



**CLIENT INFO**  
 NICHOLAS POLANSKY  
 86 JESSIE LEE LANE  
 FLOQUAY-VARRINA, NC 27326

**PROJECT INFO**  
 DC INPUT: 11,22 kW  
 AC EXPORT: 10,00 kW  
 DO/INSPT. METHOD: OPTION 2

**CODE REFERENCES**  
 NATIONAL ELECTRICAL CODE v. 2017  
 NC FIRE PROTECTION CODE v. 2016  
 NC BUILDING CODE v. 2018  
 NC RESIDENTIAL CODE v. 2018  
 ASCE v. 40

**SITE CONDITIONS**  
 WIND SPEED: 116 MPH  
 RISK CATEGORY: II  
 EXPOSURE: B  
 SNOW: 15 PSF

**SHEET INDEX**  
 PV-1: COVER SHEET  
 PV-2: PV STRUCTURAL  
 PV-3: PV ELECTRICAL  
 PV-4: PV EQUIPMENT LABELS  
 PV-5: PV INSTALL GUIDE

**DESIGNER INFO**  
 CRM: CRM  
 DESIGNER: AWK  
 ENGINEER: 3/22/2021  
 DATE: P1  
 VERSION: P1

PV SYSTEM COVER PAGE

PV-1.1

**PV MATERIAL SUMMARY: DISTRIBUTOR**

Q2 PEAK DUO BLK-C6+340	33
P340	33
SE10000H-US0003NU4	1
SEZBGM-4P-S1-NVA	9
XR-10-168B	6
XR-10-204B	12
XR10-BOSS-01-M1	72
UFO-CL-01-B1	12
UFO-STP-32MM-B1	3
XR-LUG-40-A1	70
FASTJACK ROOF STANCHION	70
SPAX 4571820801278 LAG	70
LFT-03-M1	70

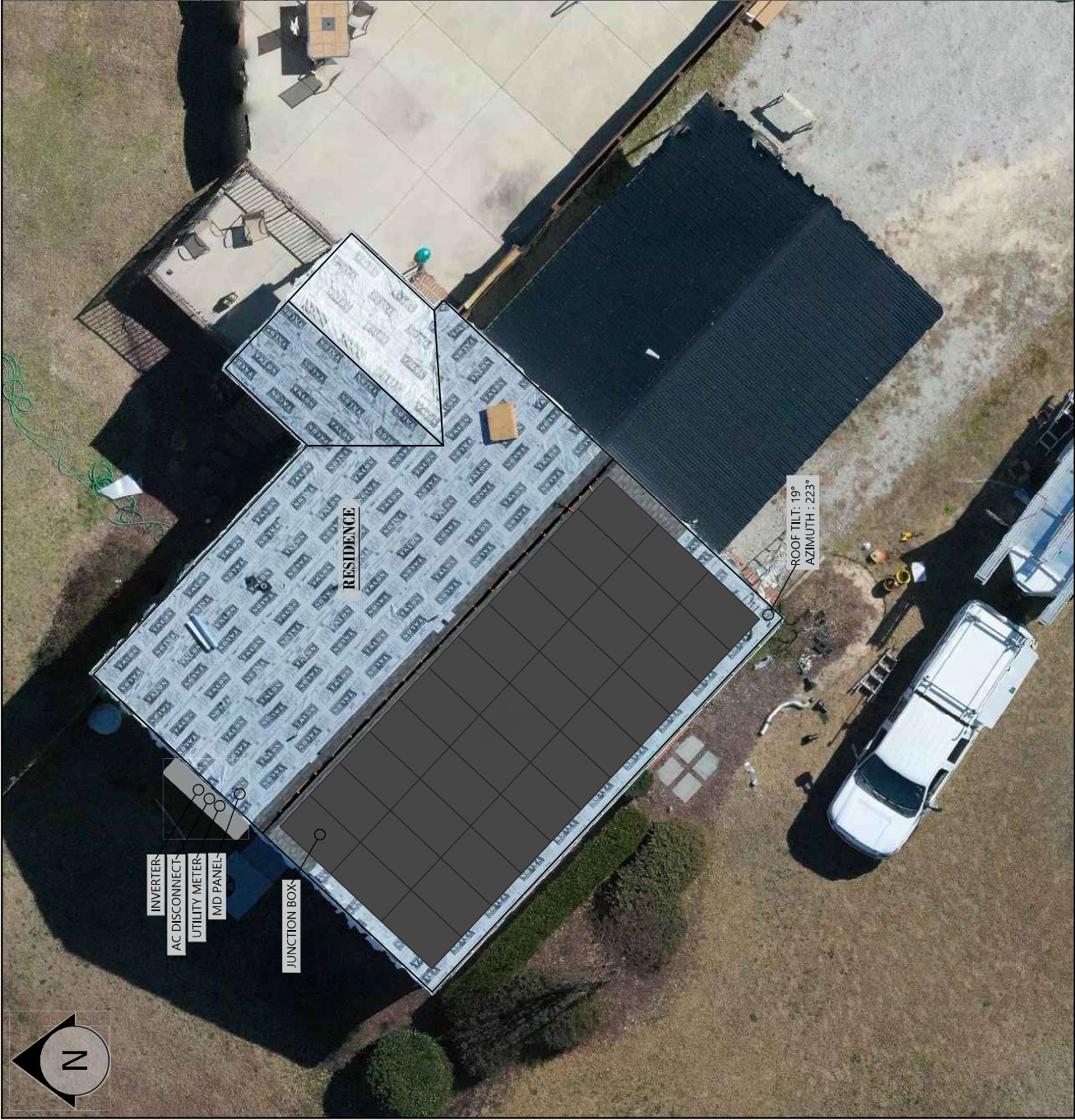


**NOTICE TO CONTRACTOR**  
 All construction shall comply with current NC Building Codes and all applicable local codes and regulations.

