



Inverter Type: (1) SolarEdge SE7600H-US
PV Panel: (26) Q.PEAK DUO BLK-G6+/TS 340
Racking: Iron Ridge XR-10
Total Wattage: 8,840W DC
Roof Type: Composition Shingles
Wind Load: 21 to 27 Deg
Fastener Type: Use 5/16" Dia 4" Lags

Sheet Index

S-1 Cover Sheet / Site Plan
S-2 Detail
E-1 One - Line
E-2 Electrical Code
S-1A Mounting Plan

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.



605 W Lumsden Rd,
Brandon, FL 33511
855-577-7999

Legend

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

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.)

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

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



Represents all Fire Clearance
including Alternative methods

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

Customer Info:

Courtney Knight
434 SW Pilots Way
Lake City, FL
32024

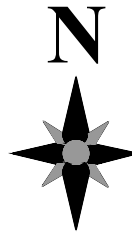
Godwin Engineering and
Design, LLC
8378 Foxtail Loop
Pensacola, FL 32526
D. Chad Godwin, PE
Chad@godwineng.com

Date: 4/27/2022
Drawn by: KT
Revised by: .
Rev #: 00
Rev Date: .
Page: S-1

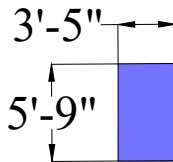
Donnie C
Godwin

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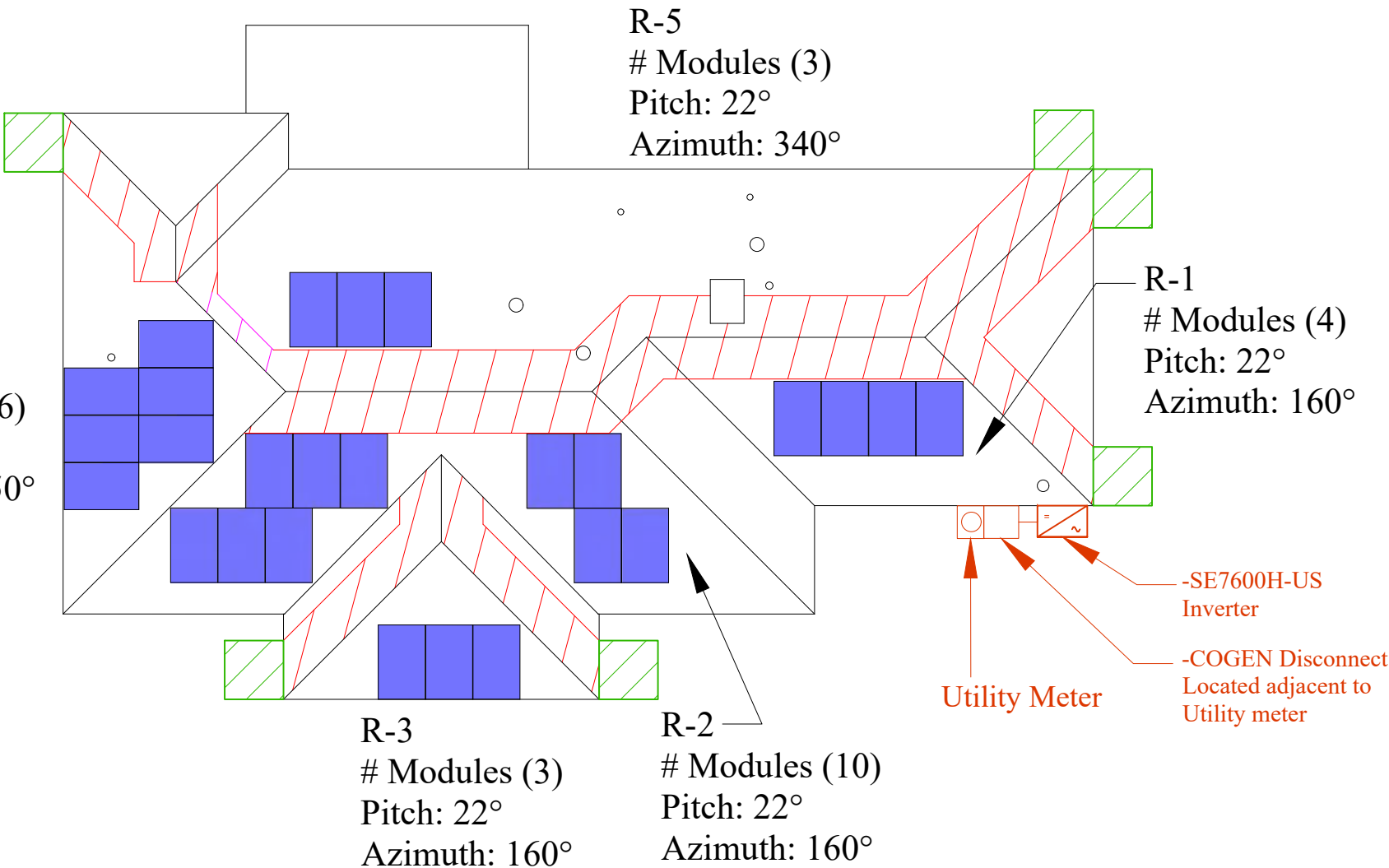


