Building Codes: 2017 NEC, 2018 IBC, 2018 IFC, 2018 IRC and AHJ Amendments



ASWELL, PAMELA B PV SYSTEM 239 EXECUTIVE DRIVE . LILLINGTON, NC, 27546 APN:

JURISDICTION: HARNETT COUNTY (NC) GENERAL INFORMATION

SYSTEM SIZE: 12.400 kW-DC-STC 12.000 kW-AC

ROOF PITCHED: 38 DEGREES

INVERTER: (2) SOLAREDGE SE6000H-US W/ S440 OPTIMIZERS

MODULES: (31) Q PEAK DUO BLK ML G10+ 400W STRINGS: INV 1: (2) x 8 MODULE SERIES STRINGS

INV 2: (1) x 7, (1) x 8 MODULE SERIES STRINGS

ELECTRICAL SERVICE RATING: 200A PV SYSTEM OVERCURRENT RATING: 70A

PV SYSTEM DISCONNECT SWITCH: EATON DG223NRB (100A / 2P)

ROOF TYPE: COMP SHINGLE

ROOF FRAMING: MANUFACTURED/ENGINEERED TRUSS

RACKING: K2 SYSTEMS

ATTACHMENT METHOD: MIN. 5/16" x 3 ½ LAG SCREWS EA. STANDOFF

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VICINITY MAP

SCALE: NTS







NOTES

EQUIPMENT LOCATION

- 1. ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26.
- 2. WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC690.31(A),(C) AND NEC TABLES 310.15(B)(2)(A) AND 310.15(B)(3)(C).
- 3. JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO NEC 690.34.
- 4. ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.
- ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.
- 6. ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.

WIRING & CONDUIT NOTES

- ALL CONDUITS AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE.
 CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
- 2. CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.
- DC WIRING LIMITED TO MODULE FOOTPRINT. MICRO INVERTER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY WITH SUITABLE WIRING CLIPS.
- 4. AC CONDUCTORS COLORED OR MARKED AS FOLLOWS: PHASE A OR L1- BLACK, PHASE B OR L-2 RED, OR OTHER CONVENTION IF THREE PHASE, PHASE C OR L3-BLUE, YELLOW, ORANGE, OR OTHER CONVENTION NEUTRAL- WHITE OR GREY IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH THE HIGHER VOLTAGE TO BE MARKED ORANGE NEC 110.15.

GENERAL NOTES

- 1. MODULES ARE LISTED UNDER UL 1703 AND CONFORM TO THE STANDARDS.
- 2. INVERTERS ARE LISTED UNDER UL 1741 AND CONFORM TO THE STANDARDS
- 3. DRAWINGS ARE DIAGRAMMATIC, INDICATING GENERAL ARRANGEMENT OF THE PV SYSTEM AND THE ACTUAL SITE CONDITION MIGHT VARY
- 4. WORKING CLEARANCES AROUND THE NEW PV ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.
- ALL GROUND WIRING CONNECTED TO THE MAIN SERVICE GROUNDING IN MAIN SERVICE PANEL/SERVICE COMPONENT.
- 6. ALL CONDUCTORS SHALL BE 600V, 75° C STANDARD COPPER UNLESS OTHERWISE NOTED.
- WHEN REQUIRED, A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
- 8. THE SYSTEM WILL NOT BE INTERCONNECTED BY THE CONTRACTOR UNTIL APPROVAL FROM THE LOCAL JURISDICTION AND/OR THE UTILITY.
- ROOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREES, WIRES OR SIGNS.
- 10. PV ARRAY COMBINER/JUNCTION BOX PROVIDES TRANSITION FROM ARRAY WIRING TO CONDUIT WIRING.



ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE, LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 TSP129199 (31) Q PEAK DUO BLK ML G10+ 400W
(2) SOLAREDGE SE6000H-US
12.400 kW DC SYSTEM SIZE
12.000 kW AC SYSTEM SIZE

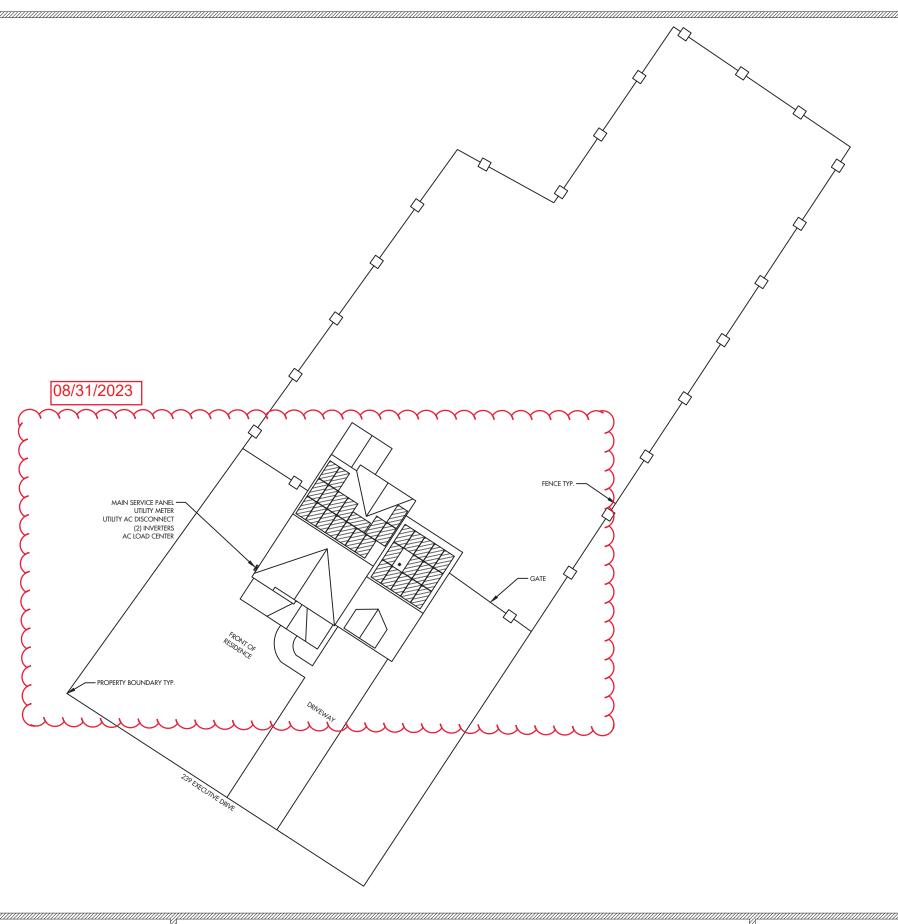
DATE: 8/31/2023

REV:A

DRAWN BY: JS

COVER PAGE

PV 1





PROJECT NOTES

- 1. UTILITY SHALL HAVE 24HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC COMPONENTS LOCATED AT SES EQUIPMENT
- 2. NO LOCKED GATES, DOGS, ETC SHALL IMPEDE ACCESS TO SES EQUIPMENT
- 3. WORKSPACE IN FRONT OF AC ELECTRICAL SYSTEM COMPONENTS SHALL BE IN ACCORDANCE WITH CENTRAL ELECTRIC MEMBERSHIP CORPORATION AND NEC REQUIREMENTS.







ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE , LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 TSP129199 (31) Q PEAK DUO BLK ML G10+ 400W
(2) SOLAREDGE SE6000H-US
12.400 kW DC SYSTEM SIZE
12.000 kW AC SYSTEM SIZE

SCALE: 9/256" = 1'-0" DATE: 8/31/2023

REV: A DRAWN BY: JS

SEAL:

SITE PLAN

ARRAY INFORMATION

AR-01

QUANTITY: 17

MOUNTING TYPE: FLUSH

ARRAY TILT: 38° AZIMUTH: 33°

ATTACHMENT SPACING: 4' STAGGERED

ROOF TYPE: COMP SHINGLE

AR-02

QUANTITY: 14

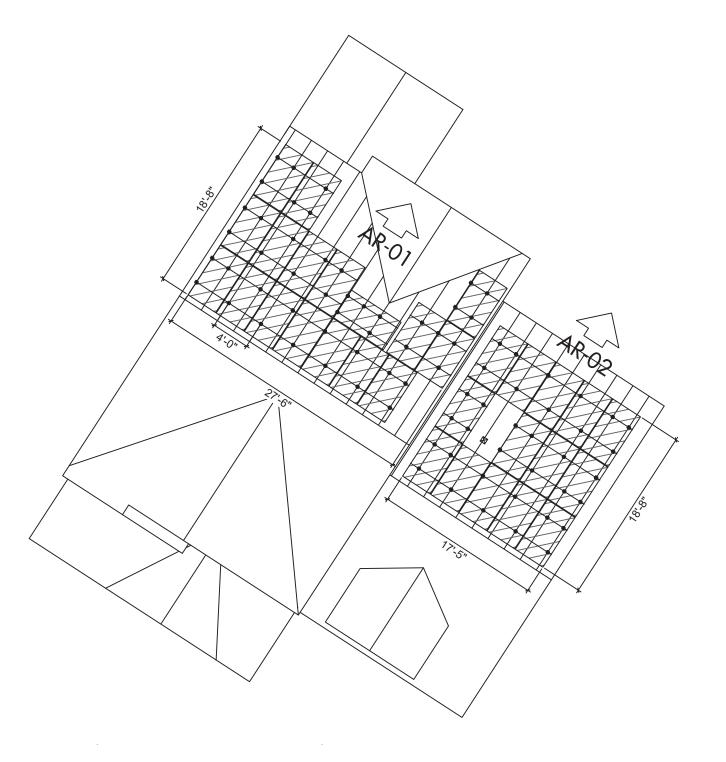
MOUNTING TYPE: FLUSH

ARRAY TILT: 38° AZIMUTH: 33°

ATTACHMENT SPACING: 4' STAGGERED

ROOF TYPE: COMP SHINGLE





NOTES

- ROOF VENTS, SKYLIGHTS, WILL NOT BE COVERED UPON PV INSTALLATION
- TOTAL ROOF AREA = 3228 SQ-FT
- TOTAL ARRAY AREA = 654.75 SQ-FT
- ARRAY COVERAGE = 20.28%



DRAWN BY: JS

MODULE & RACKING INFORMATION MODULE: Q PEAK DUO BLK ML G10+ 400W MODULE WEIGHT: 48.50 LBS MODULE DIMENSIONS: 74"x 41.1" x 1.5"

RACKING/RAIL: K2 SYSTEMS / K2 SYSTEMS

ROOF & FRAMING INFORMATION MATERIAL: COMP SHINGLE RAFTER/TRUSS SIZE: 2" x 4" RAFTER/TRUSS SPACING: 2'

ARRAY 01: 17 MODULES

UPLIFT = 10771.63 LBS.

POINT LOAD = 21.56 LBS. PER MOUNTING POINT

PULLOUT STRENGTH = 21525.00 LBS.

DISTRIBUTED LOAD = 2.46 PSF

MODULE & RACKING WEIGHT = 884.00 LBS

ARRAY 02: 14 MODULES

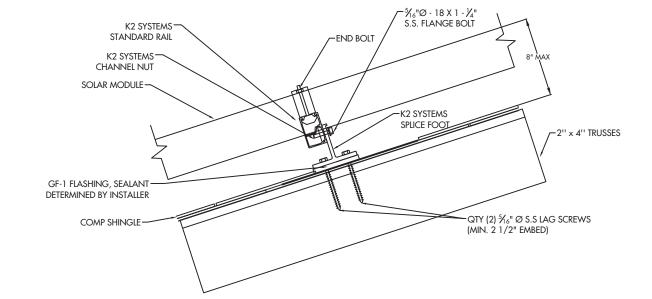
UPLIFT = 8870.75 LBS.

POINT LOAD = 21.41 LBS. PER MOUNTING POINT

PULLOUT STRENGTH = 17850.00 LBS.

