimizer

For North America

S440 / S500B / S650B

INPUT			
Rated Input DC Power ⁽¹⁾	440 ^a	500 ^b	650
Absolute Maximum Input Voltage (Voc)	60	125	85
MPPT Operating Range	8 – 60	12.3 – 105	12.5 – 85
Maximum Input Current (Maximum I _{sc} of Connected PV Module) ⁽²⁾	14.5	15	15
Maximum Input Short Circuit Current ⁽³⁾		18.75	
Maximum Efficiency		99.5	
Weighted Efficiency		98.6	
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREGE INVERTER)			
Maximum Output Current		15	
Maximum Output Voltage	60	80	
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREGE INVERTER OR INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	
STANDARD COMPLIANCE			
Protocols: Rapid Shutdown System		CSA C22.2 #338, NEC 2014 – 2023	
EMC		FCC Part 15 Class B, IEC 61000-5-2, IEC 61000-6-3	
Safety		CSA C22.2 #107.1 IEC 61010-1 (Class II Safety), UL 1741	
Material		UL 94 V-0 UV Resistant	
RoHS		Yes	
Fire Safety		VDE AR E 200-72:2013-05	
INSTALLATION SPECIFICATIONS			
Maximum Allowed System Voltage		1000	
Dimensions (W x L x H)	129 x 155 x 30 / 507 x 610 x 118	129 x 163 x 45 / 507 x 649 x 117	mm / in
Weight	720 / 16	790 / 174	g / lb
Input Connector		MC4	
Input Wire Length		0.1 / 0.32	m / ft
Output Connector		MC4	
Output Wire Length		(+) 2.3, (-) 0.10 / (+) 7.54, (-) 0.32	m / ft
Operating Temperature Range ⁽⁴⁾		-40 to +85	°C
Protection Rating		IP68 / NEMAIP	
Relative Humidity		0 – 100	%

(1) Based power of the module at STC will not exceed the power optimizer rated input DC Power. Modules with up to 15% power tolerance are allowed.
(2) For S440 with part number S440-SOLAREGE, the rated input DC Power is 650W, and the Maximum Input Current is 15A.
(3) For installations after Aug. 31, 2024, the rated input DC Power for S500B is 650W.
(4) The Maximum Input Short Circuit Current is adjusted for worst case conditions of ambient temperature, irradiance, bifacial gain, and so on, in accordance with IEC and CSA.
(5) The Maximum Operating Temperature is adjusted for worst case conditions of ambient temperature above +15°C / 60°F for S440 and S500B, and for ambient temperature above +15°C / 60°F for S650B. Refer to the Data Sheet, Chapter 1, Temperature.
Detailed technical note for more details.

PV System Design Using a SolarEdge Inverter ⁽⁶⁾			
SolarEdge Home Wave/Hub Single Phase		Three Phase for 208V Grid	Three Phase for 277/480V Grid
Minimum String Length (Power Optimizers)	S440: 8 S500B, S650B: 6	8	18
Maximum String Length (Power Optimizers)		8	14
Maximum Usable Power Delivered per String	5700	6000	12750
Maximum Allowed Connected Power per String ⁽⁷⁾⁽⁸⁾	Per the Inverter's maximum input DC power ⁽⁹⁾ AC Power ≤ 5700W Inverters with Rated AC Power of 6000W Inverters with Rated AC Power ≥ 7600W	One string 7200 Two strings or more 7800	15000
Parallel Strings of Different Lengths or Orientations	Yes		

(6) It is not allowed to mix S-series and P-series Power Optimizers in new installations in the same string.
(7) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements, safety voltage will be above the 30V requirement.
(8) For the 208V grid, the maximum is permitted only when the difference in connected power between strings is 1000W or less.
(9) For the 208V or 277/480V grids, the maximum is permitted only when the difference in connected power between strings is 2000W or less.

