

NOTE:
CONTRACTOR TO VERIFY THE ADHERENCE OF THE
EXISTING ROOF STRUCTURAL LAYOUT TO THE
ILLUSTRATION SHOWN IN RACKING/ATTACHMENT DETAIL.
ROOF FRAMING CONSISTING OF NO. 2 2X4 SYP MEMBERS
SHOULD NOT EXCEED AN UNSUPPORTED TOP CHORD
LENGTH OF 5'-2".

PHOTOVOLTAIC ROOF MOUNT SYSTEM

64 MODULES - SYSTEM SIZE STC (25.6 KW DC / 22.8 KW AC)

512 NORTHWEST SHELBY TERRACE, LAKE CITY, FL 32055, US (30.1913269, -82.6543996)

SYSTEM SUMMARY STC DC/AC (25.6 KW DC / 22.8 KW AC)

- 4X STRINGS OF 11 CONNECTED IN SERIES
- 2X STRINGS OF 10 CONNECTED IN SERIES
- (64) URECO FBM400MFG-BB (400W) MODULES
- (64) SOLAREEDGE S440 OPTIMIZERS
- (2) SOLAREEDGE SE11400H-US (240) INVERTERS
- STC DC: (64) 400 = 25.6 KW
- STC AC: (2) 10000 = 22.8 KW

GOVERNING CODES

2017 NATIONAL ELECTRICAL CODE
2020 FLORIDA FIRE PREVENTION CODE
2020 FLORIDA BUILDING CODE
2020 FLORIDA RESIDENTIAL CODE

GENERAL NOTES

- 1) ALL PANELS, SWITCHES, ETC. SHALL HAVE SUFFICIENT GUTTER SPACE AND LUGS IN COMPLIANCE WITH UL REQUIREMENTS TO ACCOMMODATE CONDUCTORS SHOWN.
- 2) THIS SYSTEM WILL NOT BE INTERCONNECTED UNTIL APPROVAL FROM THE LOCAL JURISDICTION AND UTILITY IS OBTAINED.
- 3) ALL EXTERIOR ELECTRICAL DEVICES AND EQUIPMENT INCLUDING THOSE THAT ARE EXPOSED TO OUTSIDE ENVIRONMENT SHALL BE WEATHERPROOF AND SHALL BE LISTED BY 'UL' FOR THE TYPE OF APPLICATION AND 'UL' LABEL SHALL APPEAR ON ALL ELECTRICAL EQUIPMENT.
- 4) WIRING METHOD SHALL BE EMT ABOVE GROUND MOUNTED IN CONCEALED SPACES (UNLESS APPROVED OTHERWISE) AND SCHEDULE-40 PVC FOR BELOW GROUND INSTALLATIONS UNLESS NOTED OTHERWISE.
- 5) AN OSHA APPROVED LADDER PROVIDING ACCESS TO ALL PORTIONS OF THE ARRAY SHALL BE SECURED IN PRIOR TO REQUESTING INSPECTION.
- 6) IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE CONDUCTOR IF NECESSARY.

SAFETY PLAN NOTES

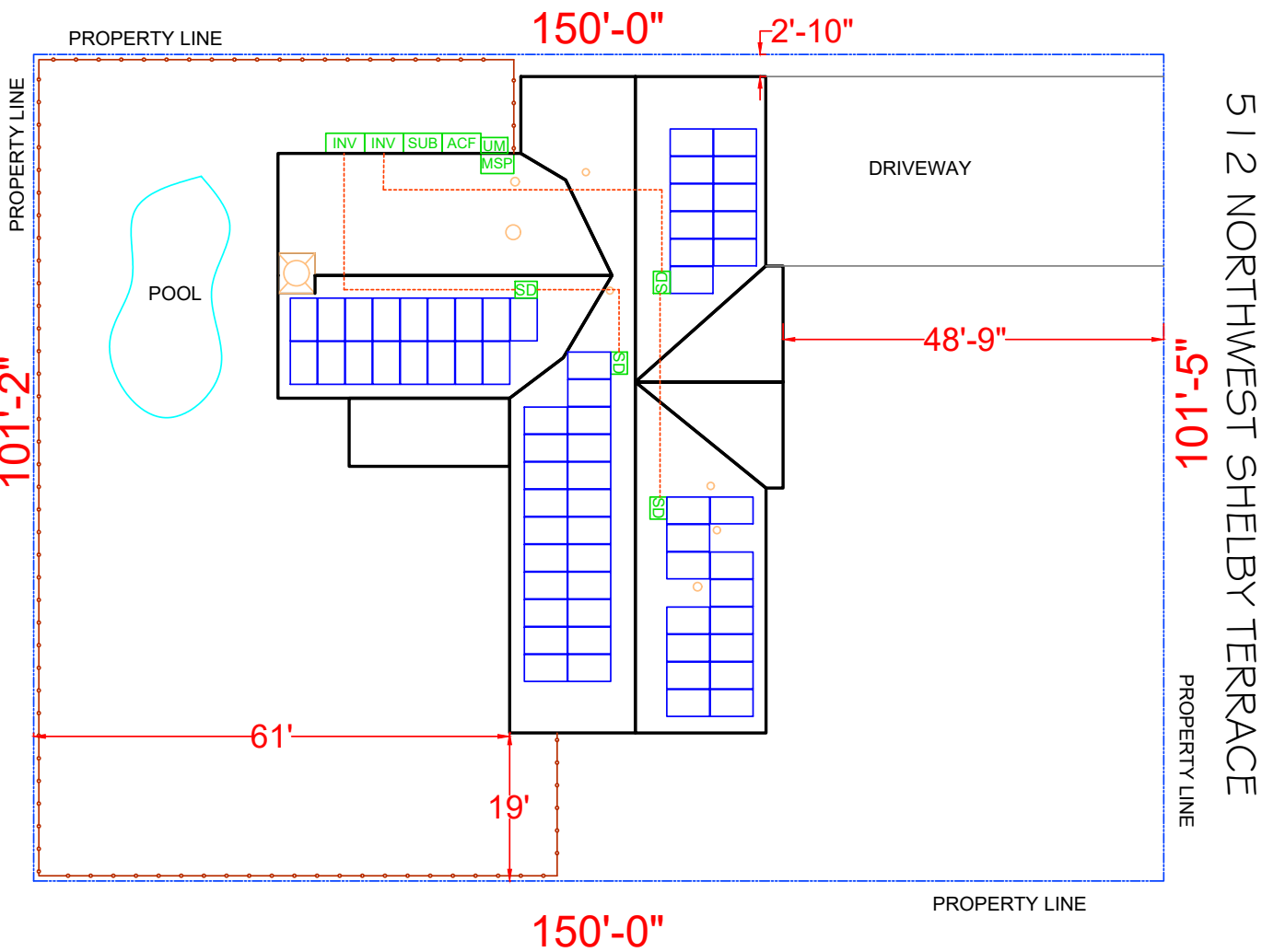
- INSTALLERS SHALL DRAW IN DESIGNATED SAFETY AREA AROUND HOME.
- INSTALLERS SHALL UPDATE NAME, ADDRESS AND PHONE NUMBER OF NEAREST URGENT CARE FACILITY RELATIVE TO THE SITE BEFORE STARTING WORK.

LOCATION OF NEAREST URGENT CARE FACILITY (FOR INSTALLER USE ONLY)

- NAME:
- ADDRESS:
- PHONE NUMBER:

LEGEND

	PV MODULE		DIMENSIONS
	OPTIMIZER		PROPERTY LINE
	ROOF ATTACHMENT		FENCE
			DRIVEWAY
			CONDUIT
	MAIN SERVICE PANEL (EXISTING, 200a)		AC DISCONNECT UNFUSED (N/A)
	UTILITY METER (EXISTING)		AC DISCONNECT FUSED (NEW)
	PRODUCTION METER (N/A)		SOLADECK (NEW)
	BATTERY (N/A)		AUTO TRANSFORMER (N/A)
	(3) INVERTER (NEW)		SUBPANEL (NEW)
	LOAD CENTER (COMBINER PANEL) (NEW)		DC DISCONNECT (N/A)
	SOLAREEDGE METER (N/A)		DC COMBINER (N/A)
	BACKUP LOAD PANEL (N/A)		EXISTING EQUIPMENT



SITE PLAN & SAFETY PLAN
SCALE: 1"=20'-0"



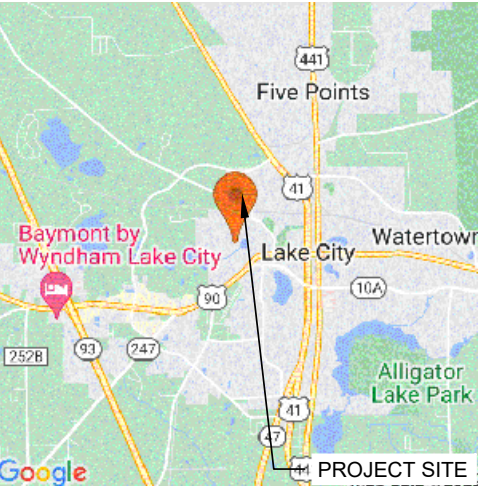
SHEET INDEX

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PV-3	ATTACHMENT DETAIL
PV-3.1	STRUCTURAL DETAIL
PV-4	SINGLE LINE DIAGRAM
PV-5	WIRING CALCULATION
PV-6	PLACARDS
PV-7+	EQUIPMENT SPECIFICATION

