Inverter Type: (1) SolarEdge SE7600H-US
PV Panel: (26) TSM-DE06X.05(II) 365W
Racking: Iron Ridge XR-10
Total Wattage: 9,490W DC
Roof Type: Composition Shingle
Wind Load: 21 to 27 Deg
Fastener Type: Use 5/16" Dia 4.75" Lags

Sheet Index

General Notes:
-SolarEdge SE7600H-US Inverter located near utility meter
-SolarEdge S440 Optimizers are located on roof behind each module.
-First responder access maintained and from adjacent roof.
-Wire run from array to connection is 60 feet.

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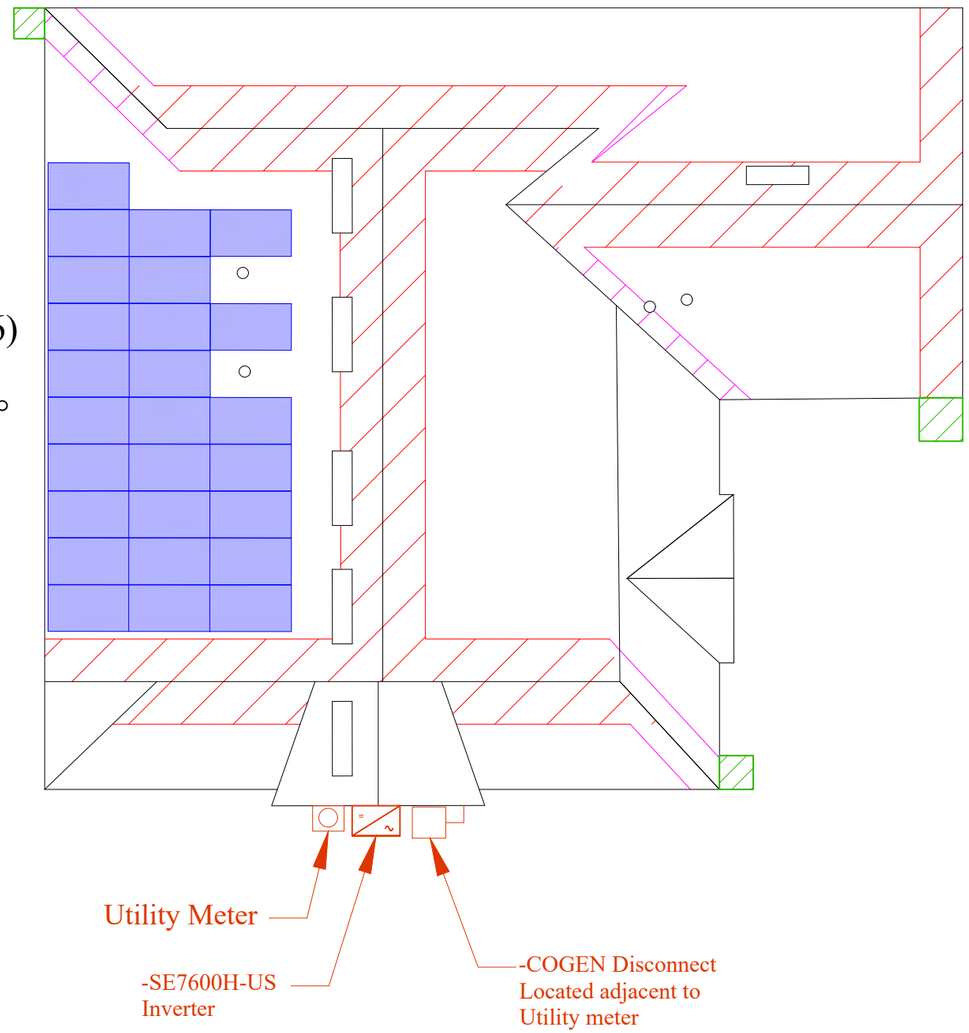
855-577-7999

R-1
Modules (26)
Pitch: 25°
Azimuth: 269°



FRONT OF HOUSE

Layout Subject to Change Based on Site Conditions

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

System meets the requirements of NFPA 70th Edition, Chapter 11.12

Install will be done to Manufacturer Spec

Legend

3' 1'-6" First responder access
Ground Access
Chimney
Satellite
Utility Meter
Vent Pipe
PV Disconnect
SolarEdge Inverter

Meets All Editions of Florida Fire Prevention Code 2020 7th Edition
Meets all requirements of NFPA-1 7th Edition and NFPA-101

3' Access Pathway

Represents all Fire Clearance including Alternative methods

1st Responder Access minimum of 36" unobstructed as per Section R324 of the 2020 IRC

Meets the requirements of the following- (2020 FL Residential Code & FBC, 7th Edition (2020 International Residential Code) - 2nd Printing modified by the FL Building Standards, 2020 Florida Building Energy Conservation Code 7th edition, County of Columbia Code, 2017 National Electric Code.)

Customer Info:

Kenneth Carner
306 SW Woodleaf CT
Lake City, FL
32024

Godwin Engineering and Design, LLC
8378 Foxtail Loop
Pensacola, FL 32526
D. Chad Godwin, PE
Chad@godwineng.com

Donnie C Godwin 2022.08.15 15:05:16 '00'05-

D. CHAD GODWIN LICENSE No 81360 STATE OF FLORIDA PROFESSIONAL ENGINEER
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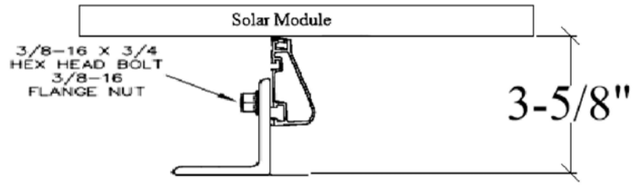
N
Compass for Aerial

Ironridge XR-10



Install will be done to Manufacturer Spec

General Notes:
- L Feet are secured to roof rafters.
@ 72" O.C. in Zone 1, @ 72" O.C in Zone 2e, @ 72" O.C. in Zone 2n,
@ 72" O.C. in Zone 2r, @ 72" O.C in Zone 3e, & @ 48" O.C. in Zone 3r
using 5/16" x 4.75" stainless steel Lag bolts.
- Subject roof has One layer.
- All penetrations are sealed and flashed.