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TOP TIER SOLAR SOLUTIONS
1530 CENTER PARK DR #2911,
CHARLOTTE, NC 28217,
UNITED STATES

REVISIONS		
DESCRIPTION	DATE	REV
INITIAL DESIGN	07/09/2025	

PROJECT NAME & ADDRESS

PATTY SCARDINO
RESIDENCE
1591 OAKRIDGE DUNCAN RD,
FUQUAY-VARINA, NC 27526

DRAWN BY
ESR

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-11

SolarEdge Home Hub Inverter
Single Phase, for North America
For Inverters Assembled in the USA

SE3800H-US / SE5700H-US / SE7600H-US / SE10000H-US /
SE11400H-US



Single phase inverter for storage and backup applications

- ✓ The ultimate home energy manager in charge of PV production, battery storage, backup operation during a power outage*, EV Charging, and smart energy devices
- ✓ Record-breaking 99% weighted efficiency with up to 300% DC oversizing
- ✓ Supports LRA – can provide the required energy for HVAC systems starting during backup operation
- ✓ Integrates seamlessly with the complete SolarEdge Home Smart Energy Ecosystem, through SolarEdge Home Network
- ✓ Module-level monitoring and visibility of battery status, PV production, and self-consumption data
- ✓ Fast and easy installation – small and lightweight, with reduced commissioning time
- ✓ A scalable solution that supports future homeowner needs through easy connection to a growing ecosystem of products
- ✓ Advanced safety features with integrated arc fault protection and rapid shutdown for 690.11 and 690.12
- ✓ Advanced reliability with automotive-grade components
- ✓ Embedded revenue grade production data, ANSI C12.20 Class 0.5
- ✓ IP65-rated, for indoor and outdoor installations

*Requires additional hardware and firmware version upgrade.

solaredge.com



/ SolarEdge Home Hub Inverter
Single Phase, for North America

SE3800H-US / SE5700H-US / SE7600H-US / SE10000H-US / SE11400H-US

Model Number ⁽¹⁾⁽²⁾	SE3800H-US	SE5700H-US	SE7600H-US	SE10000H-US	SE11400H-US	Units
OUTPUT – AC ON GRID						
Rated AC Power	3600 @ 240V 3200 @ 208V	5760 @ 240V 5000 @ 208V	7680 7680	10000	11,400 @ 240V 10,000 @ 208V	W
Maximum AC Power Output	3600 @ 240V 3200 @ 208V	5760 @ 240V 5000 @ 208V	7680	10000	11,400 @ 240V 10,000 @ 208V	W
AC Output Voltage (Nominal)	208 / 240	208 / 240	208 / 240	208 / 240	208 / 240	VAC
AC Output Voltage Range	183 – 264	183 – 264	183 – 264	183 – 264	183 – 264	VAC
AC Frequency Range (min - nom - max)	59.3 – 60.3 Hz ⁽³⁾	59.3 – 60.3 Hz ⁽³⁾	59.3 – 60.3 Hz ⁽³⁾	59.3 – 60.3 Hz ⁽³⁾	59.3 – 60.3 Hz ⁽³⁾	Hz
Minimum Continuous Output Current	16	24	32	42	48	A
Grid Threshold	1	1	1	1	1	A
Total Harmonic Distortion (THD)	< 3	< 3	< 3	< 3	< 3	%
Power Factor	1, adjustable -0.85 to 0.85	1, adjustable -0.85 to 0.85	1, adjustable -0.85 to 0.85	1, adjustable -0.85 to 0.85	1, adjustable -0.85 to 0.85	
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes	Yes	Yes	Yes	Yes	
Charge Battery from AC (if allowed)	Yes	Yes	Yes	Yes	Yes	
Typical Nighttime Power Consumption	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	W
OUTPUT – AC STAND-ALONE (BACKUP) ⁽⁴⁾⁽⁵⁾						
Rated AC Power if Stand-alone Operation	1,400 ⁽⁶⁾	1,400 ⁽⁶⁾	1,400 ⁽⁶⁾	1,400 ⁽⁶⁾	1,400 ⁽⁶⁾	W
Maximum Stand-alone Capacity	1,400	1,400	1,400	1,400	1,400	W
AC L-L Output Voltage Range in Stand-alone Operation	211 – 264	211 – 264	211 – 264	211 – 264	211 – 264	VAC
AC L-N Output Voltage Range in Stand-alone Operation	95 – 132	95 – 132	95 – 132	95 – 132	95 – 132	VAC
AC Frequency Range in Stand-alone (min - nom - max)	55 – 60 – 65	55 – 60 – 65	55 – 60 – 65	55 – 60 – 65	55 – 60 – 65	Hz
Maximum Continuous Output Current in Stand-alone Operation	48	48	48	48	48	A
Grid	1	1	1	1	1	A
THD	< 5	< 5	< 5	< 5	< 5	%
OUTPUT – SOLAREGE HOME EV CHARGER AC						
Rated AC Power	5600	5600	5600	5600	5600	W
AC Output Voltage Range	211 – 264	211 – 264	211 – 264	211 – 264	211 – 264	VAC
On-Grid AC Frequency Range (min - nom - max)	59.3 – 60 – 60.5	59.3 – 60 – 60.5	59.3 – 60 – 60.5	59.3 – 60 – 60.5	59.3 – 60 – 60.5	Hz
Maximum Continuous Output Current @ 240V (grid, PV and battery)	40	40	40	40	40	AAC
INPUT – DC (PV AND BATTERY)						
Transformerless, Ungrounded	Yes	Yes	Yes	Yes	Yes	
Max Input Voltage	460	460	460	460	460	VDC
Non-DC Input Voltage	360	360	360	360	360	VDC
Reverse-Polarity Protection	Yes	Yes	Yes	Yes	Yes	
Ground-Fault Isolation Detection	600kΩ Sensitivity	600kΩ Sensitivity	600kΩ Sensitivity	600kΩ Sensitivity	600kΩ Sensitivity	
INPUT – DC (PV)						
Maximum DC Power @ 240V	11,400	11,520	15,200	20,000	22,800	W
Maximum DC Power @ 208V	6500	11,000	-	-	20,000	W
Maximum Input Current ⁽⁷⁾ @ 240V	20	30.5	40	53	60	AAC
Maximum Input Current ⁽⁷⁾ @ 208V	17.5	27	-	-	53	AAC
Maximum Input Short Circuit Current	45	45	99.2	99.2	99.2	AAC
Maximum Inverter Efficiency	98.5	98.5	99	99	99	%
CEC Weighted Efficiency	98.5	98.5	99	99	99	%
2-pole Disconnection	Yes	Yes	Yes	Yes	Yes	