AHJ: COLUMBIA COUNTY
UTILITY: N/A

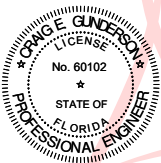


HOUSE PHOTO
SCALE: NTS



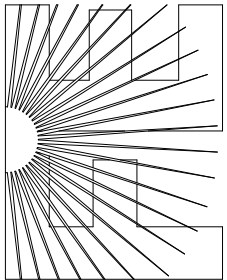
VICINITY MAP
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www.flengineeringllc.com



CA CERT. #30782

PROJECT NO. 2227898

CONTRACTOR:

SOLAR SPECIALIST, INC.
6520 US HWY 301 S STE 115
RIVERVIEW FL, 33578

PROJECT ADDRESS:

SMITH
512 NW SHELBY TER
LAKE CITY FL 32055

DESIGN DATE: 10/10/2022

REVISION 1:	DATE	PAGE : 1
REVISION 2:	DATE	
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GENERAL NOTES:

- 1. ALL WORK SHALL COMPLY WITH STATE AND LOCAL CODES.
- 2. DRAWINGS HAVE BEEN DETAILED ACCORDING TO UL LISTING REQUIREMENTS.
- 3. PRIOR TO COMMENCEMENT OF WORK CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND NOTIFY DBM OF ANY INCONSISTENCIES.
- 4. ALL EQUIPMENT SHALL BE INSTALLED AS SHOWN.
- 5. WARNINGS PER NEC 690 AND NEC 2017.
- 6. WIRING SHALL NOT BE INSTALLED WITHIN 10 INCHES OF ROOF
- 7. DECKING EXCEPT WHERE DIRECTLY BELOW PV EQUIPMENT.
- 8. PHOTOVOLTAIC SYSTEM WILL COMPLY WITH NEC 2017.
- 9. ELECTRICAL SYSTEM GROUNDING WILL COMPLY WITH NEC 2017.
- 10. PHOTOVOLTAIC SYSTEM IS UNGROUNDED. NO CONDUCTORS ARE SOLIDLY GROUNDED IN THE INVERTER. SYSTEM COMPLIES WITH 690.35.
- 11. MODULES CONFORM TO AND ARE LISTED UNDER UL 1703.
- 12. INVERTER CONFORMS TO AND IS LISTED UNDER UL 1741.
- 13. RACKING CONFORMS TO AND IS LISTED UNDER UL 2703.
- 14. RAPID SHUTDOWN REQUIREMENTS MET WHEN INVERTERS AND ALL CONDUCTORS ARE WITHIN ARRAY BOUNDARIES PER NEC 690.12(1).
- 15. CONSTRUCTION FOREMAN TO PLACE CONDUIT RUN PER 690.31(G).
- 16. ARRAY DC CONDUCTORS ARE SIZED FOR DERATED CURRENT.

ROOF ACCESS POINT:

ROOF ACCESS POINT SHALL NOT BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

I CERTIFY THAT THE INSTALLATION OF THE MODULES IS IN COMPLIANCE WITH, FBC 2020, RESIDENTIAL 7th EDITION, CHAPTER 3 SECTION 324, AND FBC: 2020, 7th ED., SECTION 101.4.9, SECTION 458: MANUFACTURED BUILDINGS, AS WELL AS CHAPTER 16. THE MANUFACTURED BUILDING STRUCTURE WILL SAFELY ACCOMMODATE WIND LATERAL AND UPLIFT FORCES, AND EQUIPMENT DEAD LOADS

APPLICABLE CODE: 2020 FLORIDA BUILDING CODE (7TH EDITION) & ASCE 7-16 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

LAG SCREW DIAMETER AND EMBEDMENT LENGTHS ARE DESIGNED PER 2020 FLORIDA BUILDING CODE (7TH EDITION) REQUIREMENTS.ALL BOLT CAPACITIES ARE BASED ON A SOUTHER YELLOW PINE (SYP) RESIDENTIAL WOOD ROOF RAFTERS AS EMBEDMENT MATERIAL.

ALL WIND DESIGN CRITERIA AND PARAMETERS ARE FOR HIP AND GABLE RESIDENTIAL ROOFS, CONSIDERING FROM A 7° TO A MAXIMUM 23° (5/12 TO A MAXIMUM 7/12 PITCH) ROOF IN SCHEDULE. CONTRACTOR TO FIELD VERIFY THAT MEAN ROOF HEIGHT DOES NOT EXCEED 15'-0".

ALL DISSIMILAR MATERIALS SHALL BE SEPARATED WITH NEOPRENE WASHERS, PADS, ETC OR SIMILAR.

ALL ALUMINUM COMPONENTS SHALL BE ANODIZED ALUMINUM 6105-T5 UNLESS OTHERWISE NOTED.

ALL LAG SCREW SHALL BE ASTM A276 STAINLESS STEEL UNLESS OTHERWISE NOTED.

ALL SOLAR RAILING AND MODULES SHALL BE INSTALLED PER MANUFACTURER INSTRUCTIONS.

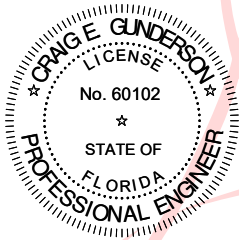
CONTRACTOR SHALL ENSURE ALL ROOF PENETRATIONS TO BE INSTALLED AND SEALED PER 2020 FLORIDA BUILDING CODE (7TH EDITION) OR LOCAL GOVERNING CODE.

NOTE TO INSTALLER:

FIELD ADJUSTMENTS CAN BE MADE TO THE LAYOUT OF THE ARRAY PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

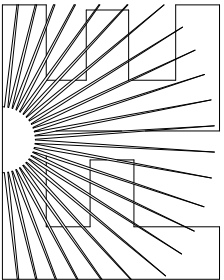
THE EXISTING STRUCTURE OF ROOF THAT SUPPORTS THE SOLAR PHOTOVOLTAIC PANELS OR MODULES IS ABLE TO ACCOMMODATE THE FULL SOLAR PANELS OR MODULES AND BALLAST DEAD LOAD (IF APPLICABLE), INCLUDING CONCENTRATED LOADS FROM SUPPORT FRAMES IN COMBINATION WITH THE LOADS FROM SECTION 1607.12.5.1, SECTION 1607.12.5.2 AND ALL OTHER APPLICABLE LOADS. THIS SOLAR PANEL INSTALLATION MEETS ALL SECTIONS OF THE FBC 2020.

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PROJECT ADDRESS:

SMITH
512 NW SHELBY TER
LAKE CITY FL 32055

DESIGN DATE: 10/10/2022

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MODULE AREA & WEIGHT CALCULATIONS

PANEL TYPES (COUNT, AREA, WEIGHT):
- (64x) URECO FBM400MFG-BB (400W) (67.83" x 44.61", 47.8 LBS)
OPTIMIZER TYPES (COUNT, WEIGHT):
- (64x) SolarEdge S440 (1.5 LBS)
ATTACHMENT COUNT: 136
MOUNTING SYSTEM WEIGHT/MODULE: 1.5 LBS
TOTAL ROOF AREA: 3992 SF
TOTAL ARRAY AREA: (64) 67.8" x 44.6" = 1344.84 SF
TOTAL ARRAY WEIGHT: (64) 47.8 + (64) 1.5 + (64) 1.5 = 3251 LBS
WEIGHT AT EACH CONNECTION: 3557 LBS / 136 = 26.15 LBS
DISTRIBUTED LOAD: 3251 LBS / 1344.84 SF = 2.42 PSF
ROOF AREA COVERED BY ARRAY: 1345 SF / 3992 SF = 33.0%

BILL OF MATERIALS		
SOLAR PV MODULES	64	FBM400MFG-BB (400W) MODULES
OPTIMIZERS	64	SOLAREEDGE S440
INVERTERS	02	SOLAREEDGE SE10000H-US (240)
LOAD CENTER	01	AC COMBINER PANEL (MIN RATING 125A)
AC DISCONNECT	01	PV VISIBLE LOCKABLE LABELED DISCONNECT (200A FUSED 1PH 240VAC)
ATTACHMENTS	166	IRONRIDGE RESOURCES - FLASHFOOT 2
RAIL	32	IRONRIDGE RESOURCES - XR10
RAIL SPLICE	24	RAIL SPLICE
MID CLAMP	96	MID CLAMP
END CLAMP	40	END CLAMP
GROUNDING LUG	10	GROUNDING LUG

ROOF DESCRIPTION TABLE							
ROOF PLANE	TRUSS SIZE	TRUSS SPACING	METAL SPACING	MAX. ATTACHMENT SPACING	MODULE COUNT	ARRAY TILT	AZIMUTH
#1	2" x 4"	24" O.C.	12"	48"	16	16°	88°
#2	2" x 4"	24" O.C.	12"	48"	17	16°	88°
#3	2" x 4"	24" O.C.	12"	48"	25	16°	178°
#3	2" x 4"	24" O.C.	12"	48"	18	16°	178°

LEGEND

PV MODULE

OPTIMIZER

ROOF ATTACHMENT

MAIN SERVICE PANEL
(EXISTING, 200a)

UTILITY METER
(EXISTING)

PRODUCTION METER
(N/A)

BATTERY
(N/A)

(1) INVERTER
(NEW)

LOAD CENTER (COMBINER
PANEL) (N/A)

SOLAREEDGE METER
(N/A)

BACKUP LOAD PANEL
(N/A)

AC DISCONNECT UNFUSED
(N/A)