Compass for Aerial



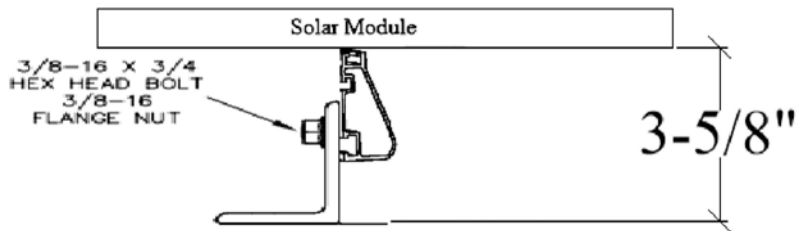
Layout Subject to Change Based on Site Conditions

FRONT OF HOUSE





Ironridge XR-10



General Notes:

- Flashlocs are secured to roof rafters.
@ 72" O.C. in Zone 1, @ 72" O.C in Zone 2e,
@ 72" O.C. in Zone 2r, @ 72" O.C in Zone 3
using 5/16" x 4" 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-R5	5/12	2"x4" @ 24 O.C.	12"	Truss
-Roof Height 15' -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) Q.PEAK DUO BLK-G6+/TS 340 Racking: Iron Ridge XR-10 Total Wattage: 8,840W DC Roof Type: Composition Shingles Wind Load: 21 to 27 Deg Fastener Type: Use 5/16" Dia 4" Lags		Customer Info: Courtney Knight 434 SW Pilots Way Lake City, FL 32024

Install will be done to Manufacturer Spec

Godwin Engineering and Design, LLC 8378 Foxtail Loop Pensacola, FL 32526 D. Chad Godwin, PE Chad@godwineng.com		Donnie C Godwin 2022.04.28 10:12:38 '00'05-			
 605 W Lumsden Rd, Brandon, FL 33511 855-577-7999					
Date: 4/27/2022					
Drawn by: KT					
Revised by: .					
Rev #: 00					
Rev Date: .					
Page: S-2					



All wiring to meet the 2017 NEC and 2018 Energy Code

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

Inverter Type:
SolarEdge SE7600H-US
PV Panel:
(26)
Q.PEAK DUO BLK-G6+/TS 340
Total Wattage:
8.840W DC



605 W Lumsden Rd,
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Inverter Type:
SolarEdge SE7600H-US
PV Panel:
(26)
K DUO BLK-G6+/TS 340
Total Wattage:
8.840W DC

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

Rapid Shutdown Built in Per Code NEC 690.12

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

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

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

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 complaine 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.I2 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

Cond. Allowable Ampacity(A)

Cond Adjusted Ampacity(A)

All Exterior equipment is A minimum of Nema-R3 Rated

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.

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

In Case of Emergency Call

ACDC Solar LLC

at 855-577-7999

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

Line Side Tap will be done in Main Service Panel in garage.

-Markings Shall Be reflective, Weather Resistant and suitable for the environment.

-Markings Shall be red with white lettering with minimum 3/8" 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.