(1) These specifications apply to inverters with part numbers SE3800H-US, SE5700H-US, SE7600H-US, SE10000H-US, and SE11400H-US. (2) Inverters with part numbers SE3800H-US, SE5700H-US, SE7600H-US, SE10000H-US, and SE11400H-US are intended for use in the United States only. (3) Not designed for non-grid connected applications and requires AC for commissioning. Stand alone (Backup) functionality is only supported for the 240V grid. (4) Not designed for non-grid connected applications and requires AC for commissioning. Stand alone (Backup) functionality is only supported for the 240V grid. (5) For LRA (Locked Rotational Inertia) values please refer to the LRA for LRA Application Note. (6) For modes SE7600H-US and below, the rated AC stand-alone power is configurable between 700W or 11400W from CPU version 4.20x. (7) A higher current should only be used if the inverter will limit its input current to the rated value.

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TOP TIER SOLAR SOLUTIONS
1530 CENTER PARK DR #2911,
CHARLOTTE, NC 28217,
UNITED STATES

REVISIONS	DESCRIPTION	DATE	REV
INITIAL DESIGN		07/09/2025	

PROJECT NAME & ADDRESS
PATTY SCARDINO
RESIDENCE
1591 OAKRIDGE DUNCAN RD,
FUQUAY-VARINA, NC 27526

DRAWN BY
ESR

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-12

/ SolarEdge Home Hub Inverter

Single Phase, for North America

SE3800H-US / **SE5700H-US** / SE7600H-US / SE10000H-US / SE11400H-US / SE11400H-US

Model Number ⁽¹⁾⁽²⁾	SE3800H-US	SE5700H-US	SE7600H-US	SE10000H-US	SE11400H-US	Units
OUTPUT – DC (BATTERY)						
Supported Battery Types	SolarEdge Home Battery, L5 RESU Prime					
Number of Batteries per Inverter	Up to 3 SolarEdge Home Battery, up to 2 LG RESU Prime					
Continuous Power ⁽⁸⁾	11,400 @ 240V 3800 @ 208V	11,400 @ 240V 5000 @ 208V	11,400 @ 240V 11,400 @ 208V	11,400 @ 240V	11,430 @ 240V 10,020 @ 208V	W
Peak Power ⁽⁸⁾	11,400 @ 240V 3800 @ 208V	11,400 @ 240V 5000 @ 208V	11,400 @ 240V 11,400 @ 208V	11,400 @ 240V	11,430 @ 240V 10,020 @ 208V	W
Maximum Input Current	3C					
2-pole Disconnection	Up to the inverter's rated static-alone power					
SMART ENERGY CAPABILITIES						
Consumption Metering	Built-in ⁽⁹⁾					
Static-alone & Battery Storage	With Backup interface (purchased separately) for service up to 200A, up to 3 inverters					
EV Charging	Direct connection to the SolarEdge Home EV Charger					
ADDITIONAL FEATURES						
Supported Communication Interfaces	RS-485, Ethernet, Cellular ⁽⁶⁾ , Wi-Fi (optional), SolarEdge Home Network (optional)					