AC DISCONNECT FUSED
(NEW)

SOLADECK
(NEW)

AUTO TRANSFORMER
(N/A)

SUBPANEL
(NEW)

DC DISCONNECT
(N/A)

DC COMBINER
(N/A)

EXISTING EQUIPMENT

DIMENSIONS

TRUSS

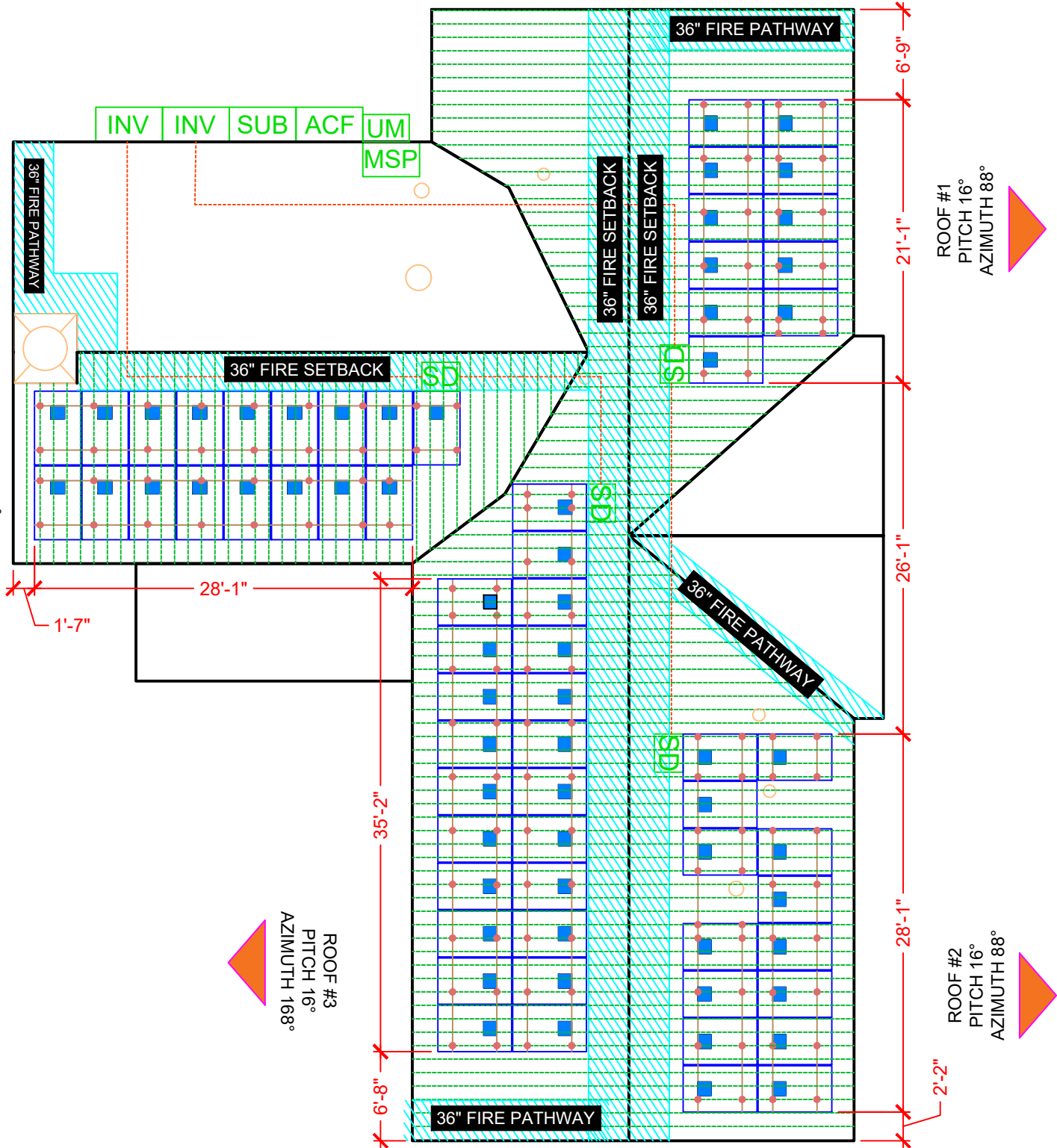
RAIL

CONDUIT

STRING

ROOF PLAN WITH MODULES
SCALE: 3/32" = 1'-0"

ROOF #4
PITCH 16°
AZIMUTH 178°



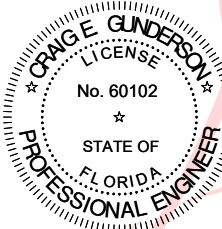
ROOF #3
PITCH 16°
AZIMUTH 168°

ROOF #1
PITCH 16°
AZIMUTH 88°

ROOF #2
PITCH 16°
AZIMUTH 88°

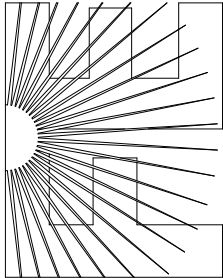
512 NORTHWEST SHELBY TERRACE
(E) FRONT YARD

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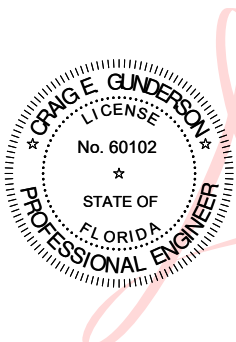
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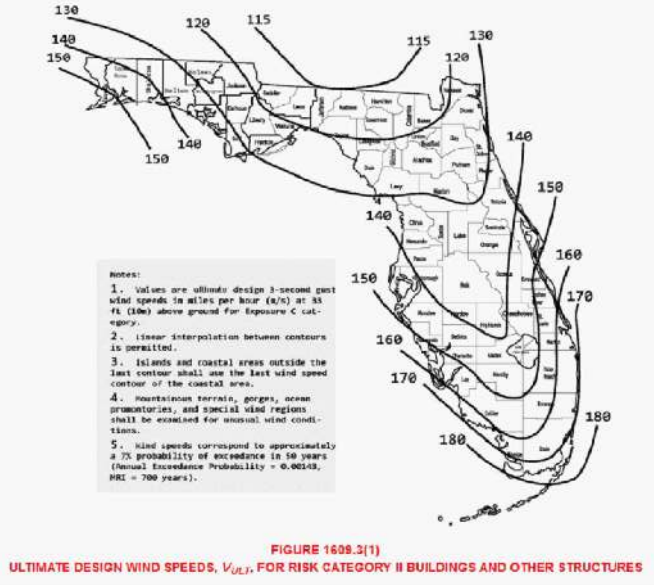
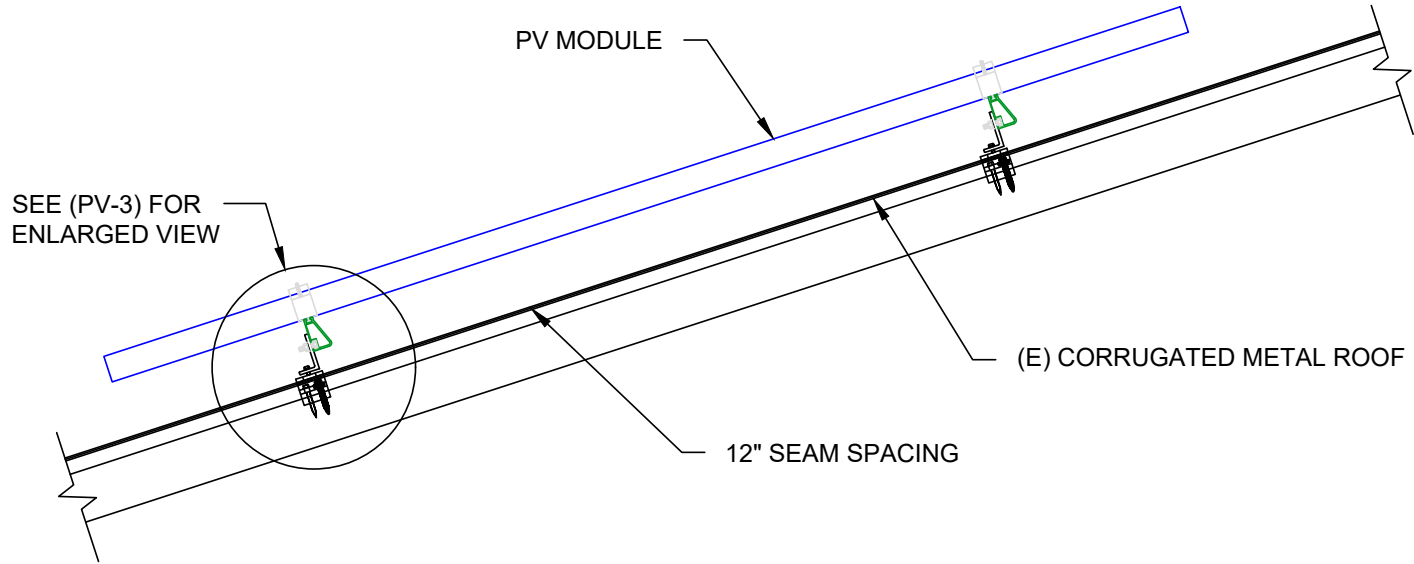
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LAKE CITY FL 32055