**APPROVED**  
 United Building only review.  
 Permit holder responsible for full compliance with the code.

04/07/2021





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**PV SYSTEM STRUCTURAL**

**PV-2.1**

**PV MODULES**

MAKE	HANWHA
MODEL	Q.PAK DUO BK-G66-340
WIDTH	40.60 IN
LENGTH	68.50 IN
THICKNESS	32 MM
WEIGHT	43.90 LBS
ARRAY AREA	6.77 SQ.FT.
ARRAY WEIGHT	1593 LBS

**ROOF SUMMARY**

STRUCTURE:	
TYPE	TRUSSES
MATERIAL	SOUTHERN PINE #2
SIZE	2 X 6
SPACING	24" O.C.
ALLOWABLE SPAN	48 FT
PITCH	4/12
DENSITY	30 LBS./CU.FT.
DICKING:	OSB
TYPE	COMPOSITE
MATERIAL	7/16 IN
THICKNESS	7/16 IN
WEIGHT	1.60 LBS./SQ.FT.
ROOFING:	
TYPE	ASPHALT + METAL SHINGLES
MATERIAL	ASPHALT + ALUMINUM
WEIGHT	3.00 LBS./SQ.FT.

**ROOF MOUNT SUMMARY**

MAXIMUM (MIN) MOUNT SPACING	RAIL OVERHANG	
WIND ZONE 1	72 IN	26 IN
WIND ZONE 2	48 IN	19 IN
WIND ZONE 3	24 IN	11 IN

**ROOF LOADING**

GROUND SNOW LOAD:	15 LBS./SQ.FT.
LIVE LOAD:	20 LBS./SQ.FT.
DEAD LOAD:	5.2 LBS./SQ.FT.
ROOFING:	2.5 LBS./SQ.FT.
PV ARRAY:	7.7 LBS./SQ.FT.
TOTAL:	
WIND ZONE 1	43.0 LBS./SQ.FT.
WIND ZONE 2	46.0 LBS./SQ.FT.
WIND ZONE 3	57.1 LBS./SQ.FT.
UPWARD:	13.0 LBS./SQ.FT.
DOWNWARD:	
UPHIFT ZONE 1	29.1 LBS.
UPHIFT ZONE 2	43.0 LBS.
UPHIFT ZONE 3	43.3 LBS.
DOWNWARD:	231 LBS.

**ROOF MOUNT & FASTENER**

ROOF MOUNT:	
MAKE	ISMAH INDUSTRIES
MODEL	FAST JACK STANCHION KIT
MATERIAL	STAINLESS STEEL
FASTENER:	
MAKE	SPAX
MODEL	4571820801278
MATERIAL	STEEL
GENERAL:	
SIZE	5/16" X 5"
WEIGHT	0.36 LBS.
FASTENERS PER MOUNT	1
MAX. PULL-OUT FORCE	960.0 LBS.
SAFETY FACTOR	2
DESIGN PULL-OUT FORCE	480.0 LBS.

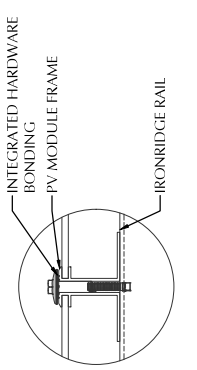
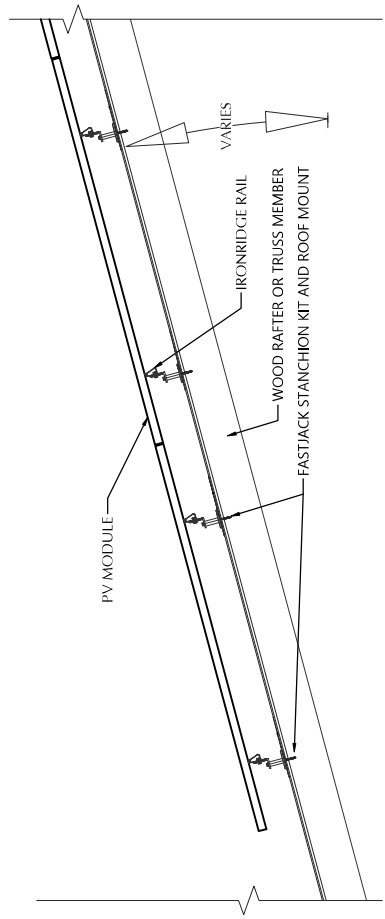
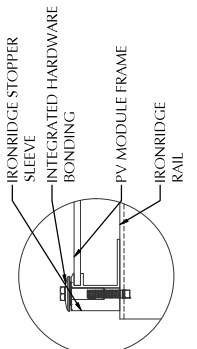
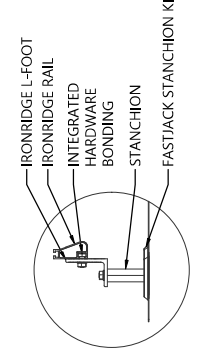
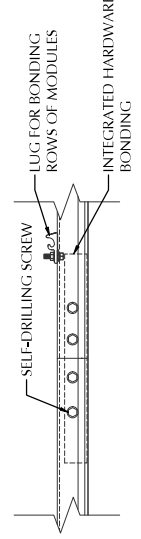
**MOUNTING RAILS**