Revenue Grade Metering, ANSI C12.20	Built-in ⁽⁹⁾					
Integrated AC, DC and Communication Connection Unit	Yes					
Inverter Commissioning	With the SEiApp mobile application using built-in Wi-Fi Access Point for local connection					
DC Voltage Rapid Shutdown (PV and Battery)	Yes, NEC 690.12					
STANDARD COMPLIANCE						
Safety	UL 1741, UL 1741SA, UL 1741B, UL 1995B, CSA 222M-07, C22.2#330, C22.3#9, ANSI/CAN/UL 9540					
Grid Connection Standards	IEEE1547 and IEEE-1547-2, Rule 21, Rule 144					
Emissions	FCC Part15 Class 3					
INSTALLATION SPECIFICATIONS						
AC Terminals	L1, L2, N terminal blocks, PE outdoor for inverter connection L1, L2 terminal blocks, PE busbar for EV Charger AC connection					
DC Terminals	4 x terminal block pairs for PV input, 1 x terminal block pair for battery input					
AC Output and EV AC Output Conduit Size / AWG Range	1" minimum / 1/4-AWG					
DC Input (PV and Battery) Conduit Size / AWG Range	1" minimum / 1/4-AWG					
Dimensions with Connection Unit (H x W x D)	21.06 x 14.6 x 8.2 / 5.5 x 3.70 x 2.03					
Weight with Connection Unit	44.9 / 20.3					
Noise	< 50					
Cooling	Natural Convection					
Operating Temperature Range	-40 to +140° / -40 to +160 ⁽¹¹⁾					
Protection Rating	NEMA 4X					

(8) Discharge power is limited up to the inverter's rated AC power for on-grid and stand-alone applications, as well as up to the installed batteries' rating.

(9) For consumption metering current transformers should be ordered separately. SECT-SPL-225A-1-20 to SE-CT1250-400MA-20. Revenue grade metering is only for production metering.

(10) For communication interfaces, the inverter must be connected to a network with a static IP address. For cellular, a cellular modem must be connected to the inverter.

(11) Full power up to at least 15°C / 127°F. For power derating information refer to the "Standardized Derating Factor" table for North America.

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TOP TIER
SOLAR SOLUTIONS

TOP TIER SOLAR SOLUTIONS
1530 CENTER PARK DR #2911,
CHARLOTTE, NC 28217,
UNITED STATES

REVISIONS		
DESCRIPTION	DATE	REV
INITIAL DESIGN	07/09/2025	

PROJECT NAME & ADDRESS

PATTY SCARDINO
RESIDENCE
1591 OAKRIDGE DUNCAN RD,
FUQUAY-VARINA, NC 27526

DRAWN BY
ESR

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

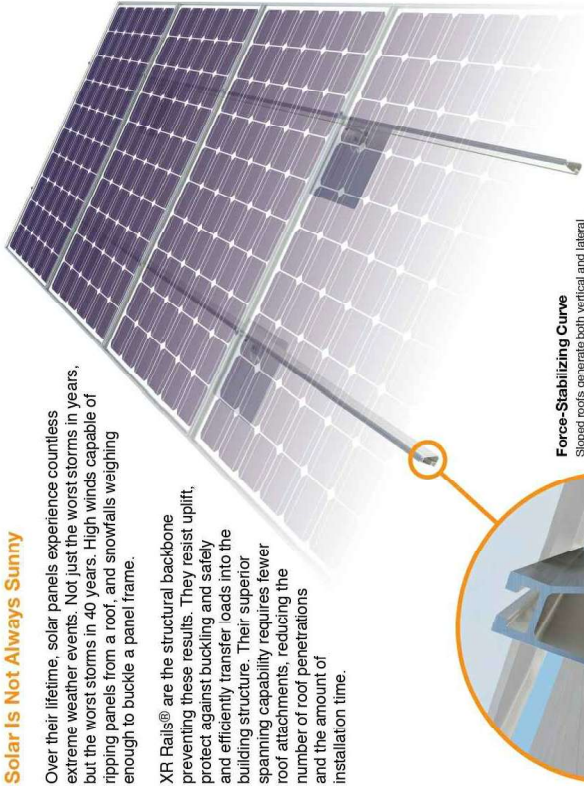
SHEET NUMBER
PV-13



Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails® are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.



Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on the building structure. XR Rails are specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs



XR Rails® are compatible with FlashFoot® and other pitched roof attachments.

Corrosion-Resistant Materials

All XR Rails® are made of 6000-series aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.



Tech Brief

XR Rail® Family

Tech Brief

XR Rail® Family

The XR Rail® Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail® to match.



XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with moderate wind and snow loads up to 6 feet, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear & black anodized finish
- Internal splices available



XR100

XR100 is a residential and commercial mounting rail. It supports a range of wind and snow loads up to 10 feet, also maximizing spans up to 10 feet.

- 10' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available



XR1000

XR1000 is a heavy-weight mounting rail, designed for commercial applications with wind and snow loads up to 12 feet for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The table below was prepared in compliance with applicable engineering codes and standards. * Values are based on the following criteria: ASCE 7-16, Gable Roof Flush Mount, Roof Zones 1 & 2e, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	90	XR10	XR10	XR100	XR1000	XR1000	XR1000
	120						
	140						
	160						
20	90	XR10	XR10	XR100	XR1000	XR1000	XR1000
	120						
	140						
	160						
30	90	XR10	XR10	XR100	XR1000	XR1000	XR1000
	120						
	140						
	160						
40	90	XR10	XR10	XR100	XR1000	XR1000	XR1000
	120						
	140						
	160						
80	90	XR10	XR10	XR100	XR1000	XR1000	XR1000
	120						
	140						
	160						
120	90	XR10	XR10	XR100	XR1000	XR1000	XR1000
	120						
	140						
	160						

*Table is meant to be a simplified span chart for conveying general rail capabilities. Use approved certification letters for actual design guidelines.



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UFO® Family of Components

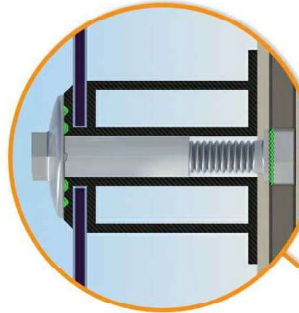
Tech Brief

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.

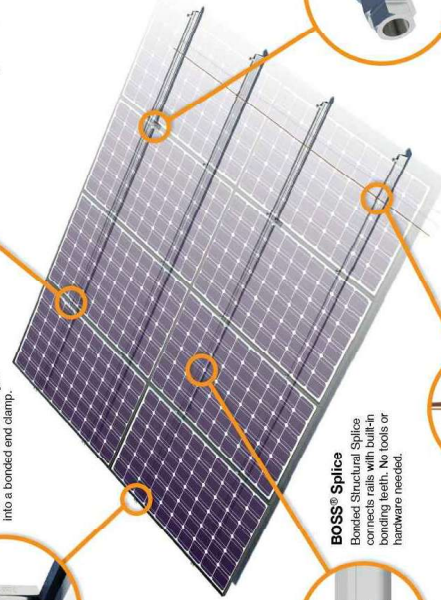
Only for installation and use with IronRidge products in accord with written instructions. See IronRidge.com/UFO



Universal Fastening Object (UFO®)
The UFO® securely bonds solar modules to XR Rails®. It comes assembled and lubricated, and can fit a wide range of module heights.



Stopper Sleeve
The Stopper Sleeve engages onto the UFO®, converting it into a bonded end clamp.



BOSS® Splice
Bonded Structural Splice connects rails with built-in bonding teeth. No tools or hardware needed.