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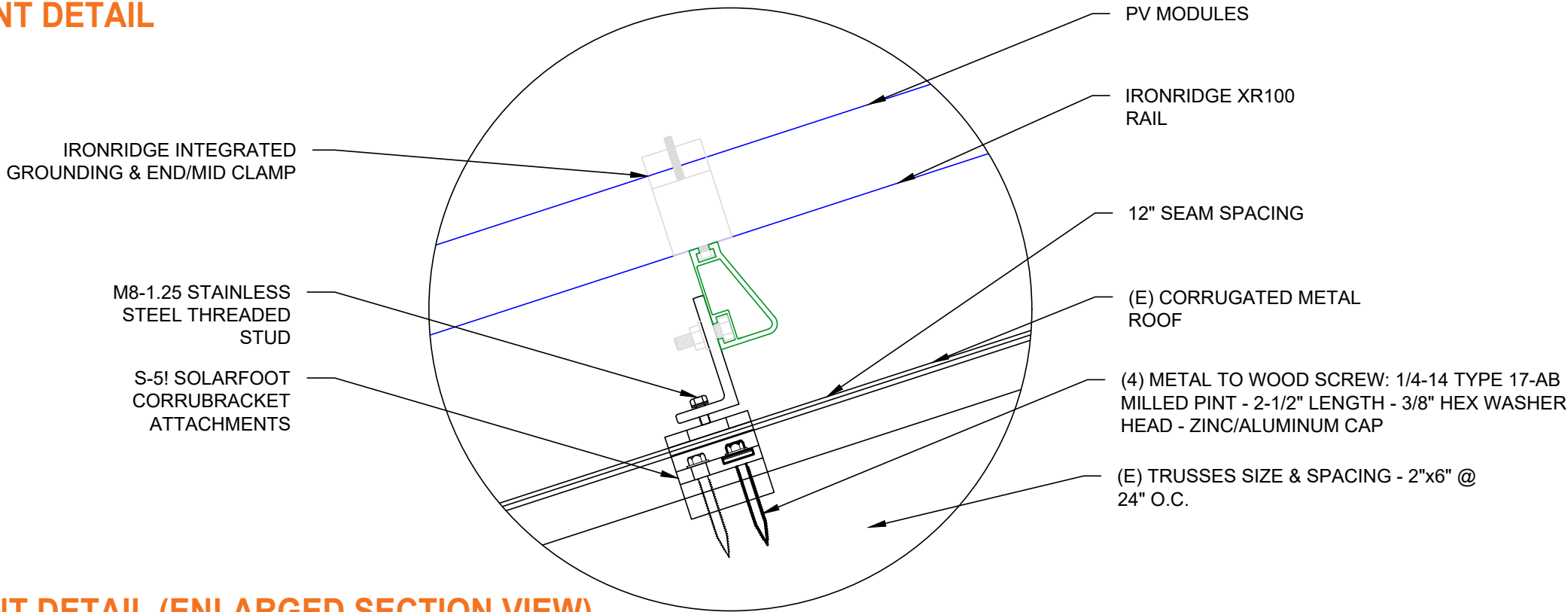


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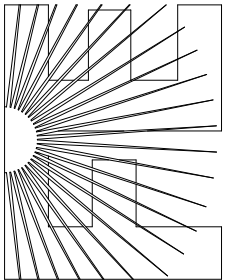
DESIGN CRITERIA
EXPOSURE CATEGORY = C
WIND SPEED = 120MPH
SNOW LOAD = 0PSF

ATTACHMENT DETAIL
SCALE: NTS



ATTACHMENT DETAIL (ENLARGED SECTION VIEW)
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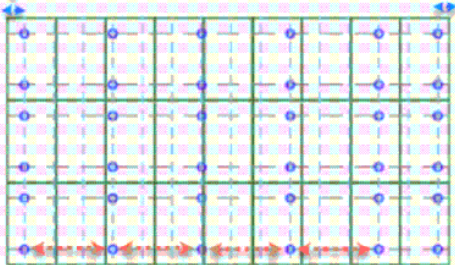
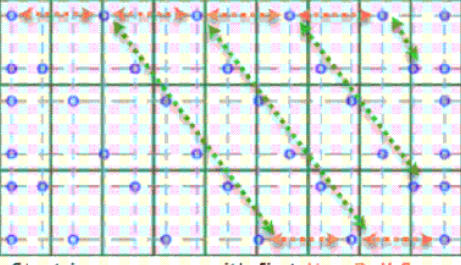
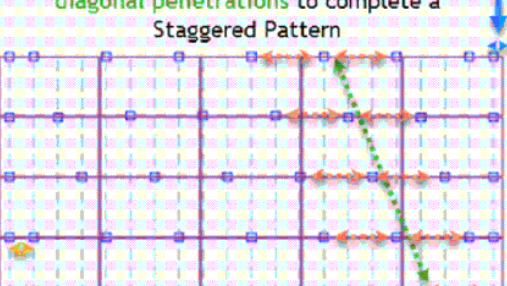
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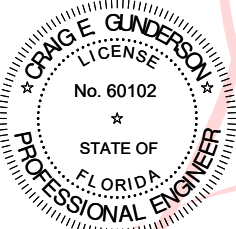
Structural Information					
SYSTEM SIZE	(25.6 KW DC / 22.8 KW AC)	RACKING	EVEREST CROSS RAIL 44-X RAIL		
MODULES	(64) URE FAM365E7G-BB				
MODULE DIMS	(67.83" X 44.61" X 1.38")	ROOF TYPE	METAL SHINGLE		
MAX ROOF HEIGHT	SINGLE STORY	FRAME TYPE	BLACK ANO DISED ALUMINIUM		
		OC SPACING	24" OC		
LAG LENGTH	5/16"x3.5": 2.5" MIN EMBEDMENT	COLUMN SPACING	1"	ROW SPACING	1"

ATTACHMENT SPECIFICATIONS									
Array	Landscape				Portrait				Layout
Name	Max OC Spacing	Max Overhang	*Reduced Max OC SPACING	*Reduced Max Overhang	Max OC Spacing	Max Overhang	*Reduced Max OC SPACING	*Reduced Max Overhang	Configuration
AR-01 TO AR-11	6'-0"	2'-4"	N/A	N/A	6'-0"	2'-2"	N/A	N/A	STACKED

Racking Type	Stacked All Non-snow & Non-high Wind Regions (exception: Standing Seam is always staggered)	Staggered All Regions if Snow>10 PSF or Wind>150 mph
Railed	Sides of each Row are Stacked to obey Max Overhang value  Penetration Spacing must land on structural members and be <= the Max Rail Span value	Sides of each Row are Stacked to obey Max Overhang value  Start in one corner with first Max Rail Span and stagger penetrations diagonally onto every structural member
Rail-Less (RL)	Sides of each Row are Stacked to obey Max Overhang value  One end of stacked Rows are often less than the Max Rail Span value	Subsequent penetrations are spaced from the diagonal penetrations to complete a Staggered Pattern  Ends of Staggered Rows are often less than the Max Rail Span value

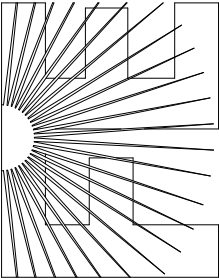
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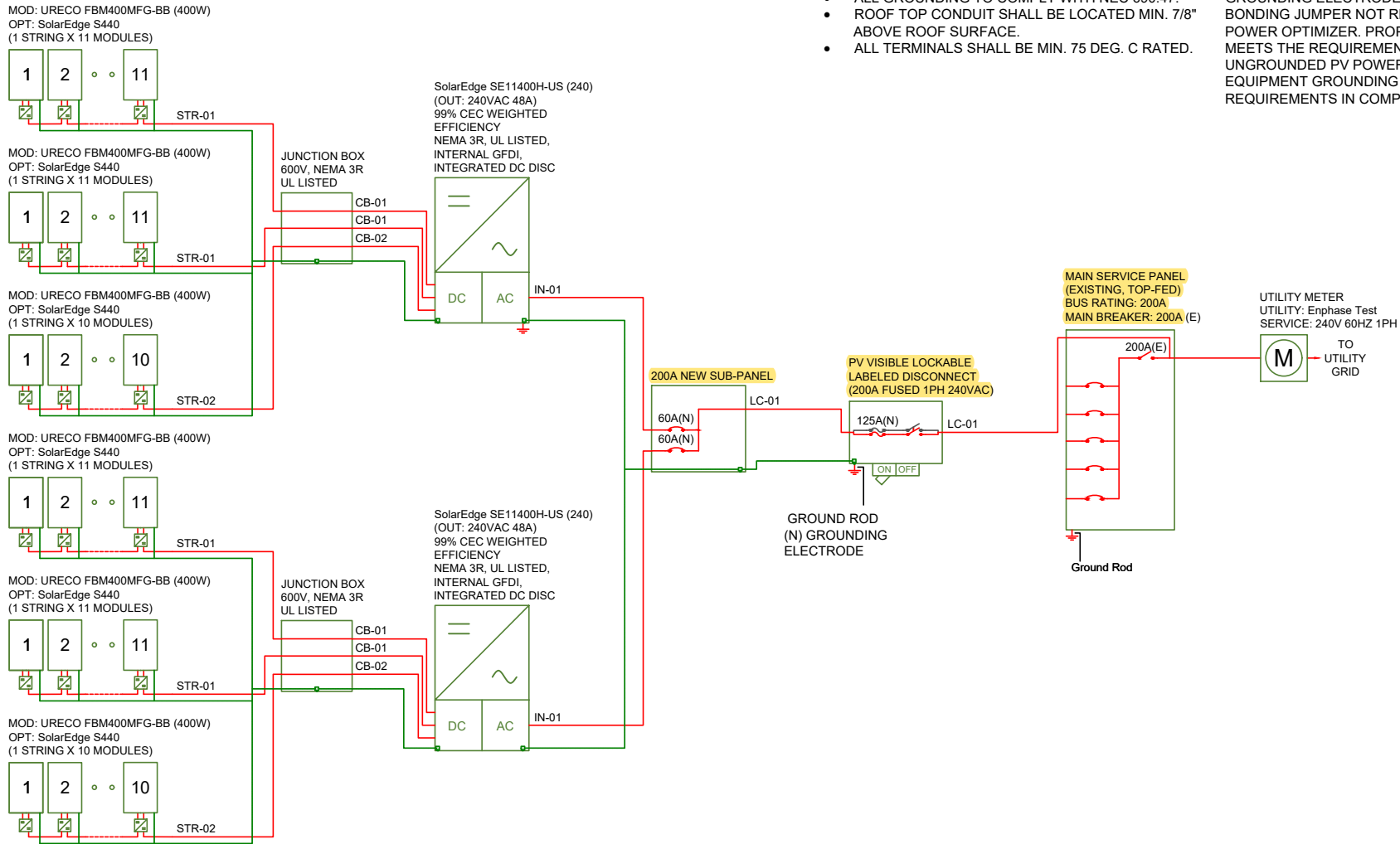
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SYSTEM SUMMARY STC DC/AC
(25.6 kW DC / 22.8 kW AC)