MAKE	IRONRIDGE
MODEL	XRD
MATERIAL	ALUMINUM
WEIGHT	0.425 LBS/IN
SPACING	34 IN

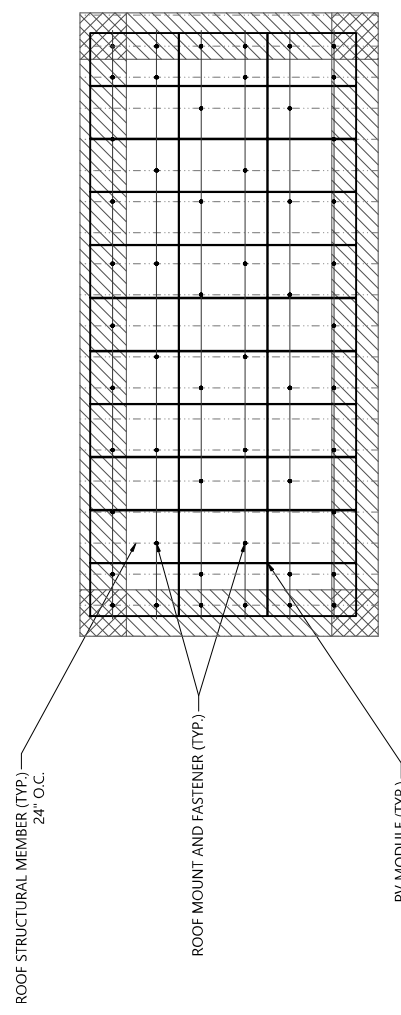
**STATEMENT OF STRUCTURAL COMPLIANCE**

THE EXISTING ROOF STRUCTURE HAS BEEN DESIGNED TO SUPPORT THE ADDITIONAL LOADS OF THE PROPOSED PV SYSTEM. IN ADDITION, THE RACKING AND FASTENING SYSTEM SHALL BE CAPABLE OF SECURING THE SYSTEM TO THE STRUCTURE UNDER DESIGN CONDITIONS WHEN INSTALLED PROPERLY AND IN ACCORDANCE WITH THE RACKING AND FASTENING ARRANGEMENT DETAILED WITHIN THESE DRAWINGS.

NAME: ANDREW W. KING, PE  
 SIGNED:



**1** ROOF FASTENER DETAIL  
 NOT TO SCALE



**2** ARRAY LAYOUT  
 1/8" = 1'-0"

PV MODULE	
MAKE	HANWHA
MODEL	Q-PEAK DUO BIK-G6+340
NOM. POWER (PNOM)	340 WATTS
NOM. VOLT. (VMPP)	33.9 VOLTS
G.C. VOLT. (VOC)	40.7 VOLTS
NOM. SYS. VOLT.	100.0 VOLTS
NOM. CURR. (IMPP)	10.0 AMPS
S.C. CURR. (ISC)	10.5 AMPS
TEMP. COEFF. (PMP)	-0.36 %/°C
MAX. SERIES FUSE	4:27 AMPS
UL LIST. (VNI)	YES

MODULE OPTIMIZER	
MAKE	SOLAERDGE
MODEL	P-40
DC INPUT	340 WATTS
NOM. POWER	340 WATTS
VOLT. RANGE	8 to 48
MAX. CURR.	11.0 AMPS
DC OUTPUT	340 WATTS
NOM. POWER	60 WATTS
MAX. VOLT.	15 AMPS
MIR-MAX STRING	16-25 OPTIMIZERS
UL LIST. (VNI)	YES

DC / AC INVERTER	
MAKE	SOLAERDGE
MODEL	SE1000H4-5000RML4
DC INPUT	15500 WATTS
MAX. POWER	400-480
VOLT. RANGE	400 VOLTS
NOM. VOLT.	27 AMPS
MAX. CURRENT	3 STRINGS
STRING INPUTS	10000 WATTS
AC OUTPUT	10000 WATTS
MAX. POWER	211-240-264
NOM. VOLT.	42.00 AMPS
MAX. CURR.	YES
DC DISC. (VNI)	YES
UL LIST. (VNI)	YES
RATED SHORT CIRCUIT (VNI)	YES
UL LIST. (VNI)	YES
CONSUMPTION MONITOR	NO

AC DISCONNECT	
MAKE	GENERIC
MODEL	NA
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
AMP. RATING	60 AMPS
UL LIST. (VNI)	YES
FUSED (VNI)	YES
FUSE RATING	60 A

JUNCTION BOX	
MAKE	SOLAERDGE
MODEL	NEMA TYPE JR
PROJECT RATING	YES
UL LIST. (VNI)	YES

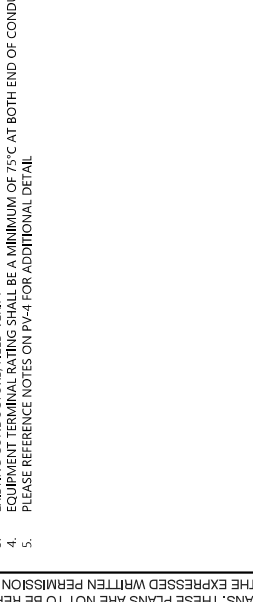
MD PANEL (EXISTING)	
MAKE	SQUARE D
MODEL	QOC-RJLF
ENCL. RATING	NEMA TYPE 1
VOLT. RATING	240
BUS RATING	200 AMPS
UL LIST. (VNI)	YES
MAIN BREAKER (VNI)	YES
MAIN BREAKER RATING	200 AMPS

CONDUCTOR SCHEDULE							
GROUNDING CONDUCTORS							
TAG	QTY.	SIZE	INSULATION	QTY.	SIZE	LOCATION	NOTES
C1	4	10 AWG	PV WIRE	1	6 AWG	BARE	FREE AIR
C2	4	10 AWG	THWN	1	3/4"	EXT/INT	2,4
C3	3	6 AWG	THWN	1	3/4"	EXTERIOR	2,4
C4	3	6 AWG	THWN	1	3/4"	EXTERIOR	2,4
NC	.	.	.	.	.	.	3

- NOTES:
- MANUFACTURER PROVIDED, UL LISTED WIRING HARNESS FOR USE ON EXPOSED ROOFS
  - CONDUIT SIZE SHOWN IS CODE MINIMUM. LARGER SIZES ARE ALLOWED.
  - EXISTING CONDUCTORS, FIELD VERIFY
  - EQUIPMENT TERMINAL RATING SHALL BE A MINIMUM OF 75°C AT BOTH END OF CONDUCTOR
  - PLEASE REFERENCE NOTES ON PV-4 FOR ADDITIONAL DETAIL

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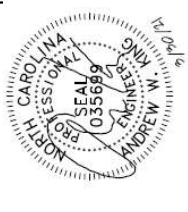
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- PV SYSTEM ELECTRICAL