WARNING:

DUAL POWER SUPPLY SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

WARNING:

INVERTER OUTPUT CONNECTION: DO NOT RELOCATE THIS OVERCURRENT DEVICE

! WARNING !

POWER SOURCE OUTPUT CONNECTION: DO NOT RELOCATE THIS OVERCURRENT DEVICE

WARNING:

DEDICATED SOLAR PANEL DO NOT CONNECT ANY OTHER LOADS

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

3/8 IN MIN. TEXT

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.

SOLAR ELECTRIC PV PANELS

3/16 IN MIN. TEXT

Apply to Main Disconnect

Permanent sticker added to disconnect

DC to DC Converter Current Per String - 15A

System meets the grounding requirements of NEC 690.43

In compliance with 230.71

WARNING:PHOTOVOLTAIC POWER SOURCE

DO NOT OPEN UNDER LOAD

WARNING

THIS SERVICE METER IS ALSO SERVED BY A PHOTOVOLTAIC SYSTEM

705.12(B)(3)

WARNING

POWER SOURCE OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

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

WARNING

PHOTOVOLTAIC POWER SOURCE

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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8378 Foxtail Loop

Pensacola, FL 32526

D. Chad Godwin, PE

Chad@godwineng.com

Donnie C Godwin

2022.04.28

'00'05- 10:12:59

CHAD GODWIN

FLORIDA

PROFESSIONAL ENGINEER

No 81360

AC/DC Solar LLC

605 W Lumsden Rd,

Brandon, FL 33511

855-577-7999

Date:

4/27/2022

Drawn by:

KT

Revised by:

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Rev #:

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Rev Date:

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Page:

E-2

Inverter Type:

SolarEdge SE7600H-US

PV Panel:

(26)

Q.PEAK DUO BLK-G6+/TS 340

Total Wattage:

8,840W DC

EMERGENCY RESPONDER THIS SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE 'OFF' POSITION TO SHUT DOWN THE ENTIRE PV SYSTEM.

SOLAR ELECTRIC PV PANELS

NEC690.56(C)(1) AND NFPA 111.12.2.1.1.1,11.12.2.1.4

WARNING

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.

690.17E

NEC 690.35

Install will be done to Manufacturer Spec

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

Including the label below

In Case of Emergency Call

ACDC Solar LLC

at 855-577-7999

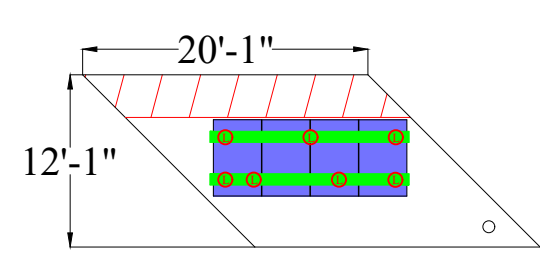
Customer Info:

Courtney Knight

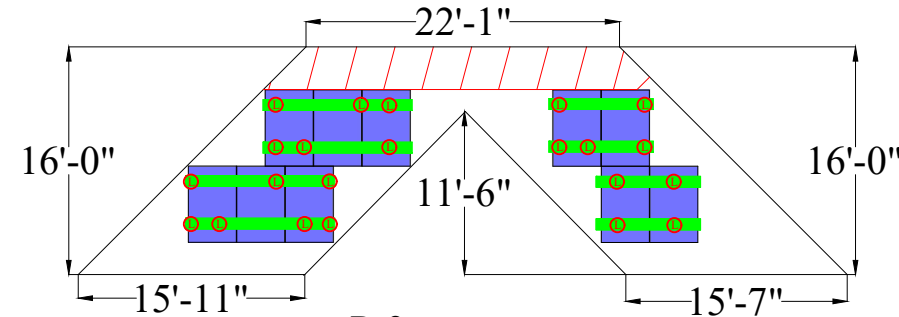
434 SW Pilots Way

Lake City, FL

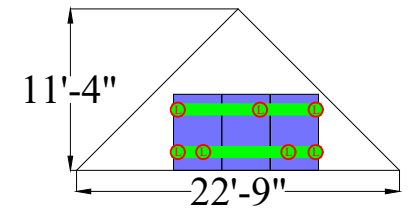
32024



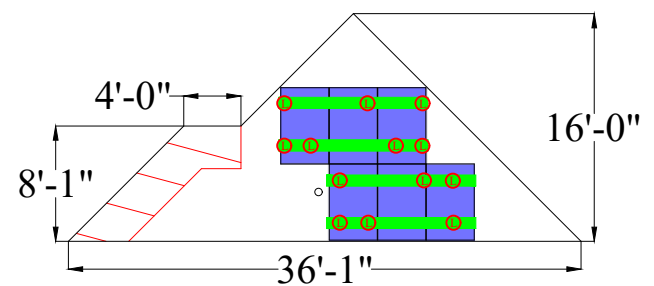
R-1
Modules (4)
Pitch: 22°
Azimuth: 160°



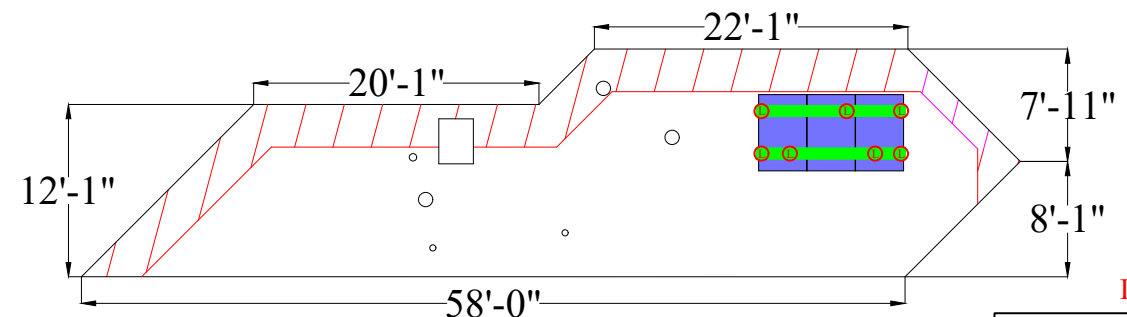
R-2
Modules (10)
Pitch: 22°
Azimuth: 160°



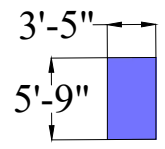
R-3
Modules (3)
Pitch: 22°
Azimuth: 160°



R-4
Modules (6)
Pitch: 22°
Azimuth: 250°



R-5
Modules (3)
Pitch: 22°
Azimuth: 340°



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

- Iron Ridge XR-10 Rail
- 14' 18
- 7'
- 4'
- 56 Unirac Flashloc
- 70 Iron Ridge UFO's
- 36 Iron Ridge Sleeves/End Caps
- 5 Roof Top Combiner
- 9 Iron Ridge Ground Lugs
- 26 Q.PEAK DUO BLK-G6+/TS 340
- 1 SolarEdge SE7600H-US
- 1 60A Fused Disconnect
- 2 40A Fuses
- 26 S440 Optimizer

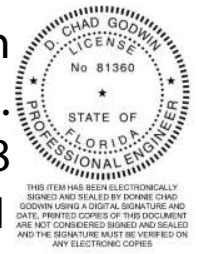
Zone 1: Max cantilever is 24" as per manufacturer spec.
Max Cantilever = Max Span * (1/3)=72"*(1/3)=24"

Zone 2e: Max cantilever is 24" as per manufacturer spec.
Max Cantilever = Max Span * (1/3)=72"*(1/3)=24"

Zone 2r: Max cantilever is 24" as per manufacturer spec.
Max Cantilever = Max Span * (1/3)=72"*(1/3)=24"

Zone 3: Max cantilever is 24" as per manufacturer spec.
Max Cantilever = Max Span * (1/3)=72"*(1/3)=24"

Inverter Type: (1) SolarEdge SE7600H-US	Customer Info: Courtney Knight 434 SW Pilots Way Lake City, FL 32024
PV Panel: (26) Q.PEAK DUO BLK-G6+/TS 340	
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 605 W Lumsden Rd, Brandon, FL 33511 855-577-7999			
Date:	4/27/2022		
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Rev Date:	.		
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powered by
Q.ANTUM DUO

Q.PEAK DUO BLK-G6+ /TS

330-345

ENDURING HIGH PERFORMANCE



- 

Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY
Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.5%.
- 

INNOVATIVE ALL-WEATHER TECHNOLOGY
Optimal yields, whatever the weather with excellent low-light and temperature behavior.
- 

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID and Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.
- 

ZEP COMPATIBLE™ FRAME DESIGN
High-tech black Zep Compatible™ frame, for improved aesthetics, easy installation and increased safety.
- 

A RELIABLE INVESTMENT
Inclusive 25-year product warranty and 25-year linear performance warranty².
- 

STATE OF THE ART MODULE TECHNOLOGY
Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology.