Roof Section	Pitch	Roof Rafter and Spacing	Overhang	Notes:
R1	6/12	2"x4" @ 24 O.C.	12"	Truss

-Roof Height 20'
-Per 2020 FBC, the Roof Mounted PV System will be subject to the following design criteria: Design Wind Speed(Vult) - 120mph 3 sec gust, Exposure Category - B
-Designed as per ASCE7-16

Inverter Type: (1) SolarEdge SE7600H-US
PV Panel: (26) TSM-DE06X.05(II) 365W
Racking: Iron Ridge XR-10
Total Wattage: 9,490W DC
Roof Type: Composition Shingle
Wind Load: 21 to 27 Deg
Fastener Type: Use 5/16" Dia 4.75" Lags

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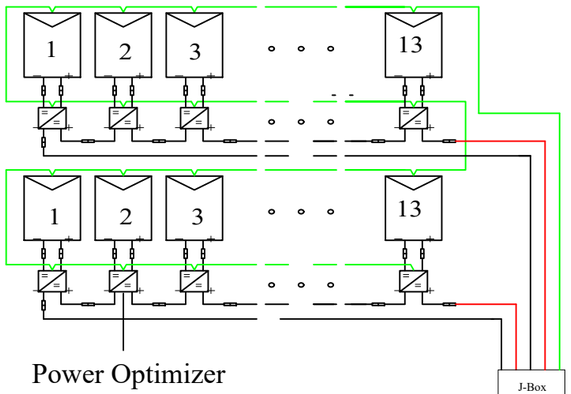

Equipment list

PV:
(26) TSM-DE06X.05(II) 365W

(26) SolarEdge Power Optimizer S440

(2) strings of (13)

Inverter:
(1) SolarEdge SE7600H-US
SolarEdge AC/DC Safety Switch

AC Disconnect:
60A Non-Fused Disconnect

All wiring to meet the 2017 NEC and 2018 Energy Code

PHOTOVOLTAIC SYSTEM DC DISCONNECT
MAX CIRCUIT CURRENT: 20A
MAX POWER POINT VOLTAGE: 400 VDC
MAX SYSTEM VOLTAGE: 480 DC
MAX RATED OUTPUT CURRENT: 15 A

Apply to DC disconnect/inverter

WARNING
ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

Apply to each J box, combiner box, disconnect,and device where energized, ungrounded circuits maybe exposed during service.

(A)12-2 Romex can be used for interior building and attic runs only. Do not use romex in conduit or outdoor environments.

! WARNING !

POWER SOURCE OUTPUT CONNECTION: DO NOT RELOCATE THIS OVERCURRENT DEVICE

PHOTOVOLTAIC SYSTEM
! AC DISCONNECT !

RATED AC OUTPUT CURRENT: 32A
NOMINAL OPERATING VOLTAGE: 240VAC

(4) #10 AWG Wire
(1) #8 EGC
In 3/4" Metal Conduit

SolarEdge Inverter
SE7600H-US
w/ Integrated Disconnect

L1
L2
N
G

B

Manual Lockable Disconnect

60A Service Rated
Fused Disconnect
Neutral to Ground Bond
AC Disconnect
40A Fuse

Located Adjacent to Utility Meter

Generac ATS
200A Main

M

Line Side Tap

N

C

In Compliance with NEC 705.12(B)

Refer to NEC 312.8 for Conditions on taps in switch and over current devices Enclosures.
If the conditions are not met a tap box will need to be installed and revision completed.

Inverter Output Ckt	
To Overcurrent Protection Device	
AC Max Output Current	32.0
AC Max Output Current * 125%	40.0
Overcurrent Protection (A)	40
No. of Current Carrying Cond	<4
Conductor Gauge (AWG)	8

		Conduit(in)	L1,L2,N (Awg)	Ground (Awg)	OCPD
After Inverter	B	0.75	8	8	40
To Line Side Tap	C	0.75	6	N/A	40

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855-577-7999

Including the label below

In Case of Emergency Call
ACDC Solar LLC
at 855-577-7999

Meets 11.12.2.1.5

Note:
-All wiring to meet the 2017 NEC and Florida electric codes.
60A Disconnect
-Type of conduit to be determined on site by contractor.

Install will be done to Manufacturer Spec

GEC NOTES
- Ungrounded system per 690.41(A)(4)
- GEC must be installed per 250.64
- GEC must be continuous un-spliced or irreversibly spliced from inverter to existing service ground system or continuous from the arrays to the existing service ground system.
- GEC must be min #8 AWG and installed in conduit
- If GEC is not in conduit, it must be #6 min

Disconnects will be Visible, lockable, adjacent to and within 10' of utility meter
All Labels & Markings for photovoltaic system will be reflective and meet all requirements for NFPA 11.12

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Lake City, FL
32024

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Revised by:	.
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Page:	11"x17" E-1

Inverter Type:
SolarEdge SE7600H-US
PV Panel:
(26)
TSM-DE06X.05(II) 365W
Total Wattage:
9,490W DC

System meets the grounding requirements of NEC 690.43

The Placard shall be permanently riveted..., and shall be made of red, weatherproof, hard plastic, with engraved white block lettering.