DISTRIBUTED LOAD = 2.46 PSF

MODULE & RACKING WEIGHT = 728.00 LBS





ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE, LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 TSP129199

(31) Q PEAK DUO BLK ML G10+ 400W (2) SOLAREDGE SE6000H-US 12.400 kW DC SYSTEM SIZE 12.000 kW AC SYSTEM SIZE

DATE: 8/31/2023

REV:A

DRAWN BY: JS

DETAILS

PV MODULE

Q PEAK DUO BLK ML G10+ 400W

W = 400 W SC = 11.14 ADC

ISC = 11.14 ADC VOC = 45.30 VDCIMP = 10.77 ADC

VMP = 37.13 VDCTVOC = -0.270% / °C

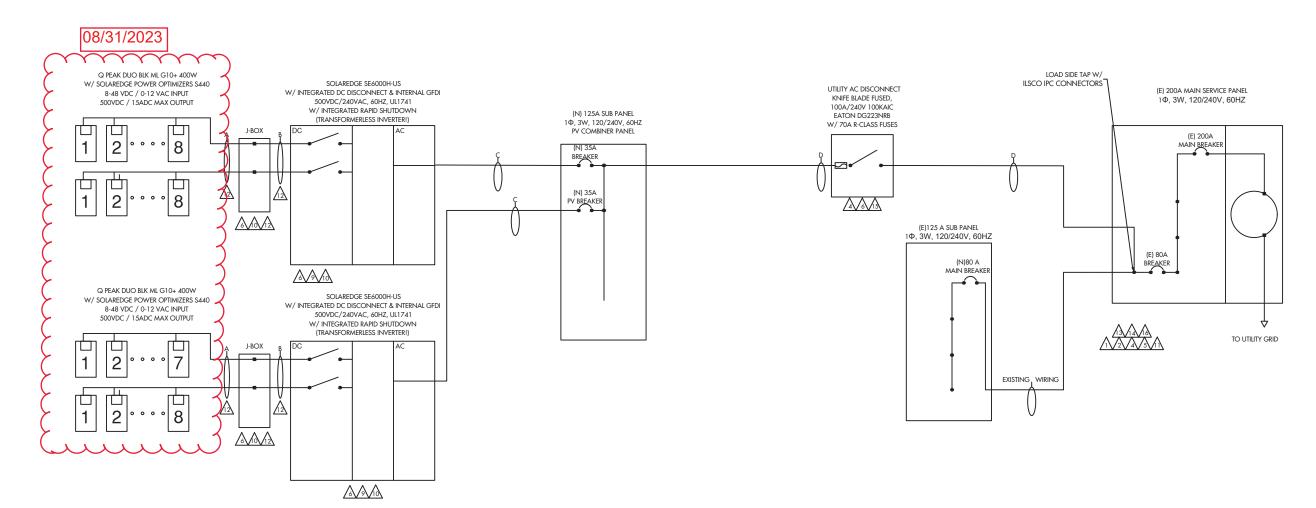
WIRE SCHEDULE

A - (4) #10 AWG-CU PV WIRE (HR)
(1) #10 AWG-CU BARE COPPER WIRE (GND)
IN FREE AIR

B - (4) #10 AWG-CU THWN-2 WIRE (HR) (1) #10 AWG-CU THWN-2 WIRE (GND) 3/4" EMT C - (3) #8 AWG-CU THWN-2 WIRE (HR) (1) #8 AWG-CU THWN-2 WIRE (GND)

D - (3) #4 AWG-CU THWN-2 WIRE (HR)
(1) #8 AWG-CU THWN-2 WIRE (GND)
1'' EMT

3/4" EMT



WIRE SIZE CALCULATIONS

TEMP CORRECTION FACTOR: 0.87 (43° AMBIENT)
ROOFTOP TEMP CORRECTION FACTOR: 1.00 (43° ADJUSTED)
(2" ABOVE ROOFTOP / 0° TEMP ADDERS - AS OCCURS)
(TEMP DATA TAKEN FROM ASHRAE 2% AVG HIGH TEMP)