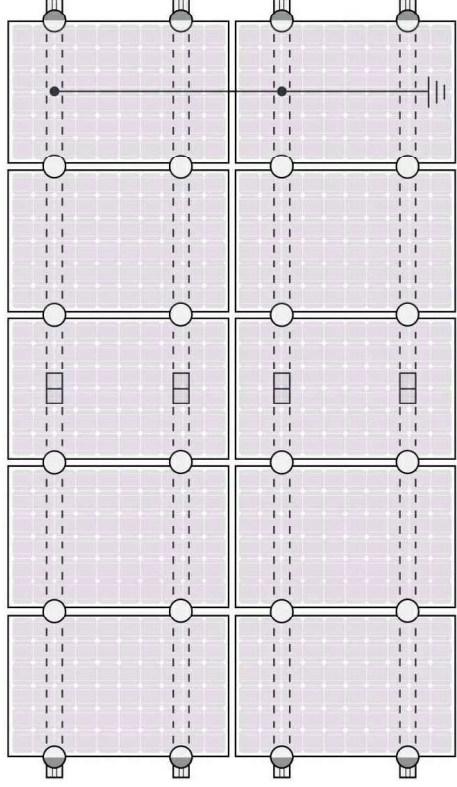


Grounding Lug
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.

Bonded Attachments
The bonding bolt attaches and bonds the L-Log® to the rail. It's installed with the L-Log® as the rest of the system.

System Diagram

Tech Brief



○ UFO ● Stopper Sleeve ● Grounding Lug □ BOSS® Splice — Ground Wire

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](http://GoToIronRidge.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.		

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S-5![®]

The Right Way!

ProteaBracket[™]

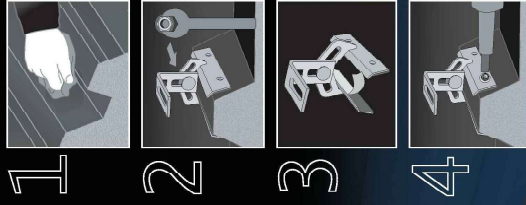
ProteaBracket[™] is the most versatile standing seam metal roof attachment solution on the market, fitting most trapezoidal sheet profiles with and without intermediate insulation. It features an adjustable attachment base and multiple solar module attachment options (illustrated on back) to accommodate varying widths and heights. There are no messy sealants to apply and no chance for leaks; the ProteaBracket comes with factory-applied, adhesive rubber sealant to ensure quick installation and a weather-proof fit.

Installation is simple! The ProteaBracket is mounted directly onto the crown of the panel, straddling the profile. No surface preparation is necessary; simply wipe away excess oil and debris, align, and apply. Secure ProteaBracket through its pre-punched holes, using the hardened drill point S-5![®] screws.

ProteaBracket[™] is the perfect match for our S-5-PV Kit and spares you the hassle of cold-bridging! For a solar attachment solution that is both economical and easy to use, choose ProteaBracket[™].

*When ProteaBracket is used in conjunction with the S-5-PV Kit, an additional fastener is required during installation.

The right way to attach almost anything to metal roofs!



S-5![®] ProteaBracket[™] is a versatile bracket that adjusts easily to most trapezoidal roof profiles.

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

ProteaBracket[™]

S-5![®]

The Right Way!

ProteaBracket[™] is the perfect solar attachment solution for most trapezoidal exposed-fastened metal roof profiles! No messy sealants to apply. The factory-applied adhesive rubber sealant weathers-proofs and makes installation easy!

ProteaBracket[™]

Each ProteaBracket[™] comes with a factory-applied, adhesive rubber sealant on the base. A structural A2 stainless steel bimetal attachment bracket, ProteaBracket is compatible with most common metal roofing materials. All four pre-punched holes must be used to achieve tested strength. Mounting hardware is furnished with the ProteaBracket. For design assistance, ask your distributor, or visit www.S-5.com for the independent lab test data that can be used for load-critical designs and applications. Also, please visit our website for more information including metallurgical compatibilities and specifications. S-5![®] holding strength is unmatched in the industry.

Multiple Attachment Options:



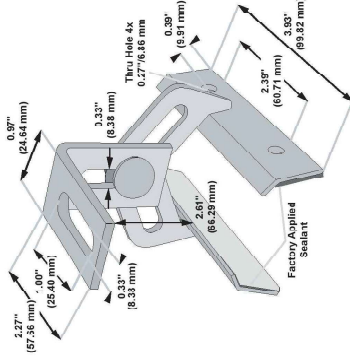
Side Rail Option



Top Rail Option

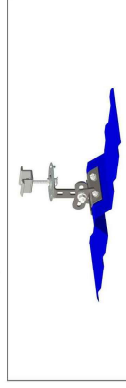


S-5-PV Kit Option



Please note: All measurements are rounded to the second decimal place.

Example Applications



S-5-PV Kit demonstrated with a ProteaBracket on a trapezoidal profile.

Example Profile



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Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, see www.S-5.com or contact S-5![®] at 888-825-3432.
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