-A placard will be added with instructions and locations to be in compliance with 690.12, 690.56(B) and NEC 705.10

Rapid Shutdown Built in Per Code NEC 690.12

In compliance with NEC 250.58, NEC 690.8, NEC 250.24, NEC250.24(D)

PV AC disconnect is lockable in the open position per code NEC 705.22(7)

Conductors have a min ampacity of 60 amperes Per Code NEC 230.79(D)

Everything will be built to Code without all Specifics labeled on plan

System is in compliance with FFPC 1:11.12 7th Edition.

Smoke Detectors will be added as per FBC 553.883

Markings shall be placed on all DC Conduits, DC Combiners, Raceways, Enclosures, Junction Boxes, and Cable Assemblies at every 10', turns, and above and below penetrations in compliance with NFPA

Disconnect means shall be provided for all disconnecting all ungrounded conductors that supply or pass through the building or structure Per Code 2017 NEC Section 225.31 & Section 225.32

E04. Construction documents specify PV system circuits installed on or in buildings include a rapid shutdown function that controls specific conductors in accordance with NEC article 690.12.

E05. These construction documents specify that a label is provided with the method to initiate rapid shut down per 690.12(4).

E06. Construction drawings specify buildings or structures with both utility service and a PV system, complying with NEC article 690.l2 shall have a permanent plaque or directory including the following wording: “PHOTO VOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN” as per NEC article 690.56 (C).

E07. Construction documents specify PV power circuit labels shall appear on every section of the wiring system that is separated by enclosures, walls, partitions, ceilings, or floors.

E08. Construction documents specify all warning sign(s) or label(s) shall comply with NEC article 110.21 (B). Label warnings shall adequately warn of the hazard. Labels shall be permanently affixed to the equipment, and Labels required shall be suitable for the environment.

Inverter Output Ckt To Overcurrent Protection Device		
Design Temperature(F)	94°F	
Max Amb Temp Range(F)	87-95	310.15(B)(2)(a)
Temp Rating of Conductors (C)	75°C	
Current Carrying	<4	310.15(B)(3)(a)
AC Max Output Current	32A	690.8(A)(3)
AC Max Output Current * 1.25%	40A	690.8(B)
Overcurrent Protection(A)	40A	
Amp Temp Correction Factor	0.94	310.15(B)(2)(a)
Raceway Fill adjustment Factor	100%	310.15(B)(3)(a)
Wire Size(Awg)	8	310.15(B)(16)
Cond. Allowable Ampacity(A)	50A	
Cond Adjusted Ampacity(A)	47A	50A*1*0.94=47A
Ampacity Check 1 Per 690.8(B)(1)	Pass	32A*1.25=40A<50A Pass
Ampacity Check 2 Per 690.8(B)(2)	Pass	50A*0.94A*1=47A>32A Pass

PV Source Ckt		
Distance above roof	½ in. -3 ½ in.	310.15(B)
Amb. Temp. Adder for Rooftops (°F)	40	
Design temperature (°F)	136.8	
Adjusted Temp. Range for Roof	132-140	310.15(B)(2)(a)
Temp. Rating of Conductor	90°C	
No. of Current Carrying Cond.	4-6	310.15(B)(3)(a)
Max Source Circuit Current	15	690.8(A)(5)
Max Source Circuit Current * 1.25%	18.8	690.8(B)(1)
Amb. Temp Correction Factor	0.71	310.15(B)(2)(a)
Raceway Fill Adjustment Factor	80%	310.15(B)(3)(a)
Cond. Gauge (AWG)	10	310.15(B)(16)
Cond. Allowable Ampacity (Amps)	40	
Cond. Adjusted Ampacity (Amps)	23	40*.71*.8=22.7

All Exterior equipment is A minimum of Nema-R3 Rated

In compliance with 230.71

All Interactive System(S) Points of interconnection with other sources shall be marked at an accesible location at the disconnecting means as a power source and with the rated ac output current and the nominal operating AC voltage. Per NEC 690.54

Disconnect is in compliance 230.72

Supply side disconnect adjacent to Msp

Over Current Protection Device is "Next size up" Based on Inverter Maximum Continuous Output Current Rating 2017 NEC 240.4(B)

-All new equipment located adjacent to Meter on exterior wall

Labels will be placed in the correct location Per Code NEC 690.56(B), 690.56(C), & 690.53

Smoke Alarms per F.S. 553.883

Include required label for metallic raceways and conduits to sheet E-1 per NEC article 690.31(G)(3).

Add required label to sheet E-1 per NEC article 705.10.

Include required label to sheet E-1 per NEC article 705.12(B)

Photovoltaic AC disconnect shall be capable of being locked in the open position per NEC article 705.22(6).

Photovoltaic AC Overcurrent protection shall be located within 10 feet of the point where conductors are connected to the service per NEC 705.31.

In Case of Emergency Call
ACDC Solar LLC
at 855-577-7999

Apply to Main Disconnect

DC to DC Converter Current Per String - 15A

Permanent sticker added to disconnect

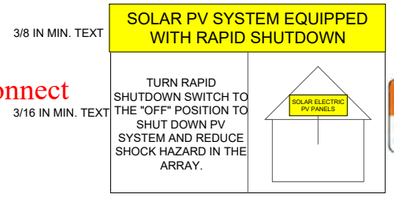
-All Electrical Service Equipment shall be located at or above BFE+1' or 8.00' NAVD

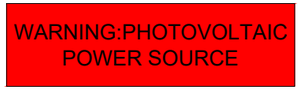
Line Side Tap will be done in Generac ATS adjacent to Utility Meter

-Markings Shall Be reflective, Weather Resistant and suitable for the environment.
-Markings Shall be red with white lettering with minimum ⅜" Capital Letters

Note:
-Subject PV Systems has been designed to meet the requirments of the NEC **2017**, and those set forth by the Florida Solar Energy Center Certification, Including Maximum Number of Module Strings, Maximum number of modules per string, Maximum Output, Module Manufacturer and model number, inverter manufacturer and model number, as applicable.