- 4x STRINGS OF 11 CONNECTED IN SERIES
- 2x STRINGS OF 10 CONNECTED IN SERIES
- (64) URECO FBM400MFG-BB (400W) MODULES
- (64) SolarEdge S440 OPTIMIZERS
- (2) SolarEdge SE11400H-US (240) INVERTERS
- STC DC: (64) 400 = 25.6 kW
- STC AC: (2) 11400 = 22.8 kW



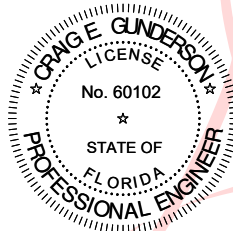
NOTE:

- ALL GROUNDING TO COMPLY WITH NEC 690.47.
- ROOF TOP CONDUIT SHALL BE LOCATED MIN. 7/8" ABOVE ROOF SURFACE.
- ALL TERMINALS SHALL BE MIN. 75 DEG. C RATED.

NOTE:

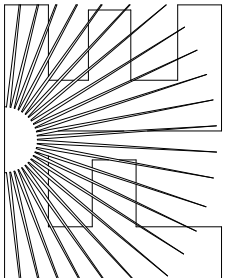
GROUNDING ELECTRODE CONDUCTOR/SYSTEM BONDING JUMPER NOT REQUIRED FOR SOLAREEDGE POWER OPTIMIZER. PROPERLY INSTALLED SYSTEM MEETS THE REQUIREMENTS OF NEC 690.35 FOR UNGROUNDED PV POWER SYSTEMS. PROVIDE EQUIPMENT GROUNDING PER MANUFACTURER'S REQUIREMENTS IN COMPLIANCE WITH THE NEC.

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DC wire details						
Wire	Min Ampacity	Live	Neutral	Ground	Min EMT	Min RMC
STR-01	18.75A	(2) 10 AWG PV	-	06 AWG BARE (NOT IN CONDUIT)	-	-
STR-02	18.75A	(2) 10 AWG PV	-	06 AWG BARE (NOT IN CONDUIT)	-	-
CB-01	18.75A	(2) 10 AWG THWN-2	-	10 AWG THWN-2	0.50 in	0.50 in
CB-02	18.75A	(2) 10 AWG THWN-2	-	10 AWG THWN-2	0.50 in	0.50 in

AC wire details							
Wire	Min Ampacity	Live	Neutral	Ground	Min EMT	Min PVC	Min RMC
IN-01	59.38A	(2) 06 AWG THWN-2	06 AWG THWN-2	10 AWG THWN-2	0.75 in	0.75 in	0.75 in
LC-01	118.75A	(2) 1/0 AWG THWN-2	1/0 AWG THWN-2	06 AWG THWN-2	1.50 in	1.50 in	1.25 in

INTERCONNECTION 120% RULE (MAIN PANEL)

INTERCONNECTION 120% RULE NOT APPLICABLE

LINE-SIDE TAP DOES NOT AFFECT MAIN PANEL

EXTREME CASE MODULE OUTPUT (URECO FBM400MFG-BB (400W))

$I_{sc}(25^{\circ}\text{C}) = 13.68\text{A}$, $T_{isc} = 0.048\text{A}/^{\circ}\text{C}$
 $I_{sc}(T) = I_{sc}(25^{\circ}\text{C}) + [T_{isc} \times (T - 25^{\circ}\text{C})]$
 $I_{sc}(-5^{\circ}\text{C}) = 12.24\text{A}$, $I_{sc}(34^{\circ}\text{C}) = 14.11\text{A}$

$V_{oc}(25^{\circ}\text{C}) = 37.20\text{V}$, $T_{voc} = -0.270\text{V}/^{\circ}\text{C}$
 $V_{oc}(T) = V_{oc}(25^{\circ}\text{C}) + [T_{voc} \times (T - 25^{\circ}\text{C})]$
 $V_{oc}(-5^{\circ}\text{C}) = 45.30\text{V}$, $V_{oc}(34^{\circ}\text{C}) = 34.77\text{V}$

ELECTRICAL SINGLE LINE DIAGRAM
SCALE: NTS

CONTRACTOR:
SOLAR SPECIALIST, INC.
6520 US HWY 301 S STE 115
RIVERVIEW FL, 33578

PROJECT ADDRESS:
SMITH
512 NW SHELBY TER
LAKE CITY FL 32055

DESIGN DATE: 10/10/2022

REVISION 1: DATE

REVISION 2: DATE

SCALE: NTS

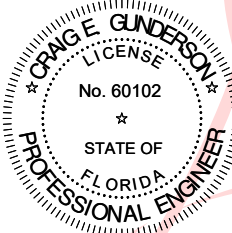
PAGE :

6

SYSTEM SUMMARY STC DC/AC
(25.6 kW DC / 22.8 kW AC)

- 4x STRINGS OF 11 CONNECTED IN SERIES
 - 2x STRINGS OF 10 CONNECTED IN SERIES
 - (64) URECO FBM400MFG-BB (400W) MODULES
 - (64) SolarEdge S440 OPTIMIZERS
 - (2) SolarEdge SE11400H-US (240) INVERTERS
- STC DC: (64) 400 = 25.6 kW
STC AC: (2) 11400 = 22.8 kW

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DC wire details															
WireID	(Strings) Modules	Voltage	Backfeed *1.25 /cond. set	Min OCPD	Conductor sets	ccConductors /conduit	Expected max temp	Adjusted ampacity (ampacity x temp derate x conduit fill derate)	Conductor size	EGC size (Cu)	Conductor metal	Max length	V drop	Min EMT size	Min RMC size
STR-01	(1x) 11x URECO FBM400MFG-BB (400W)	400-480 V	18.75 A	20 A	1	2	34	35 x 0.94 x 1.00 = 32.90 A	10 AWG PV	06 AWG BARE (NOT IN CONDUIT)	Cu	50 ft	0.40 %	-	-
STR-02	(1x) 10x URECO FBM400MFG-BB (400W)	400-480 V	18.75 A	20 A	1	2	34	35 x 0.94 x 1.00 = 32.90 A	10 AWG PV	06 AWG BARE (NOT IN CONDUIT)	Cu	50 ft	0.40 %	-	-
CB-01	(1x) 11x URECO FBM400MFG-BB (400W)	400-480 V	18.75 A	20 A	1	2	34	35 x 0.94 x 1.00 = 32.90 A	10 AWG THWN-2	10 AWG THWN-2	Cu	50 ft	0.40 %	0.50 in	0.50 in
CB-02	(1x) 10x URECO FBM400MFG-BB (400W)	400-480 V	18.75 A	20 A	1	2	34	35 x 0.94 x 1.00 = 32.90 A	10 AWG THWN-2	10 AWG THWN-2	Cu	50 ft	0.40 %	0.50 in	0.50 in

AC wire details																	
WireID	#Modules	Nominal Voltage	Backfeed *1.25 /cond. set	Min OCPD	Total Power	Conductor sets	ccConductors /conduit	Expected max temp	Adjusted ampacity (ampacity x temp derate x conduit fill derate)	Conductor & neutral size	EGC size (Cu)	Conductor metal	Max length	V drop	Min EMT size	Min PVC size	Min RMC size
IN-01	32	240 V	59.38 A	60 A	11.4 kW	1	2	34	65 x 0.94 x 1.00 = 61.10 A	06 AWG THWN-2	10 AWG THWN-2	Cu	50 ft	0.84 %	0.75 in	0.75 in	0.75 in
LC-01	64	240 V	118.75 A	125 A	22.8 kW	1	2	34	150 x 0.94 x 1.00 = 141.00 A	1/0 AWG THWN-2	06 AWG THWN-2	Cu	10 ft	0.09 %	1.50 in	1.50 in	1.25 in

INTERCONNECTION 120% RULE
(MAIN PANEL)

INTERCONNECTION
120% RULE
NOT APPLICABLE

LINE-SIDE TAP DOES NOT AFFECT
MAIN PANEL

EXTREME CASE MODULE OUTPUT
(URECO FBM400MFG-BB (400W))

