

VICINITY MAP



PROPERTY MAP



ENGINEER:



MODEL ENERGY

300 FAYETTEVILLE ST.  
#1430  
RALEIGH, NC 27602  
919-274-9905  
MODELENERGY.COM

P-1194

JOB TITLE:

**NEW SOLAR PV SYSTEM**  
12.6 kW DC INPUT  
11.4 kW AC EXPORT

**Barbara Wilson**  
136 Regal Crest Drive  
Fuquay Varina, NC 27526

CONSTRUCTION NOTES

- ALL WORK AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST NATIONAL, STATE, AND LOCAL CODES AND ORDINANCES
- FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS, BEST PRACTICES, AND SPECIFICATIONS
- WIRES SHALL BE RATED AND LABELED "SUNLIGHT RESISTANT" WHERE EXPOSED TO AMBIENT CONDITIONS
- THE PHOTOVOLTAIC SYSTEM SHALL NOT EXCEED 600 VOLTS OR 800 AMPS
- 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 APPLIANCES IS REQUIRED, THE APPLIANCE SHALL BE SO MARKED
- WHERE APPLICABLE, GROUNDING ELECTRODE CONDUCTOR TO BE CONTINUOUS. GROUNDING CRIMPS TO BE IRREVERSIBLE
- GROUNDING DC PHOTOVOLTAIC ARRAYS SHALL BE PROVIDED WITH DC GROUND-FAULT PROTECTION THAT MEETS THE REQUIREMENTS OF NEC SECTION 690.5. UNGROUNDED DC PHOTOVOLTAIC ARRAYS SHALL COMPLY WITH NEC SECTION 690.35
- IN ONE- AND TWO-FAMILY DWELLINGS, LIVE PARTS IN PHOTOVOLTAIC SOURCE CIRCUITS AND PHOTOVOLTAIC OUTPUT CIRCUITS OVER 150 VOLTS TO GROUND, SHALL ONLY BE ACCESSIBLE TO QUALIFIED PERSONS WHILE ENERGIZED.
- 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 BY THE INSTALLED 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.
- A PERMANENT PLAQUE OR DIRECTORY SHALL BE PROVIDED DENOTING THE LOCATIONS OF THE SERVICE DISCONNECT MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECT MEANS IF THEY ARE NOT LOCATED AT THE SAME LOCATION.
- ALL MODULE GROUND CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH NEC SECTION 690.4 (C)

ABBREVIATIONS

A	AMPERE
AC	ALTERNATING CURRENT
DC	DIRECT CURRENT
EGC	EQUIPMENT GROUNDING CONDUCTOR
EMT	ELECTRICAL METAL TUBING
GALV	GALVANIZED
GEC	GROUNDING ELECTRODE CONDUCTOR
GND	GROUND
I	CURRENT
IHP	CURRENT AT MAXIMUM POWER
ISC	SHORT-CIRCUIT CURRENT
kVA	KILOVOLT AMPERE
kW	KILOWATT
MAX	MAXIMUM
MIN	MINIMUM
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUG ONLY
NOM	NOMINAL
NTS	NOT TO SCALE
PNOM	NOMINAL POWER
PV	PHOTOVOLTAIC
PVC	POLYVINYL CHLORIDE
SN	SOLAR NOON
STC	STANDARD TEST CONDITIONS
TYP	TYPICAL
V	VOLT
VMP	VOLTAGE AT MAXIMUM POWER
Voc	OPEN-CIRCUIT VOLTAGE
W	WATT

CODE REFERENCES

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

SHEET INDEX

PV1.1 - PROJECT INFORMATION  
PV2.1 - SITE INFORMATION  
PV3.1 - STRUCTURAL INFORMATION  
PV4.1 - ELECTRICAL INFORMATION  
PV5.1 - EQUIPMENT LABELS

SITE CONDITIONS

ASCE 7-10 WIND SPEED - II7 MPH  
EXPOSURE CATEGORY - B  
RISK CATEGORY - II

LEGEND

	DISCONNECT SWITCH
	FUSE
	CIRCUIT BREAKER
	EQUIP. GROUND

CLIENT:

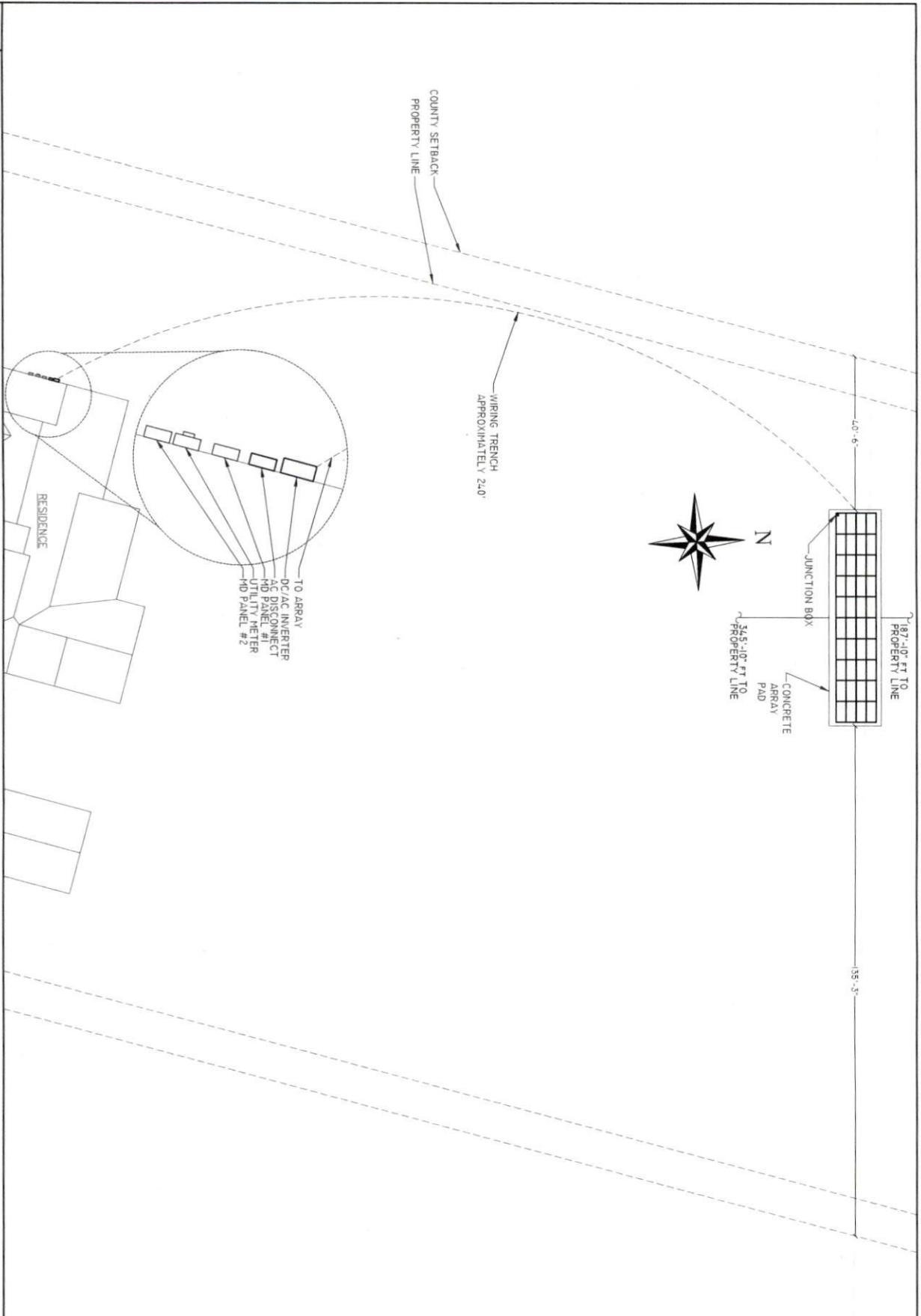


ISSUED FOR: CONSTRUCTION DATE: 06/11/19

PROJECT INFORMATION  
**PV1.1**

© 2019 MODEL ENERGY, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MODEL ENERGY, PLLC.

1 SITE & STRUCTURAL PLAN



SCALE : 1/2" = 1'-0"

	ISSUED FOR: DATE:		ENGINEER:
	CONSTRUCTION: 06/11/19		MODEL ENERGY 300 FAYETTEVILLE ST. #1430 RALEIGH, NC 27602 919.274.9905 MODELENERGY.COM P1194
PV2.1		JOB TITLE:	

© 2019 MODEL ENERGY, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MODEL ENERGY, PLLC.