NEC 705.10 A permanent plaque or directory, denoting the location of all electric power source disconnecting means on or in the premises, shall be installed at each service equipment location and at the location(s) of the system disconnect(s) for all electric power production sources capable of being interconnected. One sign required for each PV system.



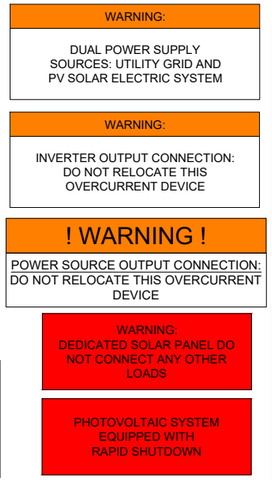


705.12(B)(3)

705.12(B)(2)(3)(b)

NEC 690.31 (G)(3)

Figure 690.56(C)(1)(a) Label for PV Systems that Shut down the array and the conductors leaving the array



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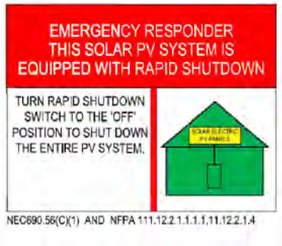
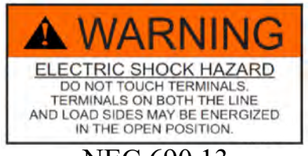
Plans Satisfy NEC 250.94 & NEC250.53(A)(2)





NEC 690.13

Install will be done to Manufacturer Spec

Including the label below

In Case of Emergency Call
ACDC Solar LLC
at 855-577-7999

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306 SW Woodleaf CT
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Inverter Type:
SolarEdge SE7600H-US
PV Panel:
(26)
TSM-DE06X.05(II) 365W
Total Wattage:
9,490W DC

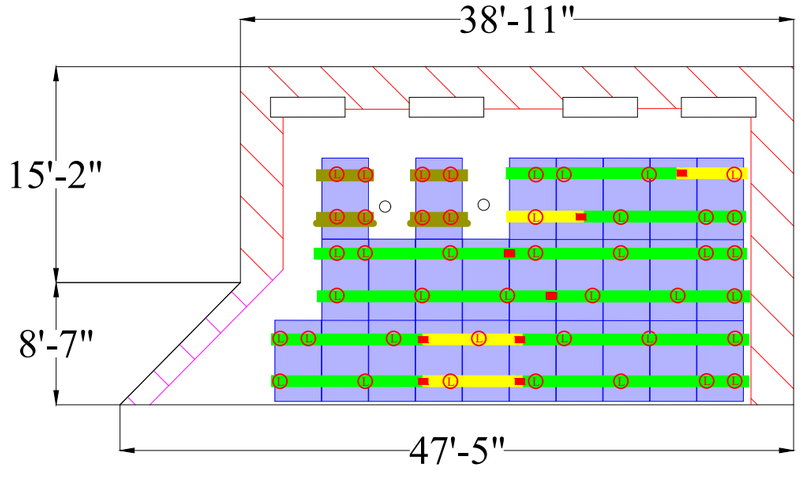
Iron Ridge XR-10 Rail

14' 14

7'

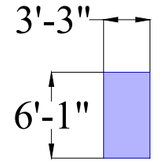
4'

8 Splice Bar
43 Iron Ridge FF2
62 Iron Ridge UFO's
20 Iron Ridge Sleeves/End Caps
1 Roof Top Combiner
5 Iron Ridge Ground Lugs
26 TSM-DE06X.05(II) 365W
1 SolarEdge SE7600H-US
1 60A Fused Disconnect
2 40A Fuses
26 S440 Optimizer



R-1
Modules (26)
Pitch: 25°
Azimuth: 269°

Proposed Mounting locations



Plans satisfy zones FBC-1510.7.1
Install will be done to Manufacturer Spec

Zone 1: Max cantilever is 24" as per manufacturer spec.
Max Cantilever = Max Span * (⅓)=72"*(⅓)=24"

Zone 2e: Max cantilever is 24" as per manufacturer spec.
Max Cantilever = Max Span * (⅓)=72"*(⅓)=24"

Zone 2n: Max cantilever is 24" as per manufacturer spec.
Max Cantilever = Max Span * (⅓)=72"*(⅓)=24"

Zone 2r: Max cantilever is 24" as per manufacturer spec.
Max Cantilever = Max Span * (⅓)=72"*(⅓)=24"

Zone 3e: Max cantilever is 24" as per manufacturer spec.
Max Cantilever = Max Span * (⅓)=72"*(⅓)=24"

Zone 3r: Max cantilever is 16" as per manufacturer spec.
Max Cantilever = Max Span * (⅓)=48"*(⅓)=16"

Inverter Type:	(1) SolarEdge SE7600H-US
PV Panel:	(26) TSM-DE06X.05(II) 365W
Racking:	Iron Ridge XR-10
Total Wattage:	9,490W DC
Roof Type:	Composition Shingle
Wind Load:	21 to 27 Deg
Fastener Type:	Use 5/16" Dia 4.75" Lags

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Date:	8/12/2022
Drawn by:	KR
Revised **by:**	.
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Page:	11"x17" S-1A

THE

Residential Module

MULTI-BUSBAR MONO PERC MODULE

132-Cell
MONOCRYSTALLINE MODULE

355-380W
POWER OUTPUT RANGE

20.6%
MAXIMUM EFFICIENCY

0~+5W
POSITIVE POWER TOLERANCE

Founded in 1997, Trina Solar is the world's leading total solution provider for solar energy. With local presence around the globe, Trina Solar is able to provide exceptional service to each customer in each market and deliver our innovative, reliable products with the backing of Trina as a strong, bankable brand. Trina Solar now distributes its PV products to over 100 countries all over the world. We are committed to building strategic, mutually beneficial collaborations with installers, developers, distributors and other partners in driving smart energy together.