- LOAD-BREAK RATED
- VERB. CIR. BY OPEN POSITION
- INSTALL ADJACENT TO METER
- DISCONNECT TO BE READILY ACCESSIBLE
- TO UTILITY COMPANY PERSONNEL AT ALL TIMES
- SERVICE RATED
- PROVIDE NEUTRAL/GROUND BONDING JUMPER

- BACK-FEED SOLAR OUTPUT VIA SUPPLY SIDE TAP INSIDE OF MD PANEL

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 ENGINEER: 3/22/2021  
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**PV SYSTEM EQUIPMENT LABELS**

**PV-4.1**

**CONSTRUCTION NOTES**

- ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE NEC, STATE, AND LOCAL APPLICABLE CODES.
- FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS, BEST PRACTICES, AND SPECIFICATIONS.
- ENSURE REQUIRED MAINTENANCE ACCESS AND CLEARANCES ARE MAINTAINED.
- WIRES SHALL BE RATED AND LABELED "SUNLIGHT RESISTANT" WHERE EXPOSED TO AMBIENT CONDITIONS.
- FUSES 0 - 600 AMPS SHALL BE UL CLASS "RK-1" LOW PEAK DUAL ELEMENT TIME DELAY WITH 200000 AMPERE INTERRUPTING RATING AS MANUFACTURED BY BUSSMANN, UNLESS NOTED OTHERWISE.
- ALL TERMINALS/BUGS SHALL BE 75° RATED. ALL TERMINALS, SPlicing CONNECTORS, LUGS, ETC SHALL BE IDENTIFIED FOR USE WITH THE MATERIAL (CU/AL) OF THE CONDUCTOR AND SHALL BE PROPERLY INSTALLED.
- PROVIDE A PULLWIRE IN ALL EMPTY CONDUITS.
- ALL PENETRATIONS THROUGH EXTERIOR ROOFS SHALL BE FLASHED IN A WATERPROOF MANNER.
- ALL PENETRATIONS THROUGH ATTIC FIRE BARRIERS SHALL BE SEALED WITH FIRE-BARRIER SEALANT CAULK.
- SUPPORT ALL CONDUIT AND EQUIPMENT IN ACCORDANCE W/ NEC. ANY SUSPENDED MATERIALS SHALL BE DIRECTLY SUPPORTED BY THE BUILDING STRUCTURE.
- METAL CONDUIT COUPLINGS CAN BE COMPRESSION TYPE, THREADED, OR BE SET-SCREW TYPE. PLASTIC CONDUIT COUPLINGS TO BE SOCKET GLUED TYPE.
- A COMPLETE GROUNDING SYSTEM SHALL BE PRESENT OR PROVIDED AS SHOWN ON THE DRAWINGS.
- EACH ELECTRICAL APPLIANCE SHALL BE PROVIDED WITH A NAMEPLATE GIVING THE IDENTIFYING NAME AND THE RATING IN VOLTS AND AMPERES OR VOLTS AND WATTS. IF THE APPLIANCE IS TO BE USED ON A SPECIFIC FREQUENCY OR FREQUENCIES, IT SHALL BE SO MARKED.
- WHERE MOTOR OVERLOAD PROTECTION EXTERNAL TO THE APPLIANCE IS REQUIRED, THE APPLIANCE SHALL BE SO MARKED.
- WHERE APPLICABLE, GROUNDING ELECTRODE CONDUCTOR TO BE CONTINUOUS. GROUNDING CRIMPS TO BE IRREVERSIBLE.
- PHOTOVOLTAIC SYSTEMS SHALL BE PERMANENTLY MARKED AT VARIOUS EQUIPMENT LOCATIONS TO IDENTIFY THAT A PHOTOVOLTAIC SYSTEM IS INSTALLED AND THAT VARIOUS DANGERS ARE PRESENT.
- EACH PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS SHALL BE PERMANENTLY MARKED TO IDENTIFY IT AS A PHOTOVOLTAIC SYSTEM DISCONNECT.
- WHERE ALL TERMINALS OF A DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A WARNING SIGN SHALL BE MOUNTED ON OR ADJACENT TO THE DISCONNECT.
- A PERMANENT LABEL FOR THE DIRECT-CURRENT PHOTOVOLTAIC POWER SOURCE SHALL BE PROVIDED AT THE DC DISCONNECT MEANS.
- A PERMANENT PLAQUE OR DIRECTORY, DENOTING ALL ELECTRIC POWER SOURCES SERVING THE PREMISES, SHALL BE INSTALLED AT EACH SERVICE EQUIPMENT LOCATION AND AT LOCATIONS OF ALL POWER PRODUCTION SOURCES.
- ALL MODULE GROUND CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH NEC SECTION 690.4(C).
- A NORTH CAROLINA REGISTERED DESIGN PROFESSIONAL WILL BE REQUIRED TO SEAL THE STRUCTURAL DESIGN AT THE TIME OF PERMIT APPLICATION IF ANY OF THE FOLLOWING EXIST AND ARE ATTESTED TO BY THE APPLICANT:
  - THE WEIGHT OF THE PV SYSTEM EXCEEDS THREE (3) POUNDS PER SQUARE FOOT (PSF).
  - THE ROOF POSSESSES MORE THAN ONE (1) LAYER OF ASPHALT SHINGLES.
  - THE ROOFING MATERIAL CONSISTS OF A TYPE OTHER THAN ASPHALT SHINGLES OR METAL.
  - THE ROOF IS LOCATED IN A 140 MPH OR GREATER WIND ZONE.

**LABEL NOTES**

- LABELS SHOWN ARE HALF THEIR ACTUAL REQUIRED SIZE.
- LABEL MATERIAL SHALL BE SUITABLE FOR THE EQUIPMENT ENVIRONMENT.
- DC CONDUIT SHALL BE MARKED WITH REQUIRED LABEL EVERY 10 FEET.
- LABELS WILL BE APPLIED IN ACCORDANCE WITH THE NEC. SOME LABELS MAY NOT BE NECESSARY.