ROOF FASTENERS	
MAKE	RXC
TYPE	7515 WEDGE ANCHOR
MATERIAL	304 SS
SIZE	3/8" X 3-3/4"
WEIGHT	0.1 LBS.
MAXIMUM PULL-OUT FORCE	2,880 LBS.
SAFETY FACTOR	3
DESIGN PULL-OUT FORCE	960 LBS.

NOTES:

- EMBED ANCHOR BETWEEN 2.5 AND 3.0 INCHES INTO THE CONCRETE

GROUND MOUNTS	
MAKE	UNIRACK
MODEL	L-FOOT
MATERIAL	ALUMINUM
WEIGHT	0.25 LBS.
FASTENERS	1 PER MOUNT

MOUNTING RAILS	
MAKE	UNIRACK
MODEL	SM STANDARD
MATERIAL	ALUMINUM
WEIGHT	1.25 LBS./SQFT.
SPACING	38 IN.

ARRAY LOADING SUMMARY	
DEAD LOAD	
MOUNTING PAD	52.0 LBS./SQFT.
PV ARRAY	2.4 LBS./SQFT.
TOTAL	54.4 LBS./SQFT.
WIND LOAD	
UPLIFT	-33.8 LBS./SQFT.
DOWNWARD	21.5 LBS./SQFT.
FASTENER LOAD:	
UPLIFT	-4.09 LBS.
DOWNWARD	25.8 LBS.

PV MODULES	
MAKE	Q CELL
MODEL	Q PEAK DUO-G5 315
WIDTH	39.4"
LENGTH	66.3"
THICKNESS	1.26"
WEIGHT	40 LBS.

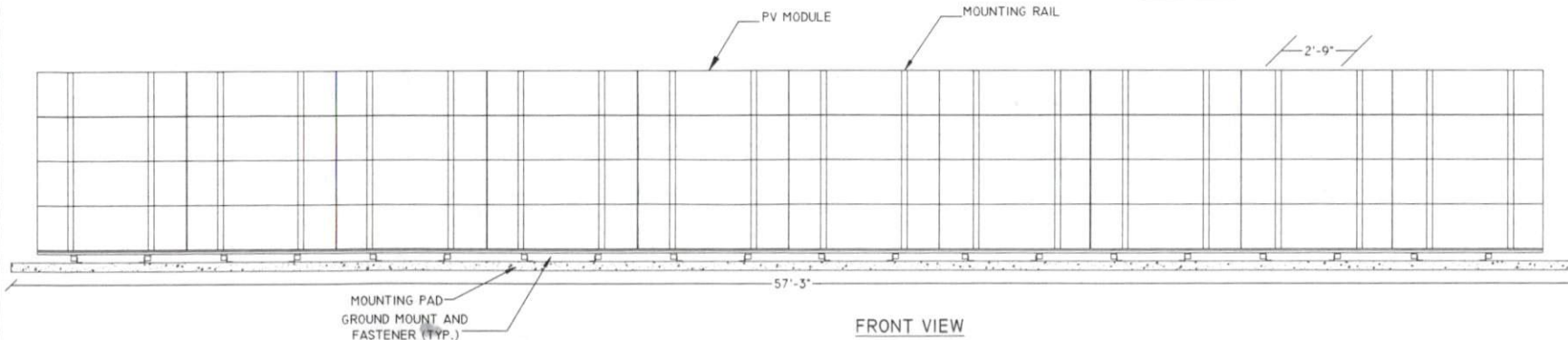
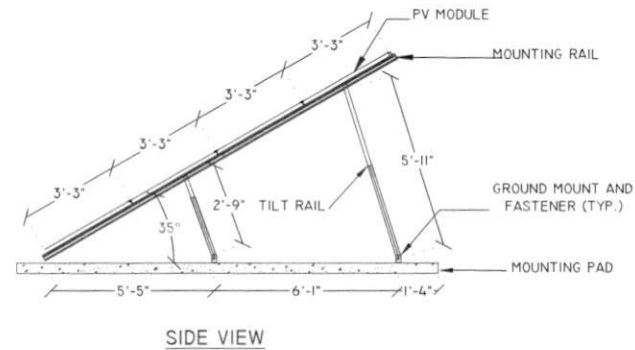
ARRAY SUMMARY	
# MODULES	40
# MOUNTS	60
RAIL LENGTH	271 FT.
ARRAY AREA	727 SQFT.
ARRAY WEIGHT	1990 LBS.
AZIMUTH @ SN	182°
TILT ANGLE	35°

GROUND MOUNT ARRAY	
TYPE	POURED PAD
MATERIAL	CONCRETE
LENGTH	57'-3"
WIDTH	14"
DEPTH	4"
STRENGTH	2,000 PSI
DENSITY	150 LBS./CU FT.
WEIGHT	40,000 LBS.