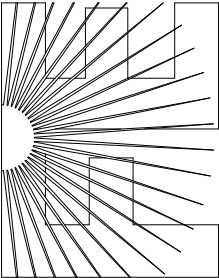
Isc(25°C) = 13.68A, Tisc = 0.048A/°C
Isc(T) = Isc(25°C) + [Tisc x (T-25°C)]
Isc(-5°C) = 12.24A, Isc(34°C) = 14.11A

Voc(25°C) = 37.20V, Tvoc = -0.270V/°C
Voc(T) = Voc(25°C) + [Tvoc x (T-25°C)]
Voc(-5°C) = 45.30V, Voc(34°C) = 34.77V

ELECTRICAL NOTES

- 1) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- 2) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
- 3) 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.
- 4) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- 5) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- 6) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- 7) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- 8) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- 9) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C.VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- 10) PV EQUIPMENT SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH NEC 690.
- 11) EXACT LOCATION OF AUXILIARY GROUNDING TO BE DETERMINED AT TIME OF INSTALL.
- 12) EXISTING WIRES MUST BE REPLACED IF SMALLER THAN LISTED MINIMUM SIZES PER NEC 310.15(B)(16).
- 13) AC DISCONNECT LOCATED WITHIN 10' OR LESS FROM UTILITY METER

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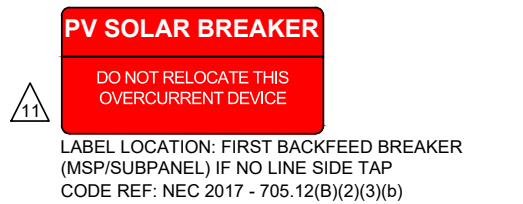
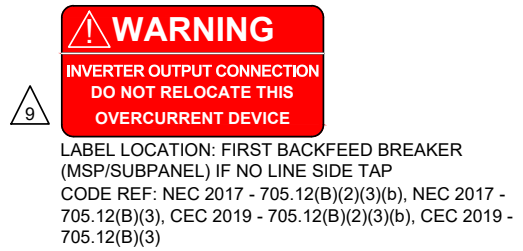
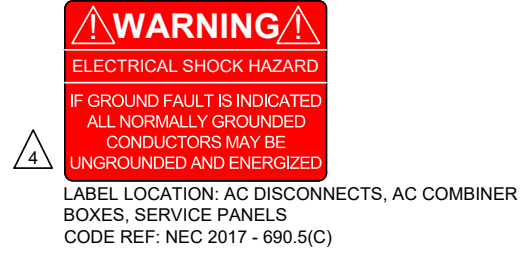
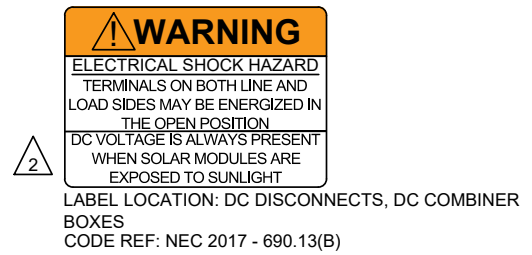
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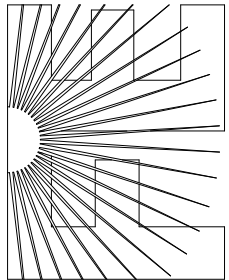
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A circular professional engineer seal for Craig E. Gunderson. The outer ring contains the text "CRAIG E. GUNDERSON" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by two stars. Inside the ring, the word "LICENSE" is at the top, "No. 60102" is in the center, a single star is below the number, "STATE OF" is below the star, and "FLORIDA" is at the bottom. The seal is surrounded by a dashed circular border.

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8



FBM_MFG-BB / 108 cells
390W - 405 W
Mono-Crystalline PV Module

URE Peach module uses URE state-of -the art cell cutting technology, and advanced module manufacturing experiences.



Key Features



Positive power tolerance
+0 ~ +5 watt



100% EL inline inspection
Better module reliability



Withstand heavy loading
front load 5400 Pa & rear load 2400 Pa



Design for 1000 VDC
Reduce the system BOS effectively



Excellent low light performance
3.5% relative eff. Reduction at low
(200W/m²)

Electrical Data

Model - STC		FBM390MFG-BB	FBM395MFG-BB	FBM400MFG-BB	FBM405MFG-BB
Maximum Rating Power (Pmax)	[W]	390	395	400	405
Module Efficiency	[%]	19.98	20.23	20.49	20.75
Open Circuit Voltage (Voc)	[V]	36.84	37.03	37.20	37.36
Maximum Power Voltage	[V]	30.82	31.00	31.17	31.36
Short Circuit Current (Isc)	[A]	13.50	13.59	13.68	13.78
Maximum Power Current	[A]	12.66	12.75	12.84	12.92

*Standard Test Condition (STC): Cell Temperature 25 °C, Irradiance 1000 W/m², AM 1.5
*Values without tolerance are typical numbers.Measurement tolerance: ± 3%

Mechanical Data

Item	Specification
Dimensions	1723 mm (L) ¹ x 1133 mm (W) ¹ x 35 mm (D) ² / 67.83" (L) ¹ x 44.61" (W) ¹ x 1.38" (D) ²
Weight	21.7 kg / 47.84 lbs
Solar Cell	12x9 pieces monocrystalline solar cells series strings
Front Glass	White toughened safety glass, 3.2mm thickness
Cell Encapsulation	EVA (Ethylene-Vinyl-Acetate)
Frame	Black anodized aluminum profile
Junction Box	IP≥ 68, 3 diodes
Cable & Connector	Potrait : 500 mm (cable length can be customized), 1 x 4 mm ² compatible with MC4
Package Configuration	31 pcs Per Pallet, 806 pcs per 40' HQ container

¹ : With assembly tolerance of ± 2 mm [± 0.08"]
² : With assembly tolerance of ± 0.8 mm [± 0.03"]

Operating Conditions

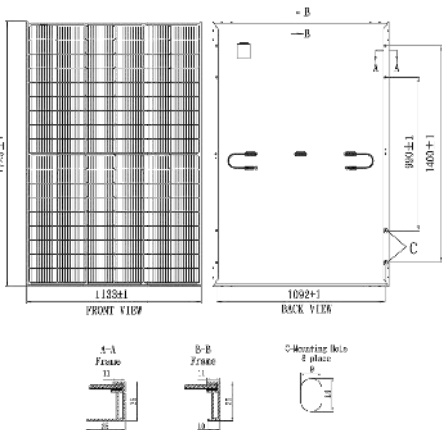
Item	Specification
Mechanical Load	5400 Pa
Maximum System Voltage	1000V
Series Fuse Rating	30 A
Operating Temperature	-40 to 85 °C

Temperature Characteristics

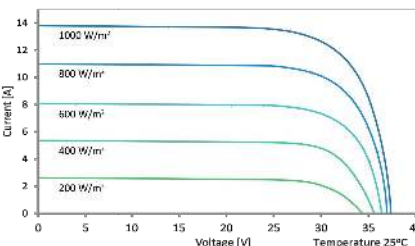
Item	Specification
Nominal Module Operating Temperature	45°C ± 2°C
Temperature Coefficient of Isc	0.048 % / °C
Temperature Coefficient of Voc	-0.27 % / °C
Temperature Coefficient of Pmax	-0.32 % / °C

*Nominal module operating temperature (NMOT): Air mass AM 1.5,
irradiance 800W/m², temperature 20°C, windspeed 1 m/s.
*Reduction in efficiency from 1000W/m² to 200W/m² at 25°C: 3.5 ± 2%.

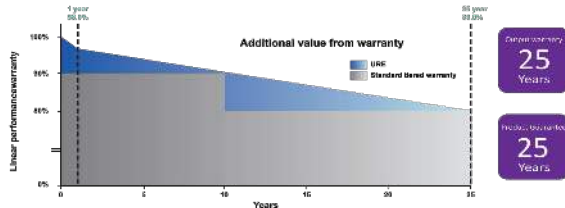
Engineering Drawing (mm)



Dependence on Irradiance



Reliability with Warranty



For more information, please visit us at www.urecorp.com

United Renewable Energy Co., Ltd.