**DC WIRING NOTES**

- CONDUCTORS SHALL BE COPPER, RATED AT NOT LESS THAN 600 VOLTS FOR RESIDENTIAL CONSTRUCTION AND NOT LESS THAN 1000 VOLTS FOR COMMERCIAL CONSTRUCTION.
- MINIMUM SIZE SHALL BE #10 AWG UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- EXPOSED WIRING CONDUCTOR INSULATION SHALL BE TYPE PV WIRE, USE-2, OR RHW-2 WHERE THE OUTER LAYER OF THE INSULATION IS UV, SUNLIGHT, AND MOISTURE RESISTANT.
- EXTERIOR WIRING CONDUCTOR INSULATION SHALL BE TYPE THWN-2 AND INSTALLED IN ELECTRICAL METALLIC TUBING (EMT) OR RIGID POLYVINYL CHLORIDE CONDUIT (PVC), ALTERNATIVELY, METAL CLAD CABLE (MC), CAN BE USED AS WELL WHEN RATED FOR USE IN WET LOCATIONS.
- INTERIOR WIRING CONDUCTOR INSULATION SHALL BE TYPE THHN-2 AND INSTALLED IN ELECTRICAL METALLIC TUBING (EMT), FLEXIBLE METAL CONDUIT (FMC), OR METAL CLAD CABLE (MC).
- USE SCHEDULE 40 PVC OUTDOORS WHERE NOT SUBJECT TO PHYSICAL DAMAGE OR BELOW FLOOR SLAB. USE SCHEDULE 80 PVC OUTDOORS WHERE SUBJECT TO PHYSICAL DAMAGE.
- MINIMUM CONDUIT SIZE TO BE 1/2".
- WIRING METHODS TO CONFORM TO ARTICLES 330, 334, 348, 350, 352, 356, AND 358 OF THE 2017 NEC.

**AC WIRING NOTES**

- CONDUCTORS SHALL BE COPPER RATED AT NOT LESS THAN 600 VOLTS.
- MINIMUM SIZE SHALL BE #14 AWG UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- EXTERIOR WIRING CONDUCTOR INSULATION SHALL BE TYPE THWN AND INSTALLED IN ELECTRICAL METALLIC TUBING (EMT), RIGID POLYVINYL CHLORIDE CONDUIT (PVC), LIQUID-TIGHT FLEXIBLE METAL CONDUIT (LFMC), OR LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT (LFNMC), ALTERNATIVELY, METAL CLAD CABLE (MC) CAN BE USED AS WELL WHEN RATED FOR USE IN WET LOCATIONS.
- INTERIOR WIRING CONDUCTOR INSULATION SHALL BE TYPE THHN AND INSTALLED IN ELECTRICAL METALLIC TUBING (EMT), FLEXIBLE METAL CONDUIT (FMC), METAL CLAD CABLE (MC), OR ROMEX.
- USE SCHEDULE 40 PVC OUTDOORS WHERE NOT SUBJECT TO PHYSICAL DAMAGE OR BELOW FLOOR SLAB. USE SCHEDULE 80 PVC OUTDOORS WHERE SUBJECT TO PHYSICAL DAMAGE.
- MINIMUM CONDUIT SIZE TO BE 1/2".
- WIRING METHODS TO CONFORM TO ARTICLES 330, 334, 348, 350, 352, 356, AND 358 OF THE 2017 NEC.

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

NEC 705.12(B)(4)  
 PLACE ON ALL EQUIPMENT THAT IS SUPPLIED BY BOTH POWER SOURCES

**WARNING**  
 POWER SOURCE OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

NEC 705.12(B)(2)(b)  
 PLACE ADJACENT TO BACK-DEP BREAKER

**SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN**

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

NEC 690.56(C)(4)(b)  
 PLACE WITHIN 3 FT OF SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED AND SHALL INDICATE THE LOCATIONS OF RAPID SHUTDOWN SWITCHES

**WARNING: PHOTOVOLTAIC POWER SOURCE**

NEC 690.31(G)(3)(4)  
 PLACE ON ALL JUNCTION BOXES, EXPOSED RACEWAYS, AND OTHER WIRING ENCLOSURES, WALLS, PARTITIONS, CEILING, OR FLOORS