DC WIRING

CONDUIT FILL FACTOR = 0.80

OPTIMIZER MAX. CURRENT = 18.75A DC (15A X 1.25) #10- AWG CU. AMPACITY = 47.85A (55A X 0.87)

FREE AIR

#10 - AWG CU. AMPACITY = ROOFTOP CONDUIT

27.84A (40A X 0.87 X 0.80)

AC WIRING: INVERTER 1 (SOLAREDGE SE6000H-US)

CONDUIT FILL FACTOR = 1 (3) CONDUCTORS

MAX. INVERTER CURRENT = 25A (PER INVERTER SPECS)

MIN. INVERTER OCP = 31.25A (25A X 1.25) INVERTER OCP = 35A

#8 - AWG CU AMPACITY = 47.85A (55A X 1 X 0.87)

AC WIRING: INVERTER 2 (SOLAREDGE SE6000H-US)

CONDUIT FILL FACTOR = 1 (3) CONDUCTORS

MAX. INVERTER CURRENT = 25A (PER INVERTER SPECS)

MIN. INVERTER OCP = 31.25A (25A X 1.25) INVERTER OCP = 35A

#8 - AWG CU AMPACITY = 47.85A (55A X 1 X 0.87)

AC WIRING: INVERTER 1 & 2 COMBINED

MAX. INVERTER 1 MAX INVERTER CURRENT = 25A

MAX. INVERTER 2 MAX INVERTER CURRENT = 25A

MAX. INVERTER 1 & 2 COMBINED CURRENT = 50A

MIN. COMBINED INVERTER OCP = $(25A + 25A) \times 1.25 = 62.5$

INVERTER OCP COMBINED = 70A

#4 - AWG CU AMPACITY =82.65A (95A X 1 X 0.87)



ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE, LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 TSP129199 (31) Q PEAK DUO BLK ML G10+ 400W
(2) SOLAREDGE SE6000H-US
12.400 kW DC SYSTEM SIZE
12.000 kW AC SYSTEM SIZE