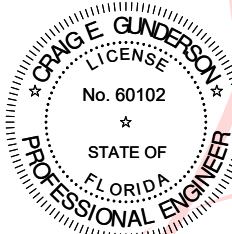
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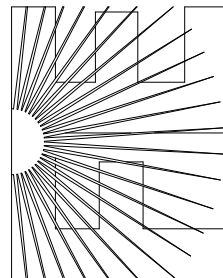
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PROJECT NO. 2227898

CONTRACTOR:

SOLAR SPECIALIST, INC.
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LAKE CITY FL 32055

DESIGN DATE: 10/10/2022

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PAGE :

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Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US



INVERTERS

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014, NEC 2017 and NEC 2020 per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)

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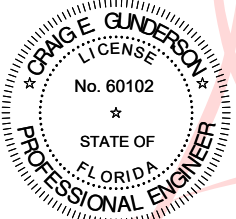
Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US		
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXXXH-XXXXXBXX4								
OUTPUT									
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA	
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA	
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac	
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac	
AC Frequency (Nominal)	59.3 - 60 - 60.5 ⁽¹⁾							Hz	
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A	
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A	
Power Factor	1, Adjustable - 0.85 to 0.85								
GFDI Threshold	1							A	
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes								
INPUT									
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W	
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W	
Transformer-less, Ungrounded	Yes								
Maximum Input Voltage	480							Vdc	
Nominal DC Input Voltage	380				400				Vdc
Maximum Input Current @240V ⁽²⁾	8.5	10.5	13.5	16.5	20	27	30.5	Adc	
Maximum Input Current @208V ⁽²⁾	-	9	-	13.5	-	-	27	Adc	
Max. Input Short Circuit Current	45							Adc	
Reverse-Polarity Protection	Yes								
Ground-Fault Isolation Detection	600k Ω Sensitivity								
Maximum Inverter Efficiency	99	99.2						%	
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%	
Nighttime Power Consumption	< 2.5							W	

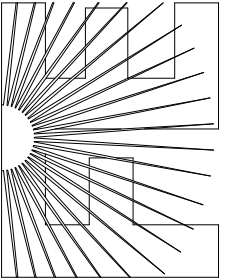
(1) For other regional settings please contact SolarEdge support
(2) A higher current source may be used; the inverter will limit its input current to the values stated

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10

Power Optimizer For Residential Installations

S440, S500



POWER OPTIMIZER

Enabling PV power optimization at the module level

- Specifically designed to work with SolarEdge residential inverters
- Detected 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 cable management and easy assembly using a single bolt
- Flexible system design for maximum space utilization
- Compatible with bifacial PV modules

* Functionality subject to inverter model and firmware version

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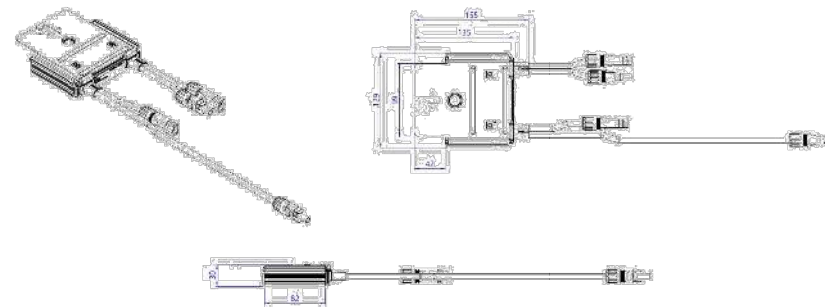
Power Optimizer For Residential Installations S440, S500

	S440	S500	UNIT
Rated Input DC Power ⁽¹⁾	440	500	W
Absolute Maximum Input Voltage (Voc)		60	Vdc
MPPT Operating Range		8 - 60	Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5	15	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.5	%
Overvoltage Category		II	
OUTPUT DURING OPERATION			
Maximum Output Current		15	Adc
Maximum Output Voltage		60	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1	Vdc
STANDARD COMPLIANCE			
EMC	FCC Part 15 Class 3, IEC61000-6-2, IEC61000-6-3, CISPR11, EN-55011		
Safety	IEC62109-1 (class II safety), UL 741		
Material	J1 94 V-0, UV Resistant		
RoHS	Yes		
Fire Safety	VDE-AR-E 2100-712:2013-05		
INSTALLATION SPECIFICATIONS			
Maximum Allowed System Voltage	1000		Vdc
Dimensions (W x L x H)	129 x 155 x 30		mm
Weight (including cables)	655 / 1.5		gr / lb
Input Connector	MC4 ⁽²⁾		
Input Wire Length	0.1		m
Output Connector	MC4		
Output Wire Length	(+) 2.3, (-) 0.10		m
Operating Temperature Range ⁽³⁾	-40 to +85		°C
Protection Rating	IP68 / NEMA6P		
Relative Humidity	0 - 100		%

(1) Rated power of the module at STC will not exceed the Power Optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed.
(2) For other connector types please contact SolarEdge.
(3) For ambient temperature above +70°C / +158°F power derating is applied. Refer to Power Optimizers Temperature Derating Technical Note for more details.

PV System Design Using a SolarEdge Inverter	Single Phase HD-Wave	Three Phase	Three Phase for 277/480V Grid	
Minimum String Length (Power Optimizers)	8	16	18	
Maximum String Length (Power Optimizers)	25	50		
Maximum Nominal Power per String ⁽⁴⁾	5700	11250 ⁽⁵⁾	12750 ⁽⁶⁾	W
Parallel Strings of Different Lengths or Orientations		Yes		

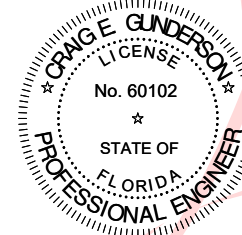
(4) If the inverter rated AC power is maximum nominal power per string, then the maximum power per string will be able to reach up to the inverter's maximum input DC power. Refer to: <https://www.solaredge.com/sites/default/files/se-power-optimizer-single-string-design-annotation-note.pdf>.
(5) For the 250/400V grid it is allowed to install up to 13,500W per string when the maximum power difference between each string is 2,000W.
(6) For the 277/480V grid it is allowed to install up to 13,500W per string when the maximum power difference between each string is 2,000W.
(7) It is not allowed to mix S-series and P-series Power Optimizers in new installations.



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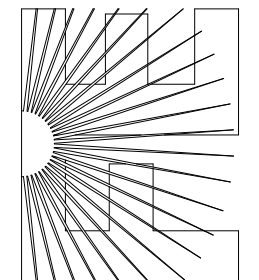
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SOLAR SPECIALIST, INC.
6520 US HWY 301 S STE 115
RIVERVIEW FL, 33578

PROJECT ADDRESS:

SMITH
512 NW SHELBY TER
LAKE CITY FL 32055

DESIGN DATE: 10/10/2022

REVISION 1:	DATE	PAGE :
REVISION 2:	DATE	11
SCALE:	NTS	

RSTC Enterprises, Inc.
2214 Heimstead Road
Eau Claire, WI 54703
715-830-9997



Outdoor Photovoltaic Enclosures

Composition/Cedar Roof System

ETL listed and labeled

Report # 3171411PRT-002 Revised May, 2018

- UL50 Type 3R, 11 Edition Electrical equipment enclosures
- CSA C22.2 No. 290 Nema Type 3R
- Conforms to UL 1741 Standard

0799 Series Includes:

- | | |
|----------|------------------|
| 0799 - 2 | Wire size 2/0-14 |
| 0799 - 5 | Wire size 14-6 |
| 0799 - D | Wire size 14-8 |

Models available in Grey, Black or Stainless Steel

Basic Specifications

Material options:

- Powder coated, 18 gauge galvanized 90 steel (1,100 hours salt spray)
- Stainless steel

Process - Seamless draw (stamped)
Flashing - 15.25" x 17.25"
Height - 3"
Cavity - 255 Cubic inches

Base Plate:

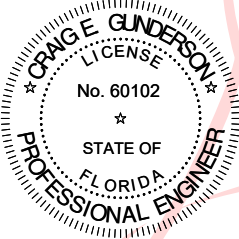
- Fastened to base using toggle fastening system
- 5 roof deck knockouts
- Knockout sizes: (3) .5", (1) .75" and (1) 1"
- 8", 35mm slotted din rail
- Ground Block

Passthrough and combiner kits are available for either
AC or DC applications.

0799 Series

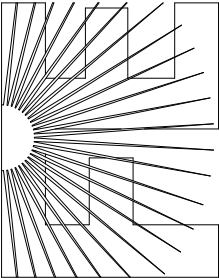


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FLORIDA ENGINEERING LLC
4161 TAMiami TRAIL, UNIT 101
PORT CHARLOTTE, FLORIDA 33952
(941) 391-5980
www.flengineeringllc.com



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Flush Mount System

Datasheet



Built for solar's toughest roofs.

IronRidge builds the strongest mounting system for pitched roofs 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.



UL 2703 Listed System

Entire system and components meet newest effective UL 2703 standard.



PE Certified

Pre-stamped engineering letters available in most states.



Design Assistant

Online software makes it simple to create, share, and price projects.



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 and black finish

XR100 Rail



The ultimate residential solar mounting rail.

- 8' spanning capability
- Heavy load capability
- Clear and black finish

XR1000 Rail



A heavyweight mounting rail for commercial projects.

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

Bonded Splices



All rails use internal splices for seamless connections.

- Self-drilling screws
- Varying versions for rails
- Forms secure bonding

Clamps & Grounding

UFOs



Universal Fastening Objects bond modules to rails.

- Fully assembled & lubed
- Single, universal size
- Clear and black finish

Stopper Sleeves



Snap onto the UFO to turn into a bonded end clamp.

- Bonds modules to rails
- Sized to match modules
- Clear and black finish

Grounding Lugs



Connect arrays to equipment ground.

- Low profile
- Single tool installation
- Mounts in any direction

Microinverter Kits



Mount MIs or POs to XR Rails.

- Bonds devices to rails
- Kit comes assembled
- Listed to UL 2703

Attachments

FlashFoot2



Flash and mount XR Rails with superior waterproofing.

- Twist-on Cap eases install
- Wind-driven rain tested
- Mill and black finish

Slotted L-Feet



Drop-in design for rapid rail attachment.

- Secure rail connections
- Slot for vertical adjusting
- Clear and black finish

Bonding Hardware



Bond and attach XR Rails to roof attachments.

- T & Square Bolt options
- Nut uses 7/16" socket
- Assembled and lubricated

Flush Standoffs



Raise Flush Mount System to various heights.