**PHOTOVOLTAIC POWER SOURCE**  
 OPERATING AC VOLTAGE 240 V  
 MAXIMUM OPERATING AC OUTPUT CURRENT 42.0 A

NEC 690.54  
 PLACE ON INTERCONNECTION DISCONNECTING MEANS

**PHOTOVOLTAIC POWER SOURCE**  
 OPERATING AC VOLTAGE 240 V  
 MAXIMUM OPERATING AC OUTPUT CURRENT 42.0 A

NEC 690.54  
 PLACE ON INTERCONNECTION DISCONNECTING MEANS

**PV SYSTEM DISCONNECT**

NEC 690.13(B)  
 PLACE ON PV SYSTEM DISCONNECTING MEANS

**DIRECT CURRENT PHOTOVOLTAIC POWER SOURCE**  
 MAXIMUM VOLTAGE 600 VDC  
 MAX CIRCUIT CURRENT 30.0 AMPS

NEC 690.53  
 PLACE ON ALL DC DISCONNECTING MEANS

**PHOTOVOLTAIC POWER SOURCE**  
 OPERATING AC VOLTAGE 240 V  
 MAXIMUM OPERATING AC OUTPUT CURRENT 42.0 A

NEC 690.54  
 PLACE ON INTERCONNECTION DISCONNECTING MEANS

**SERVICE DISCONNECT LOCATED: INTERIOR NW WALL OF HOME**

**PV DISCONNECT LOCATED: EXTERIOR NW WALL OF HOME**

NEC 705.10  
 PLACE AT SERVICE EQUIPMENT AND PV SYSTEM DISCONNECTING MEANS



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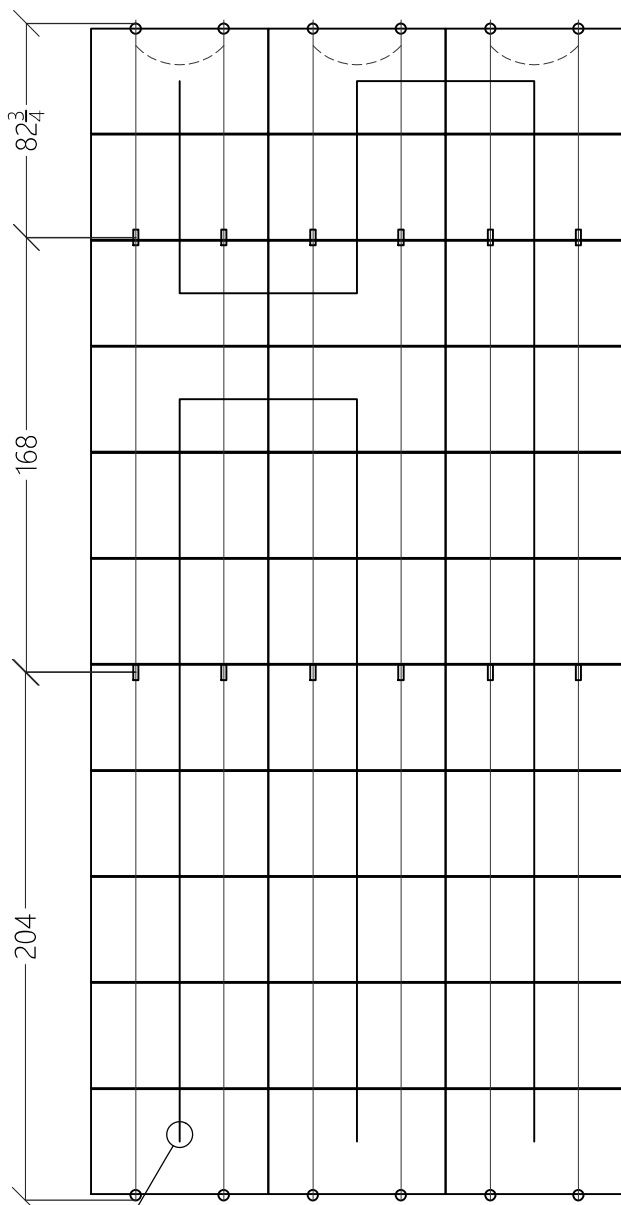
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**PV SYSTEM INSTALL GUIDE**

**PV-5.1**



1 ARRAY LAYOUT DETAIL  
 NOT TO SCALE

# Q.PEAK DUO BLK-G6+ 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 Technology<sup>1</sup>, Hot-Spot Protect and Traceable Quality Tra.Q™.



#### EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).



#### A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty<sup>2</sup>.



#### STATE OF THE ART MODULE TECHNOLOGY

Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology.

<sup>1</sup> APT test conditions according to IEC/TS 62804-1:2015, method B (-1500 V, 168 h)

<sup>2</sup> See data sheet on rear for further information

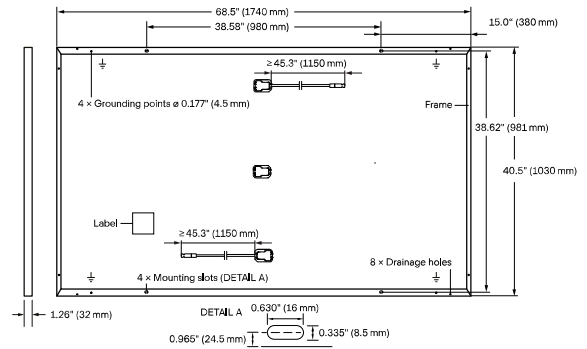
#### THE IDEAL SOLUTION FOR:



Rooftop arrays on  
residential buildings

## MECHANICAL SPECIFICATION

Format	68.5 × 40.6 × 1.26 in (including frame) (1740 × 1030 × 32 mm)
Weight	43.9 lbs (19.9 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	4 mm <sup>2</sup> Solar cable; (+) ≥ 45.3 in (1150 mm), (-) ≥ 45.3 in (1150 mm)
Connector	Stäubli MC4, Hanwha Q CELLS HQC4, Amphenol UTX, Renhe 05-6, Tongling TL-Cable01S, JMTHY JM601; IP68 or Friends PV2e; IP67

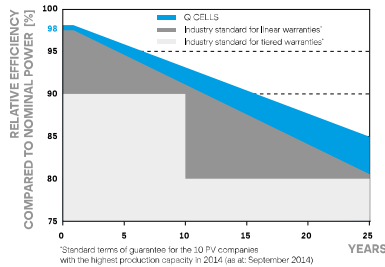


## ELECTRICAL CHARACTERISTICS

POWER CLASS		330	335	340	345	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC <sup>1</sup> (POWER TOLERANCE +5 W / -0 W)						
Minimum	Power at MPP <sup>1</sup>	$P_{MPP}$ [W]	330	335	340	345
	Short Circuit Current <sup>1</sup>	$I_{SC}$ [A]	10.41	10.47	10.52	10.58
	Open Circuit Voltage <sup>1</sup>	$V_{OC}$ [V]	40.15	40.41	40.66	40.92
	Current at MPP	$I_{MPP}$ [A]	9.91	9.97	10.02	10.07
	Voltage at MPP	$V_{MPP}$ [V]	33.29	33.62	33.94	34.25
	Efficiency <sup>1</sup>	$\eta$ [%]	≥ 18.4	≥ 18.7	≥ 19.0	≥ 19.3
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT <sup>2</sup>						
Minimum	Power at MPP	$P_{MPP}$ [W]	247.0	250.7	254.5	258.2
	Short Circuit Current	$I_{SC}$ [A]	8.39	8.43	8.48	8.52
	Open Circuit Voltage	$V_{OC}$ [V]	37.86	38.10	38.34	38.59
	Current at MPP	$I_{MPP}$ [A]	7.80	7.84	7.89	7.93
	Voltage at MPP	$V_{MPP}$ [V]	31.66	31.97	32.27	32.57