¹ APT test conditions according to IEC/TS 62804-1:2015, method B (~1500V, 168h)
² See data sheet on rear for further information

THE IDEAL SOLUTION FOR:

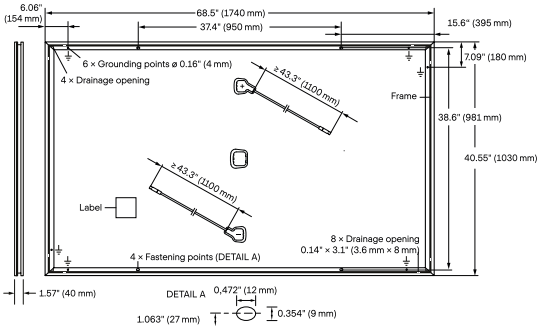


Engineered in Germany



MECHANICAL SPECIFICATION

Format	68.5 × 40.6 × 1.57 in (including frame) (1740 × 1030 × 40 mm)
Weight	47.4 lbs (21.5 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 20 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 × 1.26-2.36 × 0.59-0.71 in (53-101 × 32-60 × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4mm ² Solar cable; (+) ≥43.3 in (1100 mm), (-) ≥43.3 in (1100 mm)
Connector	Stäubli MC4; IP68

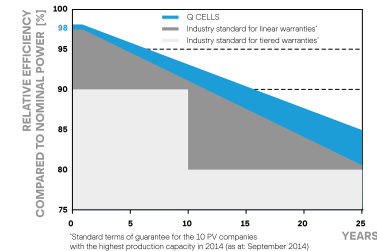


ELECTRICAL CHARACTERISTICS

POWER CLASS		330	335	340	345
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W / -0 W)					
Minimum	Power at MPP ¹	P _{MPP} [W]	330	335	340
	Short Circuit Current ¹	I _{SC} [A]	10.41	10.47	10.58
	Open Circuit Voltage ¹	V _{OC} [V]	40.15	40.41	40.92
	Current at MPP	I _{MPP} [A]	9.91	9.97	10.07
	Voltage at MPP	V _{MPP} [V]	33.29	33.62	33.94
	Efficiency ¹	η [%]	≥18.4	≥18.7	≥19.0
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT ²					
Minimum	Power at MPP	P _{MPP} [W]	247.0	250.7	254.5
	Short Circuit Current	I _{SC} [A]	8.39	8.43	8.52
	Open Circuit Voltage	V _{OC} [V]	37.86	38.10	38.34
	Current at MPP	I _{MPP} [A]	7.80	7.84	7.89
	Voltage at MPP	V _{MPP} [V]	31.66	31.97	32.27

¹ Measurement tolerances P_{MPP} ± 3%; I_{SC}; V_{OC} ± 5% at STC: 1000 W/m², 25 ± 2°C, AM 1.5 according to IEC 60904-3 • ² 800 W/m², NMOT, spectrum AM 1.5

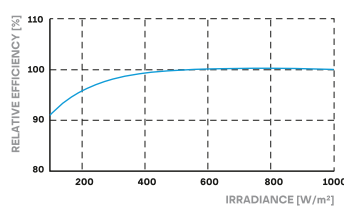
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.54% degradation per year. At least 93.1% of nominal power up to 10 years. At least 85% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organization of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25°C, 1000 W/m²)