Comprehensive Products and System Certificates

UL 61730
IEC 61215 / IEC 61730 / IEC 61701 / IEC 62716
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
OHSAS 18001: Occupation Health and Safety Management System

PRODUCTS	POWER RANGE
TSM-DE06X.05(II)	355-380W

High power and High Efficiency

- Up to 380W front power and 20.6% module efficiency with half-cut and MBB (Multi Busbar) technology bringing more BOS savings
- Reduce BOS cost with higher power bin and 1500V system voltage

Outstanding visual appearance

- Designed with aesthetics in mind
- Excellent cell color control
- Thinner wires that appear all black at a distance

High reliability

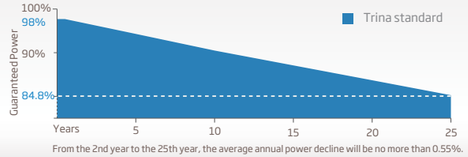
- Ensured PID resistance through cell process and module material control
- Resistant to salt, acid and ammonia
- Mechanical performance: Up to 5400 Pa positive load and 2400 Pa negative load

Certified to withstand the most chanllenging environmental conditions

- Excellent IAM and low light performance validated
- Lower temp co-efficient (-0.34%) and NOCT bring more energy leading to lower LCOE
- Better anti-shading performance and lower operating temperature

PERFORMANCE WARRANTY

25 Year Product Warranty · 25 Year Power Warranty



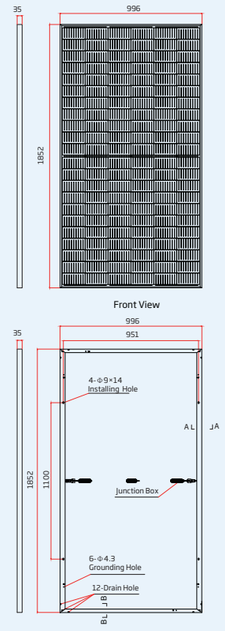
From the 2nd year to the 25th year, the average annual power decline will be no more than 0.55%.

Trinasolar

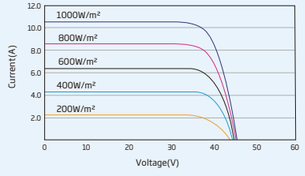
Residential Module

MULTI-BUSBAR MONO PERC MODULE

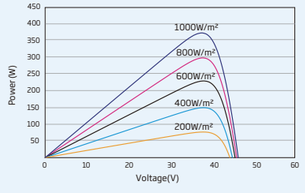
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE(370W)



P-V CURVES OF PV MODULE(370W)



ELECTRICAL DATA (STC)

Peak Power Watts-P_{MAX} (Wp)*	355	360	365	370	375	380
Power Output Tolerance-P_{MAX} (W)	0 ~ +5					
Maximum Power Voltage-V_{MPP} (V)	36.8	37.0	37.2	37.4	37.6	37.8
Maximum Power Current-I_{MPP} (A)	9.66	9.74	9.82	9.90	9.98	10.07
Open Circuit Voltage-V_{OC} (V)	44.6	44.8	45.0	45.2	45.3	45.5
Short Circuit Current-I_{SC} (A)	10.24	10.30	10.35	10.40	10.45	10.51
Module Efficiency η_m (%)	19.2	19.5	19.8	20.1	20.3	20.6

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measurement tolerance: ±3%.

ELECTRICAL DATA (NOCT)

Maximum Power-P_{MAX} (Wp)	268	272	276	279	283	287
Maximum Power Voltage-V_{MPP} (V)	34.4	34.7	34.9	35.1	35.3	35.6
Maximum Power Current-I_{MPP}(A)	7.80	7.85	7.90	7.96	8.01	8.06
Open Circuit Voltage-V_{OC} (V)	42.0	42.2	42.4	42.6	42.6	42.8
Short Circuit Current-I_{SC} (A)	8.25	8.30	8.34	8.38	8.42	8.47

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	132 cells
Module Dimensions	1852 × 996 × 35 mm (72.91×39.21× 1.38 inches)
Weight	19.7 kg (43.4 lb)
Glass	3.2 mm (0.13 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	EVA / POE
Backsheet	Black-White
Frame	35 mm (inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm² (0.006 inches²), Portrait: N 280mm/P 280mm(11.02/11.02inches) Landscape: N 1400 mm /P 1400 mm (55.12/55.12 inches)
Connector	MC4 EVO2
Fire Type	Type 1

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of P_{MAX}	- 0.34%/°C
Temperature Coefficient of V_{OC}	- 0.25%/°C
Temperature Coefficient of I_{SC}	0.04%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (UL)
Max Series Fuse Rating	20A

WARRANTY

25 year Product Workmanship Warranty
25 year Linear Power Warranty
(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box: 31 pieces
Modules per 40' container: 744 pieces
Pallet dimensions (L x W x H): 1880 x 1125 x 1173 mm
Pallet weight: 658.6kg (1,452lb)