STATEMENT OF STRUCTURAL COMPLIANCE

THE EXISTING ROOF STRUCTURE HAS BEEN DESIGNED TO SUPPORT THE ADDITIONAL LOADS OF THE PURPOSED 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.

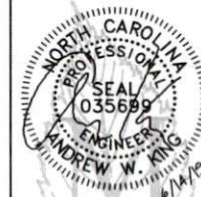
*Andrew W. King*



1 PV SYSTEM ELECTRICAL WIRING SCHEMATIC

SCALE : NTS

ENGINEER:



MODEL ENERGY

300 FAYETTEVILLE ST.  
#1430  
RALEIGH, NC 27602  
919-274-9905  
MODELENERGY.COM

P-1194

JOB TITLE:

NEW SOLAR PV SYSTEM  
12.6 KW DC INPUT  
11.4 KW AC EXPORT

Barbara Wilson  
136 Regal Crest Drive  
Fuquay Varina, NC 27526

CLIENT:



ISSUED FOR: CONSTRUCTION DATE: 06/11/19

STRUCTURAL INFORMATION

PV3.1

© 2019 MODEL ENERGY, LLC. MODEL ENERGY RESERVES ITS COMPANY LAW, COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MODEL ENERGY, LLC.

PV MODULES	
MAKE	HANWHA Q-CELL
MODEL	Q PEAK DUO BLK-G5 315
TECHNOLOGY	MONO-CRYST
NOM. POWER (P <sub>NOM</sub> )	315 WATTS
NOM. VOLT. (V <sub>MP</sub> )	33.46 VOLTS
O.C. VOLT. (V <sub>OC</sub> )	40.29 VOLTS
MAX. SYS. VOLT.	1000 V (UL)
TEMP. COEF. (V <sub>TC</sub> )	-0.28 %/°C
NOM. CURR. (I <sub>MP</sub> )	9.41 AMPS
S.C. CURR. (I <sub>SC</sub> )	9.89 AMPS
MAX. SERIES FUSE	20 AMPS

MODULE OPTIMIZER	
MAKE	SOLAREEDGE
MODEL	P320
DC INPUT:	
NOM. POWER	320 WATTS
VOLT. RANGE	8-48
MAX. CURR.	11.0 AMPS
DC OUTPUT:	
NOM. POWER	320 WATTS
MAX. VOLT.	60 VOLTS
MAX. CURR.	15 AMPS
MIN. STRING	8 OPTIMIZERS
MAX. STRING	25 OPTIMIZERS
MAX. POWER	5700 WATTS

JUNCTION BOX	
MAKE	SOLADECK
MODEL	0783-3R
PRO. RATING	NEMA 3R
VOLT. RATING	600 VOLTS
AMP RATING	120 AMPS
UL LISTING	UL 50

CONDUCTOR SCHEDULE													
TAG	CURRENT CARRYING CONDUCTORS				GROUNDING CONDUCTORS				CONDUIT/RACEWAY				NOTES
	QTY.	SIZE	MATERIAL	INSULATION	QTY.	SIZE	MATERIAL	INSULATION	QTY.	SIZE	MATERIAL	LOCATION	
C1	4	10 AWG	COPPER	PV WIRE	1	6 AWG	COPPER	PV WIRE	-	-	-	FREE AIR	1
C2	4	10 AWG	COPPER	THWN-2	1	10 AWG	COPPER	THWN-2	1	3/4"	PVC	BURIED	2.4
C3	3	6 AWG	COPPER	THWN	1	10 AWG	COPPER	THWN	1	3/4"	EMT	EXT	2.4
XC	-	-	-	-	-	-	-	-	-	-	-	-	3

NOTES:

1. MANUFACTURER PROVIDED, UL LISTED WIRING HARNESS FOR USE ON EXPOSED ROOFS
2. CONDUIT SIZE SHOWN IS CODE MINIMUM. LARGER SIZES ARE ALLOWED.
3. EXISTING CONDUCTORS, FIELD VERIFY
4. EQUIPMENT TERMINAL RATING SHALL BE A MINIMUM OF 75°C AT BOTH END OF CONDUCTOR

DC/AC INVERTER	
MAKE	SOLAREEDGE
MODEL	SE11400H-US
TECHNOLOGY	TRANS-LESS
DC INPUT:	
MAX. POWER	17650 WATTS
MAX. VOLT.	480 VOLTS
NOM. VOLT.	380 VOLTS
MAX. CURRENT	30.5 AMPS
MAX. SCC	4.5 AMPS
STRINGS INPUTS	3 STRINGS
AC OUTPUT:	
RATED POWER	11400 WATTS
MAX. POWER	11400 WATTS
NOM. VOLT.	240 VOLTS
MAX. CURR.	47.5 AMPS
GFP (Y/N)	YES
RFP (Y/N)	YES
GFCI (Y/N)	YES
AFCI (Y/N)	YES
DC DISC. (Y/N)	YES
RAPID SHUTDOWN	AUTOMATIC
FUSE RATING	15 AMPS
PROTECT. RATING	NEMA 4X

AC DISCONNECT	
MAKE	GENERIC
MODEL	N/A
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
AMP RATING	60 AMPS
UL LIST. (Y/N)	YES
FUSED (Y/N)	NO
FUSE RATING	N/A

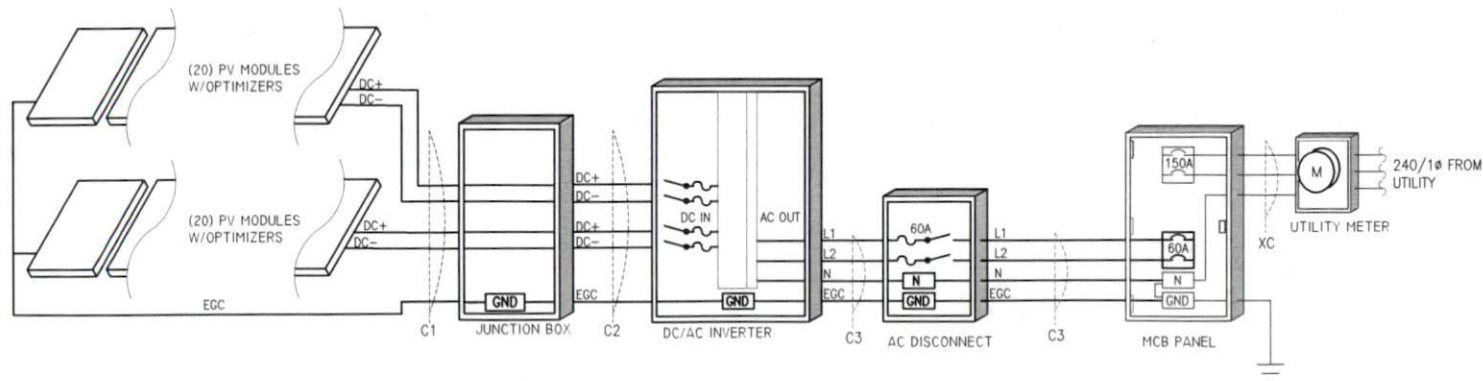
NOTES:

- LOAD-BREAK RATED
- VISIBLE OPEN
- LOCKABLE IN OPEN POSITION
- INSTALL ADJACENT TO METER
- DISCONNECT TO BE READILY ACCESSIBLE TO UTILITY COMPANY PERSONNEL AT ALL TIMES

MCB PANEL (EXISTING)	
MAKE	SIEMENS
MODEL	W0816L1200CT
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
BUS RATING	200 AMPS
UL LIST. (Y/N)	YES
MAIN BREAKER (Y/N)	YES
BREAKER RATING	150 AMPS

NOTES:

- BACK-FEED SOLAR OUTPUT VIA 60A BREAKER AT THE OPPOSITE END OF THE BUS BAR FROM MAIN BREAKER



ENGINEER:



MODEL ENERGY

300 FAYETTEVILLE ST.  
#1430  
RALEIGH, NC 27602  
919-274-9905  
MODELENERGY.COM

P-1194

JOB TITLE:

NEW SOLAR PV SYSTEM  
12.6 kW DC INPUT  
11.4 kW AC EXPORT  
Barbara Wilson  
136 Regal Crest Drive  
Fuquay Varina, NC 27526

CLIENT:



ISSUED FOR: CONSTRUCTION DATE: 06/11/19

ELECTRICAL INFORMATION

PV4.1

© 2019 MODEL ENERGY, PLLC. EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY, WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MODEL ENERGY, PLLC.