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	α	[%/K]	+0.04	Temperature Coefficient of V _{OC}	β	[%/K]	-0.27
Temperature Coefficient of P _{MPP}	γ	[%/K]	-0.36	Nominal Module Operating Temperature	NMOT	[°F]	109 ± 5.4 (43 ± 3°C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V _{sys}	[V]	1000 (IEC)/1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull (UL) ³	[lbs / ft²]	50 (2400 Pa) / 50 (2400 Pa)	Permitted Module Temperature on Continuous Duty	-40°F up to +185°F (-40°C up to +85°C)
Max. Test Load, Push / Pull (UL) ³	[lbs / ft²]	75 (3600 Pa) / 75 (3600 Pa)		

³ See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant,
IEC 61215:2016,
IEC 61730:2016,
U.S. Patent No. 9,893,215
(solar cells)



Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

Single Phase Inverter with HD-Wave Technology

for North America

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

12-25
YEAR
WARRANTY



INVERTERS

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-USSE3800H-USSE5000H-USSE6000H-USSE7600H-USSE10000H-USSE11400H-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	600ka 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

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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
- Mitigates all types of module mismatch loss, from manufacturing tolerance to partial shading
- Detects abnormal PV connector behavior, preventing potential safety issues*
- Faster installations with simplified cable management and easy assembly using a single bolt
- Module-level voltage shutdown for installer and firefighter safety
- Flexible system design for maximum space utilization
- Superior efficiency (99.5%)
- Compatible with bifacial PV modules

* Functionality subject to inverter model and firmware version

[solaredge.com](https://www.solaredge.com)

solaredge

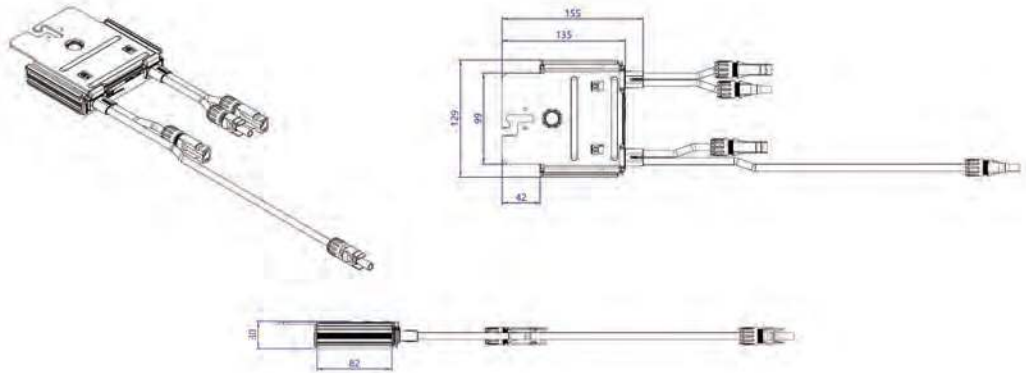
Power Optimizer For Residential Installations S440, S500

	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		%
Overtoltage 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