Trinasolar

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

Version number: TSM_DE06X.05(II)_NA_2021_A
www.trinasolar.com

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

12-25 YEAR WARRANTY

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Extremely small
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)

solaredge.com

solaredge

Single Phase Inverter with HD-Wave Technology for North America

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

	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
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
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	600kΩ Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)							
Revenue Grade Data, ANSI C12.20	Optional[3]							
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect							
STANDARD COMPLIANCE								
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07							
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)							
Emissions	FCC Part 15 Class B							
INSTALLATION SPECIFICATIONS								
AC Output Conduit Size / AWG Range	3/4" minimum / 14-6 AWG					3/4" minimum /14-4 AWG		
DC Input Conduit Size / # of Strings / AWG Range	3/4" minimum / 1-2 strings / 14-6 AWG					3/4" minimum / 1-3 strings / 14-6 AWG		
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174					21.3 x 14.6 x 7.3 / 540 x 370 x 185		in / mm
Weight with Safety Switch	22 / 10		25.1 / 11.4	26.2 / 11.9		38.8 / 17.6		lb / kg
Noise	< 25				<50			dBA
Cooling	Natural Convection							
Operating Temperature Range	-40 to +140 / -25 to +60[4] (-40°F / -40°C option)[5]							°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)							

[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
[3] Revenue grade inverter P/N: SExxxxH-US000NNC2
[4] For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf
[5] -40 version P/N: SExxxxH-US000NNU4

RoHS

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
- 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 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

solaredge.com

solaredge

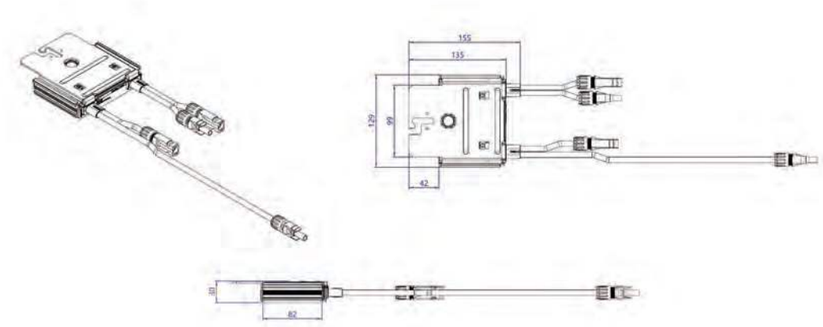
Power Optimizer
For Residential Installations
S440, S500

	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	98.6		%
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 B, IEC61000-6-2, IEC61000-6-3, CISPR11, EN-55011		
Safety	IEC62109-1 (class II safety), UL1741		
Material	UL94 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 de-rating is applied. Refer to Power Optimizers Temperature De-Rating 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)	S440, S500	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 inverters rated AC power ≤ maximum nominal power per string, then the maximum power per string will be able to reach up to the inverters maximum input DC power Refer to: https://www.solaredge.com/sites/default/files/se-power-optimizer-single-string-design-application-note.pdf
(5) For the 230/400V 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 15,000W 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



CE RoHS

Automatic Transfer Switches

PWRview™ Automatic Transfer Switch

Automatic Transfer Switches

GENERAC PWRVIEW

200 Amps, Single Phase
Model: RXEMW200A3

ETL LISTED US Intertek

USA ENGINEERED & BUILT* *Assembled in the USA using domestic and foreign parts

Description

The Generac PWRview Automatic Transfer Switch integrates the PWRview monitor to provide real-time energy consumption data that can help lower a home's electricity bill. Through the convenient mobile app, a homeowner can access their energy usage and alert information while under utility power or generator power. The PWRview energy monitor is a simple to use and low cost tool that helps save money over the life of the generator.
The 200 amp, open transition transfer switch is compatible with single-phase generators having either an Evolution™ or Nexus™ Controller.

Standard Features

Service Rated Generac Automatic Transfer Switches are housed in an aluminum NEMA Type 3R enclosure, with electrostatically applied and baked powder paint. The Heavy Duty Generac Contactor is an ETL recognized device, designed for years of service. The controller at the generator handles all the timing, sensing, exercising functions, and transfer commands. The integrated PWRview monitor provides real-time energy usage data through the PWRview app. All transfer switches are covered by a 5 year limited warranty.

Load Management Technology

Through the use of the integrated Smart A/C Module (SACM), these switches have the capability to manage up to four individual HVAC (24 VAC controlled) loads with no additional hardware. When used in tandem with external Smart Management Modules (SMM), a total of eight more loads can be managed, providing the most installation efficient power management options available.

GENERAC ISO 9001:2008

Functions

All timing and sensing functions originate in the generator controller.

Utility Voltage Drop-out	<65%
Timer to Generator Start	5 Second Factory Set, Adjustable Between 2 - 1,500 Seconds by a Qualified Dealer*
Engine Warmup Delay	5 Seconds
Standby Voltage Sensor	65% for 5 Seconds
Utility Voltage Pickup	>80%
Re-transfer Time Delay	15 Seconds
Engine Cooldown Timer	60 Seconds
Exerciser	Nexus™: 12 Minutes Weekly Evolution™: 5 to 12 Minutes Adjustable, Weekly/Bi-weekly/Monthly
The Transfer Switch can be Operated Manually Without Power Applied	