DATE: 8/31/2023

REV:A

DRAWN BY: JS

ONE LINE

PV 5

PV MODULE

Q PEAK DUO BLK ML G10+ 400W

400 W

ISC 11.14 ADC VOC 45.30 VDC

IMP 10.77 ADC VMP 37.13 VDC

TVOC = -0.270% / °C

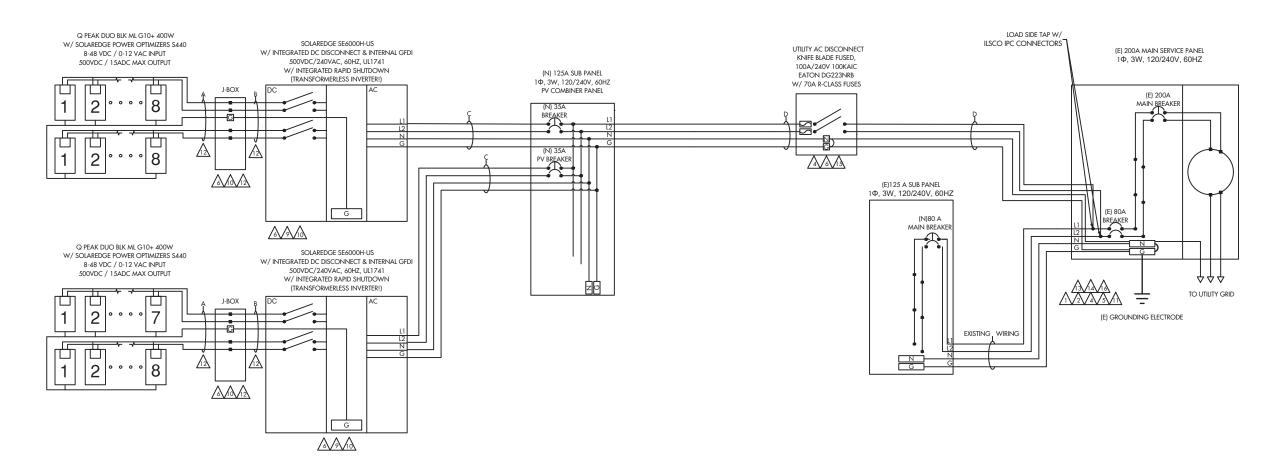
WIRE SCHEDULE

A - (4) #10 AWG-CU PV WIRE (HR) (1) #10 AWG-CU BARE COPPER WIRE (GND) IN FREE AIR

B - (4) #10 AWG-CU THWN-2 WIRE (HR) (1) #10 AWG-CU THWN-2 WIRE (GND) 3/4" EMT

C - (3) #8 AWG-CU THWN-2 WIRE (HR) (1) #8 AWG-CU THWN-2 WIRE (GND) 3/4" EMT

D - (3) #4 AWG-CU THWN-2 WIRE (HR) (1) #8 AWG-CU THWN-2 WIRE (GND) 1" EMT



WIRE SIZE CALCULATIONS

TEMP CORRECTION FACTOR: 0.87 (43° AMBIENT) ROOFTOP TEMP CORRECTION FACTOR: 1.00 (43° ADJUSTED) (2" ABOVE ROOFTOP / 0° TEMP ADDERS - AS OCCURS) (TEMP DATA TAKEN FROM ASHRAE 2% AVG HIGH TEMP)

DC WIRING

CONDUIT FILL FACTOR 0.80

OPTIMIZER MAX. CURRENT = 18.75A DC (15A X 1.25) #10- AWG CU. AMPACITY = 47.85A (55A X 0.87)

FREE AIR

#10 - AWG CU. AMPACITY =

27.84A (40A X 0.87 X 0.80) **ROOFTOP CONDUIT**

AC WIRING: INVERTER 1 (SOLAREDGE SE6000H-US)

CONDUIT FILL FACTOR (3) CONDUCTORS

MAX. INVERTER CURRENT = 25A (PER INVERTER SPECS) MIN. INVERTER OCP 31.25A (25A X 1.25)

INVERTER OCP 35A

#8 - AWG CU AMPACITY 47.85A (55A X 1 X 0.87)

AC WIRING: INVERTER 2 (SOLAREDGE SE6000H-US)

1 (3) CONDUCTORS CONDUIT FILL FACTOR 25A (PER INVERTER SPECS) MAX. INVERTER CURRENT =

MIN. INVERTER OCP 31.25A (25A X 1.25)

INVERTER OCP 35A

47.85A (55A X 1 X 0.87) #8 - AWG CU AMPACITY

AC WIRING: INVERTER 1 & 2 COMBINED

MAX. INVERTER 1 MAX INVERTER CURRENT = 25AMAX. INVERTER 2 MAX INVERTER CURRENT = 25A= 50AMAX. INVERTER 1& 2 COMBINED CURRENT

MIN. COMBINED INVERTER OCP = $(25A + 25A) \times 1.25 = 62.5$

INVERTER OCP COMBINED = 70A

#4 - AWG CU AMPACITY =82.65A (95A X 1 X 0.87)



ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE, LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 TSP129199

(31) Q PEAK DUO BLK ML G10+ 400W (2) SOLAREDGE SE6000H-US 12.400 kW DC SYSTEM SIZE 12.000 kW AC SYSTEM SIZE

DATE: 8/31/2023

REV:A DRAWN BY: JS THREE LINE

PV 6



A CAUTION PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LOCATION: BACKFED BREAKER CODE REF: NEC 705.12(4)



DO NOT RELOCATE THIS OVERCURRENT DEVICE

LOCATION: BACKFED BREAKER

CODE REF: 2017 NEC 705.12(2)(3)(b)



<u>/2</u>\

WARNING

A GENERATION SCOURCE IS CONNECTED TO THE SUPPLY HE PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH

LOCATION: (IF APPLICABLE) SUPPLY SIDE TAP

AC DISCONNECT(S)

CODE REF: UTILITY



PHOTOVOLTAIC AC DISCONNECT

ATED AC OPERATING CURRENT

NOMINAL OPERATING AC VOLTAGE:

240VAC

CODE REF: NEC 690.54

RAPID SHUTDOWN **SWITCH FOR SOLAR PV SYSTEM**

LOCATION: MAIN PANEL (EXTERIOR)

LOCATION: MAIN PANEL

CODE REF: NEC 690.56(C)(3)



 \nearrow

<u>/5\</u>

WARNING

ELECTRICAL SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LOCATION: COMBINER PANEL

AC DISCONNECT JUNCTION BOX CODE REF: NEC 690.13(B)



PHOTOVOLTAIC

SYSTEM METER

LOCATION: DEDICATED KWH METER CODE REF: NEC 690.4(B) UTILITY



MARNING

PHOTOVOLTAIC SYSTEM **COMBINER PANEL**

DO NOT ADD LOADS



PHOTOVOLTAIC SYSTEM DC DISCONNECT MAXIMUM VOLTAGE

MAXIMUM CIRCUIT CURRENT MAX. RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-TO-DC- CONVERTER (IF INSTALLED)

LOCATION: AC COMBINER PANEL

CODE REF: NEC 690.13(B)

CODE REF: UTILITY

LOCATION: DC DISCONNECT, COMBINE BOX

CODE REF: NEC 690.13(B)

LOCATION: DC DISCONNECT



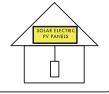
ELECTRICAL SHOCK HAZARD TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED /10\ IN THE OPEN POSITION

> DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT



SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY.



LOCATION: MAIN SERVICE (OUTSIDE COVER) CODE REF: NEC 690.12 NEC 690.56(C)(1)(a)

YELLOW STICKER

WARNING PHOTOVOLTAIC POWER SOURCE

LOCATION: DC CONDUIT JUNCTION BOX NO MORE THAN 10FT CODE REF: NEC 690.31(G)(3) NEC 690 31/G)(4) REFLECTIVE AND WEATHER RESISTANT

LABEL REQUIRES CAPITALIZED LETTERS WITH A MINIMUM HEIGHT OF 3/8 INCH, WHITE LETTERS ON RED BACKGROUND LABELS SHALL BE PLACED ON INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES, AND CABLE ASSEMBLIES EVERY 10 FEET, WITHIN 1 FOOT OF TURNS OR BENDS AND WITHIN 1 FOOT ABOVE AND BELOW PENETRATIONS OF ROOF/CEILING ASSEMBLIES, WALLS OR BARRIERS.



A CAUTION

DUAL POWER SOURCE SECOND SOURCE IS **PHOTOVOLTAIC**

LOCATION: SERVICE METER



WARNING

INVERTER OUTPUT CONNECTION

DO NOT RELOCATE THIS **OVERCURRENT DEVICE**

LOCATION: (IF APPLICABLE) SERVICE PANEL

CODE REF: NEC 705.12(7)



PHOTOVOLTAIC SYSTEM **UTILITY DISCONNECT SYSTEM**

LOCATION: AC DISCONNECT

CODE REF: UTILITY



PV SOLAR BREAKER

DO NOT RELOCATE THIS **OVERCURRENT DEVICE**

LOCATION: MAIN PANEL:(EXTERIOR) PV BREAKER: (INTERIOR)

CODE REF: NEC 705.12(B)(2)(3)(B)

525 W BASELINE RD., MESA AZ, 85210 CONTRACTOR LIC# U.34445

ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE, LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 TSP129199