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CE RoHS

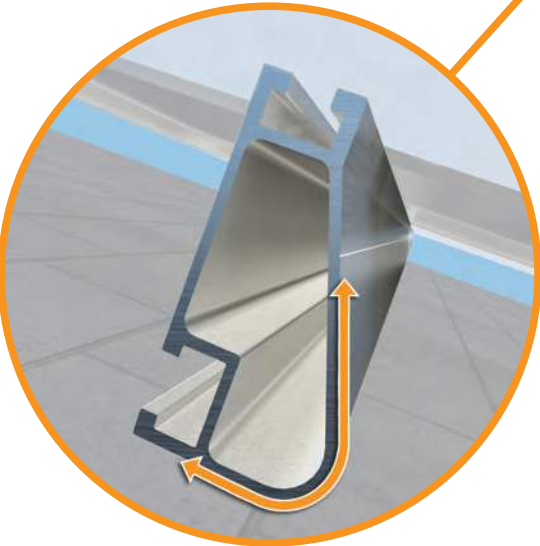
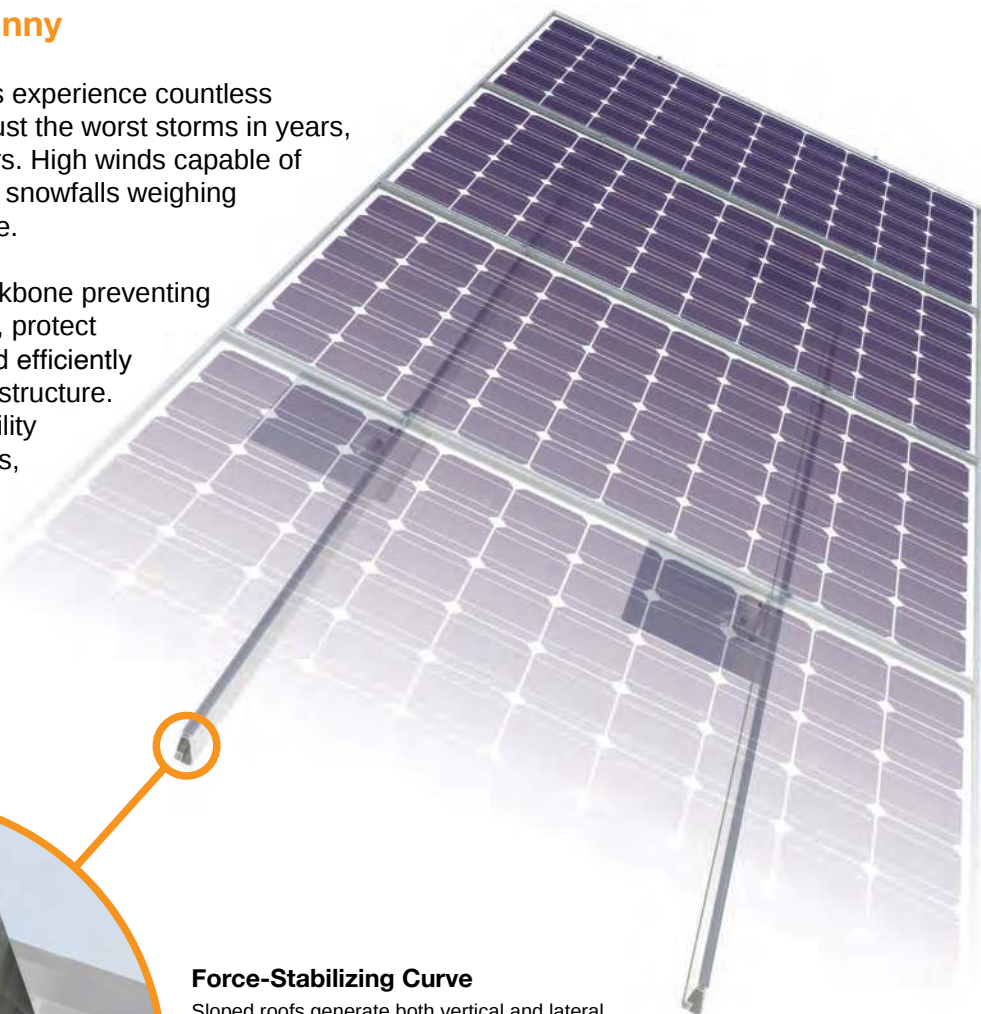


XR Rail Family

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.



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

April 28, 2022

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

Re: Knight – Residential PV Roof Mount Installation
434 SW Pilots Way.
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 all roof zones. 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" lag screw 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