* When used in conjunction with units utilizing Evolution™ controls

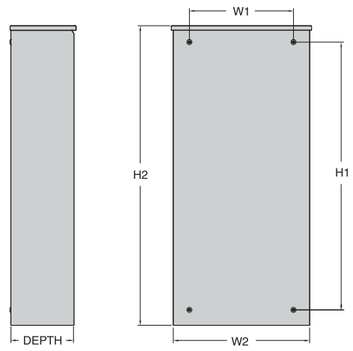
Specifications

Amps	200
Voltage	120/240, 1ø
Load transition type (automatic)	Open transition service rated
Enclosure type	NEMA Type 3R
Compliance	ETL
Withstand rating (amps)	22,000
Lug range	250 MCM - #6

Dimensions, Weight, and Wire Ranges

Dimensions and Weight		
Height (in/cm)	H1	26.8 / 67.95
	H2	30.1 / 76.43
Width (in/cm)	W1	10.5 / 26.67
	W2	13.5 / 34.18
Depth (in/cm)		6.9 / 17.5
Weight (lbs/kg)		39.0 / 17.7

Wire Ranges		
Conductor Lug	Neutral Lug	Ground Lug
250 MCM - #6	350 MCM - #6	2/0 - #14



GENERAC

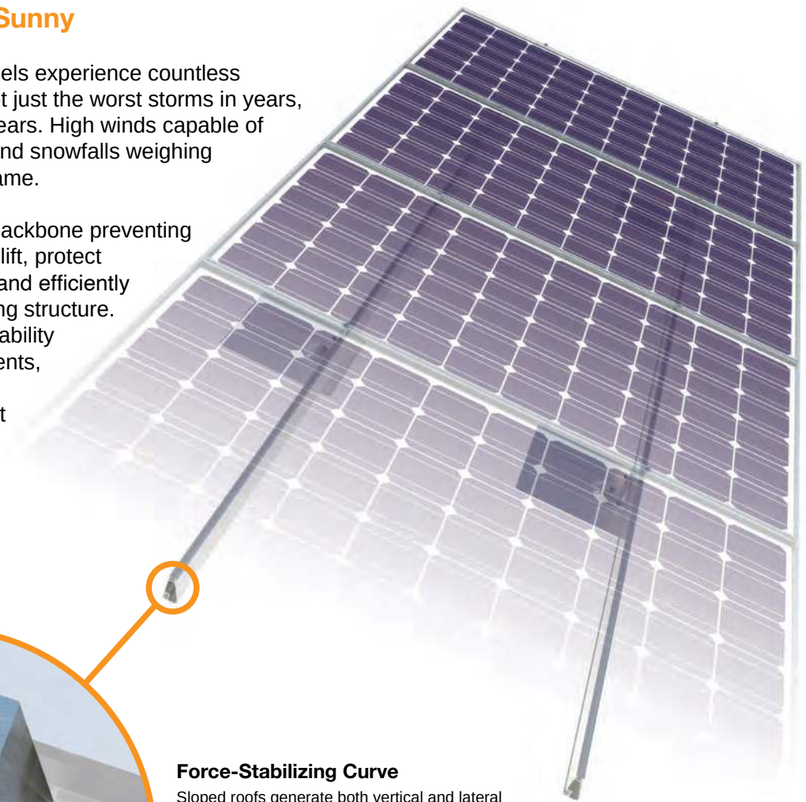
Generac Power Systems, Inc. • S45 W29290 HWY. 59, Waukesha, WI 53189 • generac.com
 Part No. A0000380921 Rev C 07/22/2020

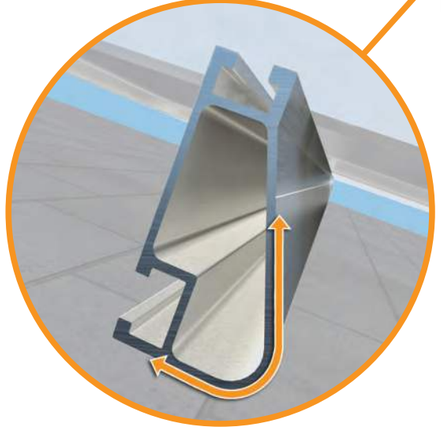
XR Rail Family

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 mounting rails which can cause them to bend and twist. The curved shape of XR Rails is 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.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

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

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 light or no snow. It achieves spans 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 the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 10 feet.

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

XR1000

XR1000 is a heavyweight among solar mounting rails. It’s built to handle extreme climates and spans 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		XR100		XR1000	
	120						
	140						
	160						
20	90						
	120						
	140						
	160						
30	90						
	160						
40	90						
	160						
80	160						
120	160						

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

GODWIN ENGINEERING AND DESIGN, LLC

8378 Foxtail Loop, Pensacola, FL 32526 | (850)712-4219 | chad@godwineng.com

August 15, 2022

To: Columbia County Building Department
135 NE Hernando Ave
Lake City, FL 32055

Re: Carner – Residential PV Roof Mount Installation
306 SW Woodleaf Ct
Lake City, FL 32024

Plan Reviewer,

This letter is regarding the installation of a new roof mounted Solar PV System on the existing residential structure at the address above. I have reviewed the attachment plan and have determined that the roof mounted PV system is in compliance with the applicable sections of the following Codes as amended and adopted by the jurisdiction:

2020 Florida Building Code 7th Edition, FBC
ASCE 7 Min. Design Loads for Buildings & Other Structures

Per 2020 FBC, the Roof Mounted PV system will be subject to the following design criteria:
Design Wind Speed(V_{ult}) - 120mph 3sec gust, Exposure Category – B

The PV System consist of the modules, railing, and connection hardware. The system will add a dead load of approximately 3 psf to the roof.

The existing roof covering is Asphalt Shingle with min. ½" plywood decking and 2" x 4" roof trusses 24" O.C. The roofing, decking, and roof trusses are in good condition. The existing structure will be adequate for supporting the additional PV dead load and wind loads.