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

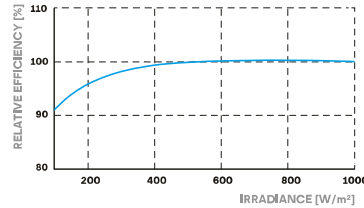
### Q CELLS PERFORMANCE WARRANTY



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/m<sup>2</sup>)

### TEMPERATURE COEFFICIENTS

Temperature Coefficient of $I_{SC}$	$\alpha$ [% / K]	+0.04	Temperature Coefficient of $V_{OC}$	$\beta$ [% / K]	-0.27
Temperature Coefficient of $P_{MPP}$	$\gamma$ [% / K]	-0.36	Normal 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)	Safety Class	II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 1703	C (IEC) / TYPE 2 (UL)
Max. Design Load, Push / Pull <sup>3</sup>	[lbs / ft <sup>2</sup> ]	75 (3600 Pa) / 55 (2667 Pa)	Permitted Module Temperature on Continuous Duty	-40°F up to +185°F (-40°C up to +85°C)
Max. Test Load, Push / Pull <sup>3</sup>	[lbs / ft <sup>2</sup> ]	113 (5400 Pa) / 84 (4000 Pa)		

<sup>3</sup>See Installation Manual

## QUALIFICATIONS AND CERTIFICATES

UL 1703, VDE Quality Tested, CE-compliant, IEC 61215:2016, IEC 61730:2016, Application Class II, U.S. Patent No. 9,893,215 (solar cells)



## PACKAGING INFORMATION

Number of Modules per Pallet	32
Number of Pallets per 53' Trailer	28
Number of Pallets per 40' HC-Container	24
Pallet Dimensions (L × W × H)	71.5 × 45.3 × 48.0 in (1815 × 1150 × 1220 mm)
Pallet Weight	1505 lbs (683 kg)

**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.**

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# Power Optimizer

For North America

P320 / P340 / P370 / P400 / P405 / P505



POWER OPTIMIZER

## PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety



# / Power Optimizer

## For North America

P320 / P340 / P370 / P400 / P405 / P505

Optimizer model (typical module compatibility)	P320 (for 60-cell modules)	P340 (for high-power 60-cell modules)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P405 (for thin film modules)	P505 (for higher current modules)	
<b>INPUT</b>							
Rated Input DC Power <sup>(1)</sup>	320	340	370	400	405	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	125 <sup>(2)</sup>		Vdc
MPPT Operating Range	8 - 48		8 - 60	8 - 80	12.5 - 105		Vdc
Maximum Short Circuit Current (Isc)	11			10.1		14	Adc
Maximum DC Input Current	13.75			12.5		17.5	Adc
Maximum Efficiency	99.5						%
Weighted Efficiency	98.8					98.6	%
Overvoltage Category	II						
<b>OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)</b>							
Maximum Output Current	15						Adc
Maximum Output Voltage	60			85			Vdc
<b>OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF)</b>							
Safety Output Voltage per Power Optimizer	1 ± 0.1						Vdc
<b>STANDARD COMPLIANCE</b>							
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3						
Safety	IEC62109-1 (class II safety), UL1741						
Material	UL94 V-0, UV Resistant						
RoHS	Yes						
<b>INSTALLATION SPECIFICATIONS</b>							
Maximum Allowed System Voltage	1000						Vdc
Compatible inverters	All SolarEdge Single Phase and Three Phase inverters						
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1			129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 159 x 49.5 / 5.1 x 6.3 x 1.9	129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight (including cables)	630 / 1.4			750 / 1.7	845 / 1.9	1064 / 2.3	gr / lb
Input Connector	Single or dual MC4 <sup>(3)</sup>						
Input Wire Length	0.16 / 0.52						m / ft
Output Wire Type / Connector	Double Insulated / MC4						
Output Wire Length	0.9 / 2.95			1.2 / 3.9			m / ft
Operating Temperature Range	-40 - +85 / -40 - +185						°C / °F
Protection Rating	IP68 / NEMA6P						
Relative Humidity	0 - 100						%

<sup>(1)</sup> Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed

<sup>(2)</sup> NEC 2017 requires max input voltage be not more than 80V

<sup>(3)</sup> For other connector types please contact SolarEdge

PV System Design Using a SolarEdge Inverter <sup>(4)(5)</sup>	Single Phase HD-Wave	Single phase	Three Phase 208V	Three Phase 480V	
Minimum String Length (Power Optimizers)	P320, P340, P370, P400	8	10	18	
	P405 / P505	6	13 (12 with SE3K)	14	
Maximum String Length (Power Optimizers)		25	25	50 <sup>(6)</sup>	
Maximum Power per String	5700 (6000 with SE7600-US - SE11400-US)	5250	6000 <sup>(7)</sup>	12750 <sup>(8)</sup>	W
Parallel Strings of Different Lengths or Orientations	Yes				

<sup>(4)</sup> For detailed string sizing information refer to: [http://www.solaredge.com/sites/default/files/string\\_sizing\\_na.pdf](http://www.solaredge.com/sites/default/files/string_sizing_na.pdf)

<sup>(5)</sup> It is not allowed to mix P405/P505 with P320/P340/P370/P400 in one string

<sup>(6)</sup> A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement

<sup>(7)</sup> For SE14.4KUS/SE43.2KUS: It is allowed to install up to 6,500W per string when 3 strings are connected to the inverter (3 strings per unit for SE43.2KUS) and when the maximum power difference between the strings is up to 1,000W

<sup>(8)</sup> For SE30KUS/SE33.3KUS/SE66.6KUS/SE100KUS: It is allowed to install up to 15,000W per string when 3 strings are connected to the inverter (3 strings per unit for SE66.6KUS/SE100KUS) and when the maximum power difference between the strings is up to 2,000W