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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					Wind Load Parameters																																																					
Risk Category	II		Table 1.5-1		Wind Speed (asd)	93	mph	FRC R301.2.1.3																																																		
Basic Wind Speed (Ult)	120		Figure 26.5-1B		Effective Wind Area	19.31	ft ²	26.20																																																		
Roof Angle	21° to 27°				Wind Directionality	K _d	0.85	Table 26.6-1																																																		
Roof Type	Hip				Topographic factor	K _{zt}	1.00	26.8 or 26.8.2																																																		
Exposure Cat.	B, C, or D		Section 26.7		Ground Elevation Factor	K _e	1.00	Table 26.9-1																																																		
Mean Roof Height	h	15.00	ft		Velocity Exposure Coefficient	K _z	0.70	Table 26.10-1																																																		
Roof attachment	5/16" x 4" Lag Screw				Array Edge Factor	γ _e	1.50	29.4.4 *Modules are considered Exposed																																																		
Rafter/Truss Spacing	24		in	O.C.	Solar Panel Equalization Factor	γ _s	0.69	Fig. 29.4-8																																																		
No. of Rails	2				Velocity Pressure	q _h	13.16	psf	q _h =0.00256 K _z K _{zt} K _e V ²																																																	
No. of Modules - Portrait	26				Added Safety Factor	1.2																																																				
No. of Modules - Landscape	0				Allowable Pullout per mount	709.6	lbs																																																			
Module Model Number	Q.PEAK DUO BLK-G6+ / TS				0.4h or 0.6h	6.00	ft	Flat - 0.6h, Gable, Hip - 0.4h																																																		
bldg. least horizontal dim (typ.)	180		in		10% of least horizontal dim	1.50	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)																																																		
Elevation	<1000		ft		Roof Zone Set Back	a	3.00	ft																																																		
Est. # of attachment points	56				h ₂	5	in	Not > 10in(panel height above roof)																																																		
PV Dead Load					Module and Racking Specs																																																					
# of Modules	26				Dimensions, LxWxH (in)	68.5 x 40.6 x 1.57																																																				
Module	W _{mod}	47	lbs		Width	3.38	ft																																																			
Array	W _{mods}	1232	lbs		Length	5.71	ft																																																			
Micro/optimizer	W _{mic}	104	lbs		Module Area	19.31	ft ²																																																			
PV Rail	W _{PV rail}	19	lbs		Module load ratings																																																					
Total Weight	W _{total}	1355	lbs				Ultimate	Allowable																																																		
Total Area	A _T	502.14	ft ²		Load Rating - Snow(psf)		113.4	75.6																																																		
Dead Load	D _{PV}	2.70	psf		Load Rating - Wind(psf)		-113.4	-75.6																																																		
Weight/attachment	24.2		lbs																																																							
PV Attachment - Results					Notes																																																					
Roof Zones - Hip 21° to 27°					Eq.1 Point Load = Roof Zone psf * TA Eq.2 TA = (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																																																					
<table border="1"> <thead> <tr> <th></th> <th>1</th> <th>2e</th> <th>2r</th> <th>3</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>GC_u - Uplift</td> <td>-1.3</td> <td>-1.8</td> <td>-1.8</td> <td>-1.8</td> <td></td> <td></td> </tr> <tr> <td>GC_d - Down</td> <td>0.7</td> <td>0.7</td> <td>0.7</td> <td>0.7</td> <td></td> <td></td> </tr> <tr> <td>p = q_h(GC_u)(γ_e)(γ_s)</td> <td>-14.9</td> <td>-21.7</td> <td>-21.7</td> <td>-21.7</td> <td>psf</td> <td>29.4-7</td> </tr> <tr> <td>p = q_h(GC_d)(γ_e)(γ_s)</td> <td>9.5</td> <td>9.5</td> <td>9.5</td> <td>9.5</td> <td>psf</td> <td>29.4-7</td> </tr> <tr> <td>Max Allowable Span</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>ft</td> <td>*notes</td> </tr> <tr> <td>Max Cantilever (in)</td> <td>24</td> <td>24</td> <td>24</td> <td>24</td> <td colspan="2">Max span * 33% (in)</td> </tr> </tbody> </table>						1	2e	2r	3			GC _u - Uplift	-1.3	-1.8	-1.8	-1.8			GC _d - Down	0.7	0.7	0.7	0.7			p = q _h (GC _u)(γ _e)(γ _s)	-14.9	-21.7	-21.7	-21.7	psf	29.4-7	p = q _h (GC _d)(γ _e)(γ _s)	9.5	9.5	9.5	9.5	psf	29.4-7	Max Allowable Span	6	6	6	6	ft	*notes	Max Cantilever (in)	24	24	24	24	Max span * 33% (in)						
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p = q _h (GC _u)(γ _e)(γ _s)	-14.9	-21.7	-21.7	-21.7	psf	29.4-7																																																				
p = q _h (GC _d)(γ _e)(γ _s)	9.5	9.5	9.5	9.5	psf	29.4-7																																																				
Max Allowable Span	6	6	6	6	ft	*notes																																																				
Max Cantilever (in)	24	24	24	24	Max span * 33% (in)																																																					

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