The securement method of the PV system is to be flush mounted to the asphalt shingle roof with the Ironridge railing and flashings/attachments. The attachments can be attached up to 72" apart in roof zones 1, 2e, 2n, 2r, 3e, and 48" apart in roof zone 3r. The mounts should be staggered, where possible, to allow distribution of the design loads evenly to the structure. The mounts shall be installed with a min. 5/16" x 4" stainless steel Lag bolts with minimum 2-5/16" thread length.

Please see attached documents and contact me should you have any questions.

Sincerely,

D. Chad Godwin, PE 81360
Exp. 02/28/2023

Donnie C Godwin
2022.08.15 15:06:57 '00'05-

D. CHAD GODWIN LICENSE No 81360 STATE OF FLORIDA PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY DONNIE CHAD GODWIN USING A DIGITAL SIGNATURE AND DATE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

ASCE 7-16 CHAPTER 29 WIND LOADS - Rooftop Solar Panels Minimum Design Loads - Part 1: Enclosed(Gable,Hip,Flat h<60ft, 0°<θ<45°)

Wind Load Parameters - Inputs

Risk Category		II		Table 1.5-1
Basic Wind Speed (Ult)		120	mph	Figure 26.5-1B
Roof Angle		21° to 27°		
Roof Type		Gable		
Exposure Cat.	B,C, or D	B		Section 26.7
Mean Roof Height	h	20.00	ft	
Roof attachment		5/16" x 4.75" Lag Screw		
Rafter/Truss Spacing		24	in O.C.	
No. of Rails		2		
No. of Modules - Portrait		26		
No. of Modules - Landscape		0		
Module Model Number		TSM-DE06x.05(II) 355-380		
bldg. least horizontal dim (typ.)		360	in	
Elevation		<1000	ft	
Est. # of attachment points		43		

Wind Load Paramaters

Wind Speed (asd)		93	mph	FRC R301.2.1.3
Effective Wind Area		19.85	ft^2	26.20
Wind Directionality	K_d	0.85		Table 26.6-1
Topographic factor	K_{zt}	1.00		26.8 or 26.8.2
Ground Elevation Factor	K_e	1.00		Table 26.9-1
Velocity Exposure Coefficient	K_z	0.70		Table 26.10-1
Array Edge Factor	γ_E	1.50		29.4.4 *Modules are considered Exposed
Solar Panel Equalization Factor	γ_a	0.68		Fig. 29.4-8
Velocity Pressure	q_h	13.16	psf	$q_h=0.00256\ K_z K_{zt} K_d K_e V^2$
Added Safety Factor		1.2		
Allowable Pullout per mount		859.2	lbs	
0.4h or 0.6h		8.00	ft	Flat - 0.6h, Gable, Hip - 0.4h
10% of least horizontal dim		3.00	ft	10% of least hor. Dim. Or 0.4h, whichever is smaller, but not less than either 4% of Least hor. Or 3ft. (flat roof - 0.6h)
Roof Zone Set Back	a	3.00	ft	
	h_2	5	in	Not > 10in(panel height above roof)
	$2h_2$	10	in	*min distance array shall be from the roof edge, Gable Ridge, or hip ridge
		0.25	in	min gap between all panels but not > 6.7ft
	d1	1.00	ft	Horizontal distance orthogonal to panel edge
	d2	0.25	ft	Horizontal distance from edge of one panel to the nearest edge in the next row
	0.5h	10.00	ft	*modules are considered exposed that are within 1.5Lp from roof edge

PV Dead Load

# of Modules		26	
Module	W_{mod}	43	lbs
Array	W_{mods}	1128	lbs
Micro/optimizer	W_{mic}	104	lbs
PV Rail	$W_{PV\ rail}$	18	lbs
Total Weight	W_{total}	1251	lbs
Total Area	A_T	516.17	ft^2
Dead Load	D_{PV}	2.42	psf
Weight/attachment		29.1	lbs

Module and Racking Specs

Dimensions, LxWxH (in)	72.91 x 39.21 x 1.38	
Width	3.27	ft
Length	6.08	ft
Module Area	19.85	ft^2

Module load ratings

	Ultimate	Allowable
Load Rating - Snow(psf)	113.4	75.6
Load Rating - Wind(psf)	-50.4	-33.6

PV Attachment - Results

Roof Zones - Gable 21° to 27°

	1	2e	2r	2n	3e	3r		
GC_p - Uplift	-1.5	-1.5	-2.1	-2.1	-2.1	-2.3		
GC_p - Down	0.5	0.5	0.5	0.5	0.5	0.5		
$p = q_h(GC_p)(\gamma_E)(\gamma_a)$	-17.7	-17.7	-25.8	-25.8	-25.8	-28.5	psf	29.4-7
$p = q_h(GC_p)(\gamma_E)(\gamma_a)$	6.7	6.7	6.7	6.7	6.7	6.7	psf	29.4-7
Max Allowable Span	6	6	6	6	6	6	ft	*notes
Max Cantilever (in)	24	24	24	24	24	24	Max span * 33% (in)	

Notes

Eq.1 Point Load = Roof Zone psf * A_{eff}

Eq.2 A_{eff} = (Module Length /2) * Max Span

Eq.3 *Max span Equation, SF = Allowable pullout / Point Load

Eq.4 Max Span = Allowable Pullout / (SF * Roof Zone psf * L/2)

a) The Max span between attachment points must not exceed the rail spans provided by racking manufacture.

b) Allowable Module load ratings are determined by SF = 1.5

D. CHAD GODWIN LICENSE No 81360 STATE OF FLORIDA PROFESSIONAL ENGINEER

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Donnie C Godwin
2022.08.15
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