# Single Phase Inverter with HD-Wave Technology

for North America

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



## Optimized installation with HD-Wave technology

- / Specifically designed to work with power optimizers
- / Record-breaking 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 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)

# / 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-XXXXXXBX4							
<b>OUTPUT</b>								
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 <sup>(1)</sup>							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							
<b>INPUT</b>								
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 <sup>(2)</sup>	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V <sup>(2)</sup>	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600k $\Omega$ Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W

<sup>(1)</sup> For other regional settings please contact SolarEdge support

<sup>(2)</sup> A higher current source may be used; the inverter will limit its input current to the values stated

# / Single Phase Inverter with HD-Wave Technology for North America

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

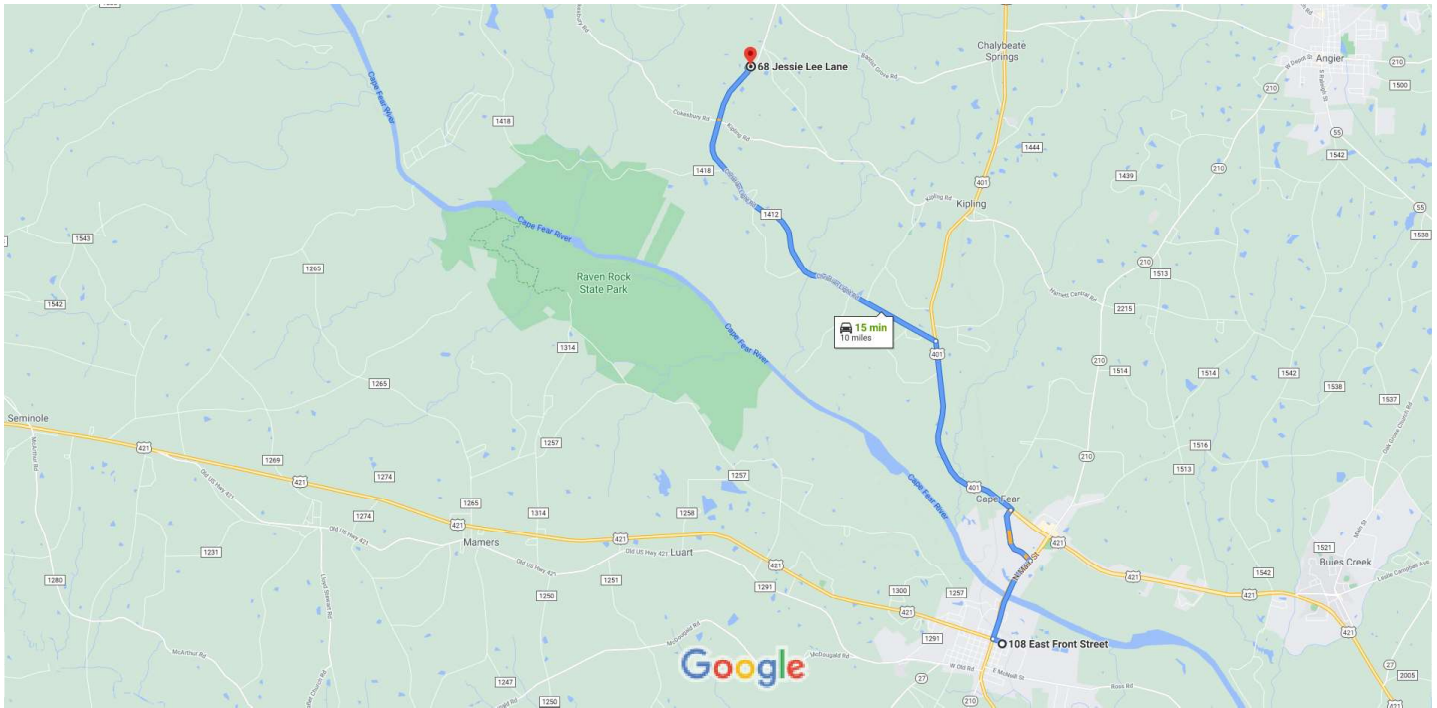
Model Number	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
<b>ADDITIONAL FEATURES</b>								
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)							
Revenue Grade Data, ANSI C12.20	Optional <sup>(3)</sup>							
Inverter Commissioning	with the SetApp mobile application using built-in Wi-Fi Access Point for local connection							
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect							
<b>STANDARD COMPLIANCE</b>								
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							
<b>INSTALLATION SPECIFICATIONS</b>								
AC Output Conduit Size / AWG Range	1" Maximum / 14-6 AWG			1" Maximum /14-4 AWG				
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1-2 strings / 14-6 AWG			1" Maximum / 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 / -40 to +60 <sup>(4)</sup>							°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)							

<sup>(3)</sup> Revenue grade inverter P/N: SExxxxH-US000BNC4

<sup>(4)</sup> Full power up to at least 50°C / 122°F; for power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf>



108 E Front St, Lillington, NC 27546 to 68 Jessie Lee Ln, Fuquay-Varina, NC 27526 Drive 10.0 miles, 15 min



Map data ©2021 1 mi

### 108 E Front St

Lillington, NC 27546

#### Take E Front St to S Main St

- 1 min (0.2 mi)
- ↑ 1. Head east toward S 2nd St
- 92 ft
- ↶ 2. Turn left onto S 2nd St
- 184 ft
- ↶ 3. Turn left onto E Front St
- 0.2 mi
- ↷ 4. Turn right onto S Main St
- 2 min (1.1 mi)
- ↶ 5. Turn left onto McKinney Pkwy
- 2 min (0.8 mi)

#### Take Christian Light Rd to Jessie Lee Ln in Hectors Creek

- 9 min (7.8 mi)
- ↶ 6. Turn left onto US-401 N
- 2.7 mi

↩ 7. Turn left onto Christian Light Rd

5.1 mi

↩ 8. Turn left onto Jessie Lee Ln

 Destination will be on the right

47 s (367 ft)

## 68 Jessie Lee Ln

Fuquay-Varina, NC 27526

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.