- Works with vent flashing
- 4" and 7" lengths
- Ships assembled

Resources



Design Assistant

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

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

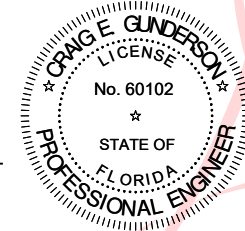


NABCEP Certified Training

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

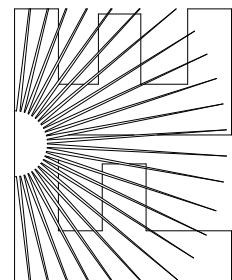
[Go to IronRidge.com/training](https://www.ironridge.com/training)

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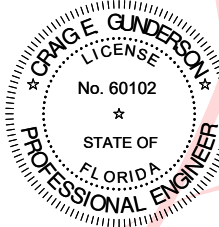
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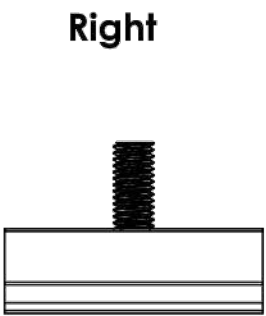
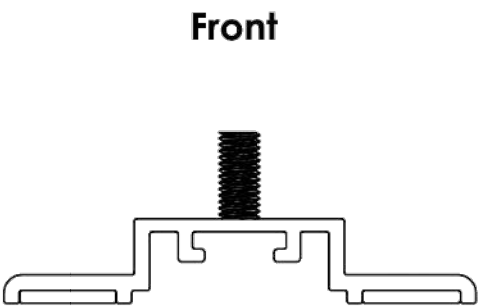
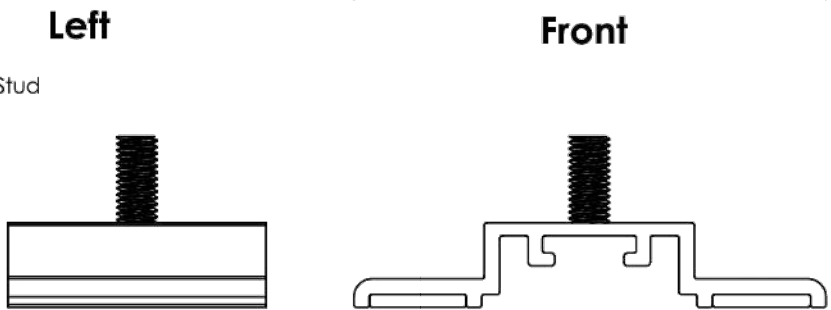
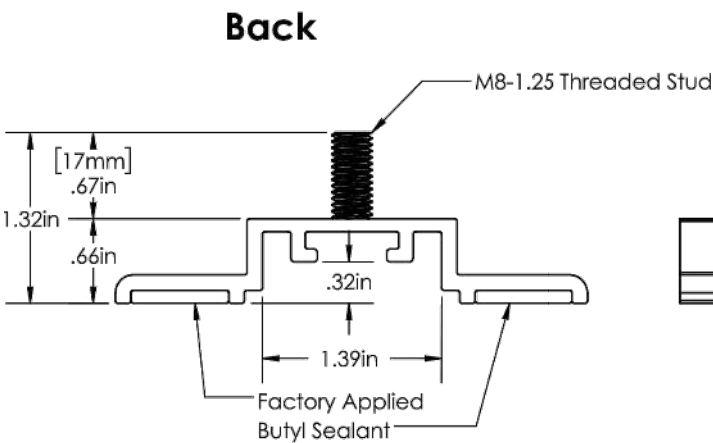
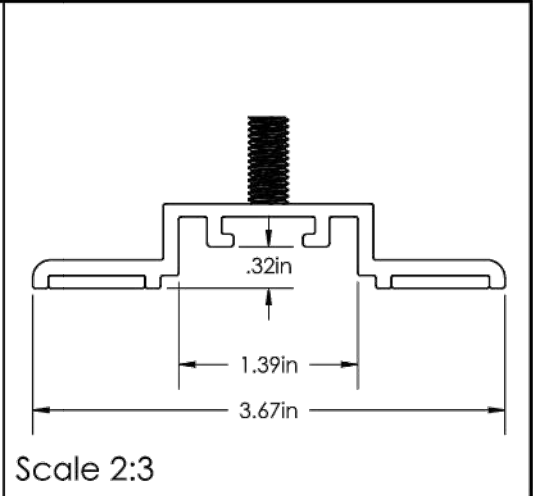
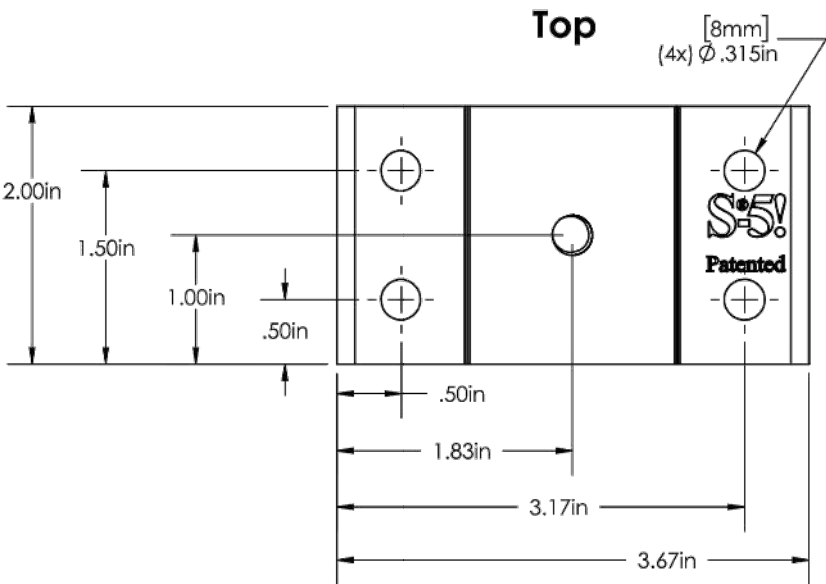
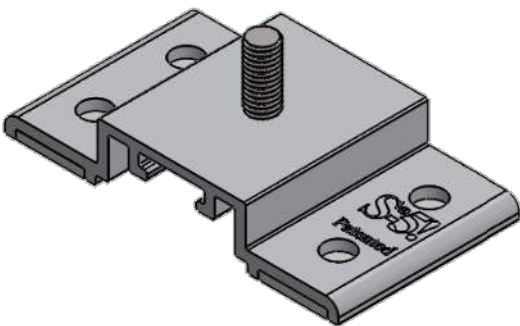
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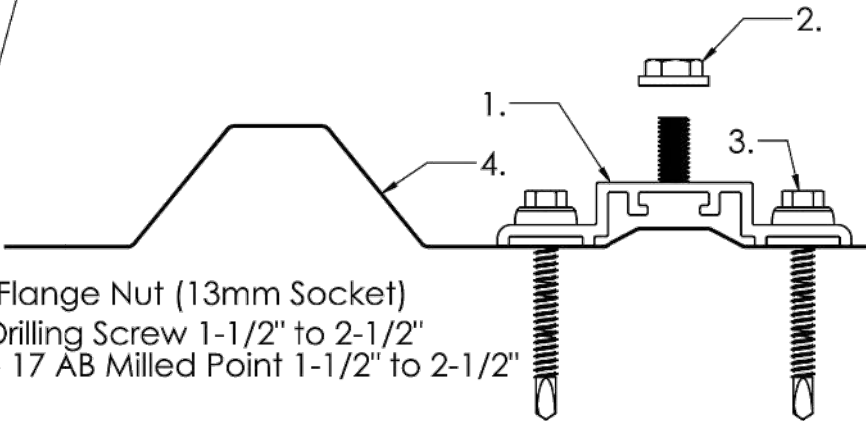
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SolarFoot



General Notes:

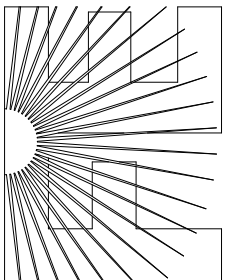
1. SolarFoot
2. M8-1.25 Stainless Steel Hex Flange Nut (13mm Socket)
3. Metal to Metal: 1/4-14 Self Drilling Screw 1-1/2" to 2-1/2"
Metal to Wood: 1/4-14 Type 17 AB Milled Point 1-1/2" to 2-1/2"
4. Example roof



FOR STANDING SEAM SPECIFIC MECHANICAL LOAD TEST INFORMATION AND CLAMP INSTALLATION INFORMATION PLEASE VISIT: WWW.S-5.COM

MATERIAL: 6005A T61 Al	 METAL ROOF INNOVATIONS, LTD. 8655 TABLE BUTTE RD COLORADO SPRINGS, CO 80908 719-495-0518 719-495-0045(FAX)		
EST ASSEMBLY WEIGHT: 0.248 lbs			
SUPPLIED HARDWARE: M8-1.25 Hex Range Nut	TITLE SolarFoot [CCD]		
SCALE: 2:3	DRAWING NO. LP66-A-0-A	DRAWN BY Paul Leitch	DATE 09/20/2017
EST. WEIGHT: Bracket: 0.129 lbs Fastener: 0.026 lbs Nut: 0.015 lbs	S-5!® PRODUCTS ARE PROTECTED BY MULTIPLE U.S. AND FOREIGN PATENTS. VISIT OUR WEBSITE AT WWW.S-5.COM FOR COMPLETE INFORMATION ON PATENTS AND TRADEMARKS.		

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