**⚠ WARNING**  
**ELECTRIC SHOCK HAZARD**  
 TERMINALS ON THE LINE AND  
 LOAD SIDES MAY BE ENERGIZED  
 IN THE OPEN POSITION

NEC 690.13 (B)  
 PLACE ON PV SYSTEM DISCONNECTING MEANS.

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

NEC 705.12 (B)(2)(3)(b)  
 PLACE ADJACENT TO BACK-FED BREAKER

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

NEC 705.12 (B)(3)  
 PLACE ON ALL EQUIPMENT THAT IS SUPPLIED  
 BY BOTH POWER SOURCES

**RAPID SHUTDOWN  
 SWITCH FOR  
 SOLAR PV SYSTEM**

NEC 690.56 (C)(3)  
 PLACE ON RAPID SHUTDOWN SWITCH OR EQUIPMENT  
 WITH INTEGRATED RAPID SHUTDOWN \*REFLECTIVE\*

**PHOTOVOLTAIC POWER SOURCE**  
 OPERATING AC VOLTAGE 240 V  
 MAXIMUM OPERATING  
 AC OUTPUT CURRENT 47.5 A

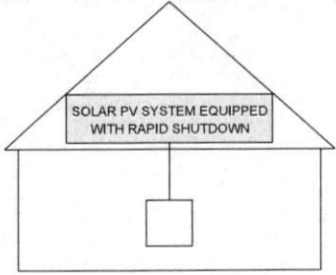
NEC 690.54  
 PLACE ON INTERCONNECTION  
 DISCONNECTING MEANS

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

NEC 690.53  
 PLACE ON ALL DC DISCONNECTING MEANS

**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



NEC 690.56 (C)(1)(a)  
 PLACE WITHIN 3FT 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  
 EVERY 10' AND 1' FROM BENDS AND PENETRATIONS,  
 ADJACENT TO THE MAIN SERVICE DISCONNECT \*REFLECTIVE\*

**PV SYSTEM  
 DISCONNECT**

NEC 690.13 (B)  
 PLACE ON PV SYSTEM DISCONNECTING MEANS.

EQUIPMENT LABEL NOTES	
1.	LABELS SHOWN ARE THEIR ACTUAL REQUIRED SIZE.
2.	LABEL MATERIAL SHALL BE SUITABLE FOR THE EQUIPMENT ENVIRONMENT.
3.	CONDUIT SHALL BE MARKED WITH REQUIRED LABEL EVERY 10 FEET.

ENGINEER:




MODEL ENERGY  
 300 FAYETTEVILLE ST.  
 #1430  
 RALEIGH, NC 27602  
 919-274-9905  
 MODELENERGY.COM  
 P-1194

JOB TITLE:

NEW SOLAR PV SYSTEM  
 12.6 kW DC INPUT  
 11.4 kW AC EXPORT

Barbara Wilson  
 136 Regal Crest Drive  
 Fuquay Varina, NC 27526

CLIENT:



ISSUED FOR:	DATE:
CONSTRUCTION	06/11/19
EQUIPMENT LABELS	
<b>PV5.1</b>	

© 2019 MODEL ENERGY, LLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MODEL ENERGY, PLLC.

powered by  
**Q.ANTUM DUO**

# Q.PEAK DUO BLK-G5 305-320

## Q.ANTUM SOLAR MODULE

The new Q.PEAK DUO BLK-G5 solar module from Q CELLS impresses with its outstanding visual appearance and particularly high performance on a small surface thanks to the innovative Q.ANTUM DUO Technology. Q.ANTUM's world-record-holding cell concept has now been combined with state-of-the-art circuitry half cells and a six-busbar design, thus achieving outstanding performance under real conditions — both with low-intensity solar radiation as well as on hot, clear summer days.



### Q.ANTUM TECHNOLOGY: LOW LEVELISED COST OF ELECTRICITY

Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.3%.



### INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



### ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology<sup>1</sup>, Hot-Spot Protect and Traceable Quality Tra.Q™.



### EXTREME WEATHER RATING

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



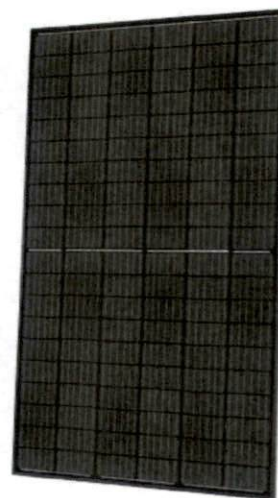
### A RELIABLE INVESTMENT

Inclusive 12-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.



www.VDEInfo.com  
ID: 40032587



### THE IDEAL SOLUTION FOR:



Rooftop arrays on residential buildings

Engineered in **Germany**

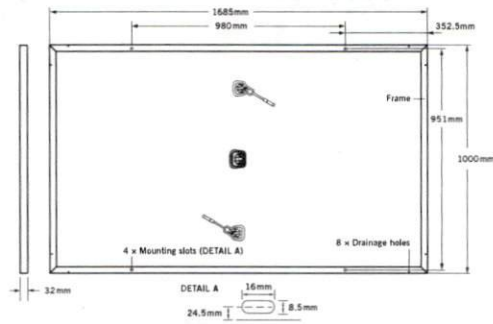
# Q CELLS

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

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

## MECHANICAL SPECIFICATION

Format	1685 mm × 1000 mm × 32 mm (including frame)
Weight	18.7 kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 20 monocrystalline Q.ANTUM solar half cells
Junction box	70-85 mm × 50-70 mm × 13-21 mm Protection class IP67, with bypass diodes
Cable	4 mm <sup>2</sup> Solar cable; (+) 1100 mm, (-) 1100 mm
Connector	Multi-Contact MC4, IP65 and IP68



## ELECTRICAL CHARACTERISTICS

POWER CLASS		305	310	315	320	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC <sup>1</sup> (POWER TOLERANCE +5W / -0W)						
Minimum	Power at MPP <sup>2</sup>	$P_{MPP}$ [W]	305	310	315	320
	Short Circuit Current*	$I_{SC}$ [A]	9.78	9.83	9.89	9.94
	Open Circuit Voltage*	$V_{OC}$ [V]	39.75	40.02	40.29	40.56
	Current at MPP*	$I_{MPP}$ [A]	9.31	9.36	9.41	9.47
	Voltage at MPP*	$V_{MPP}$ [V]	32.78	33.12	33.46	33.80
	Efficiency <sup>2</sup>	$\eta$ [%]	≥ 18.1	≥ 18.4	≥ 18.7	≥ 19.0
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NOC <sup>3</sup>						
Minimum	Power at MPP <sup>2</sup>	$P_{MPP}$ [W]	226.0	229.7	233.5	237.2
	Short Circuit Current*	$I_{SC}$ [A]	7.88	7.93	7.97	8.02
	Open Circuit Voltage*	$V_{OC}$ [V]	37.18	37.43	37.69	37.94
	Current at MPP*	$I_{MPP}$ [A]	7.32	7.36	7.41	7.45
	Voltage at MPP*	$V_{MPP}$ [V]	30.88	31.20	31.52	31.84

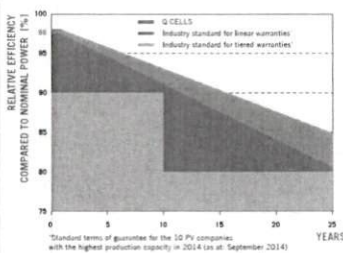
<sup>1</sup>1000 W/m<sup>2</sup>, 25 °C, spectrum AM 1.5G

<sup>2</sup>Measurement tolerances STC ± 3%; NOC ± 5%

<sup>3</sup>800 W/m<sup>2</sup>, NOCT, spectrum AM 1.5G

\* typical values, actual values may differ

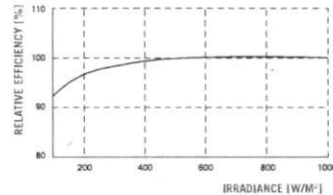
## Q CELLS PERFORMANCE WARRANTY



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 organisation 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]	-0.28
Temperature Coefficient of $P_{MPP}$	$\gamma$ [%/K]	-0.37	Normal Operating Cell Temperature	NOCT [°C]	45

## PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage	$V_{SYS}$ [V]	1000	Safety Class	II
Maximum Reverse Current	$I_R$ [A]	20	Fire Rating	C
Push/Pull Load (Test-load in accordance with IEC 61215)	[Pa]	5400/4000	Permitted Module Temperature On Continuous Duty	-40 °C up to +85 °C

## QUALIFICATIONS AND CERTIFICATES

VDE Quality Tested, IEC 61215 (Ed. 2); IEC 61730 (Ed. 1), Application class A  
This data sheet complies with DIN EN 50380.



## PARTNER

**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 GmbH

Sonnenallee 17-21, 06766 Bitterfeld-Wolfen, Germany | TEL +49 (0)3494 66 99-23444 | FAX +49 (0)3494 66 99-23000 | EMAIL sales@q-cells.com | WEB www.q-cells.com

Specifications subject to technical changes © Hanwha Q CELLS Q.PEAK DUO BLK-65\_305-320\_2017-07\_Rev01\_EN

Engineered in Germany

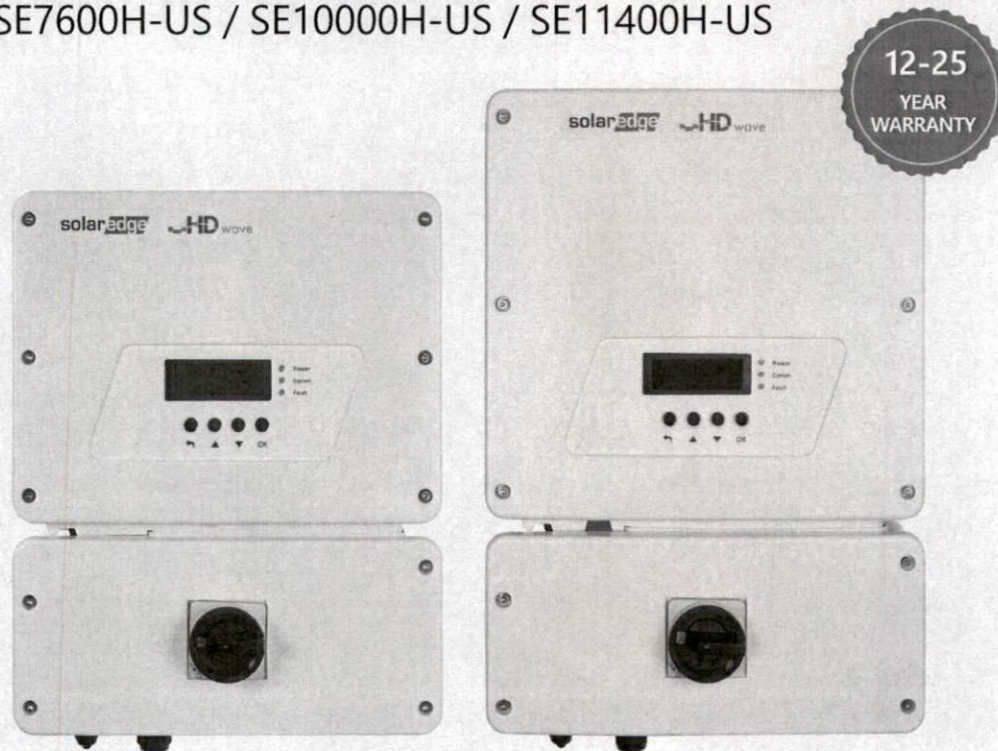
**Q CELLS**

# Single Phase Inverter with HD-Wave Technology

for North America

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

INVERTERS



## Optimized installation with HD-Wave technology

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



# / 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	
<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
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	

<b>ADDITIONAL FEATURES</b>								
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)							
Revenue Grade Data, ANSI C12.20	Optional <sup>3)</sup>							
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	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 <sup>4)</sup> (-40°F / -40°C option) <sup>5)</sup>							°F / °C	
Protection Rating	NEMA 4X (Inverter with Safety Switch)								

<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

<sup>3)</sup> Revenue grade inverter P/N: SExxxxH-US000NNC2

<sup>4)</sup> For power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf>

<sup>5)</sup> -40 version P/N: SExxxxH-US000NNU4