(31) Q PEAK DUO BLK ML G10+ 400W (2) SOLAREDGE SE6000H-US 12.400 kW DC SYSTEM SIZE 12.000 kW AC SYSTEM SIZE

DATE: 8/31/2023 REV: A

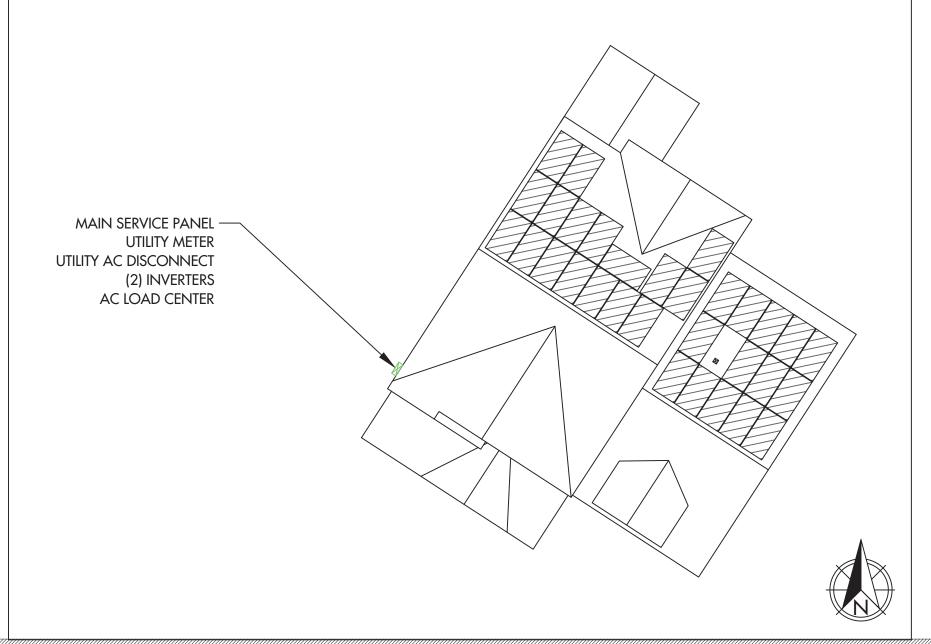
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LABELS

PV 7

CAUTION

POWER TO THIS BUILDING IS SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS AS SHOWN:



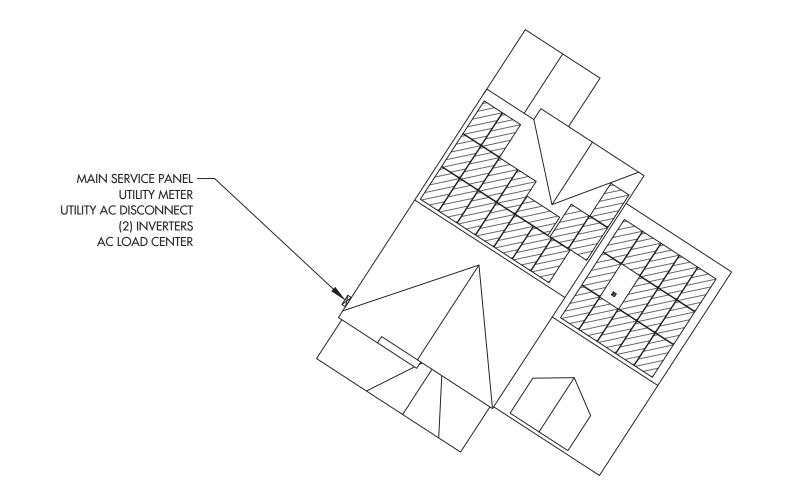
DIRECTORY PLAQUE IN ACCORDANCE WITH NEC690.56(A)(B), 705.10



ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE, LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 TSP129199 (31) Q PEAK DUO BLK ML G10+ 400W
(2) SOLAREDGE SE6000H-US
12.400 kW DC SYSTEM SIZE
12.000 kW AC SYSTEM SIZE

DATE: 8/31/2023 REV: A DRAWN BY: JS PLACARD

JOB SAFETY PLAN



LOCATION OF NEAREST URGENT CARE FACILITY

NAME:

ADDRESS:

PHONE NUMBER:

NOTES:

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

PRINT NAME	INITIAL	YES	NO



SOLAR POWER
525 W BASELINE RD., MESA AZ, 85210
CONTRACTOR LIC# U.34445

ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE , LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 TSP129199 (31) Q PEAK DUO BLK ML G10+ 400W
(2) SOLAREDGE SE6000H-US
12.400 kW DC SYSTEM SIZE
12.000 kW AC SYSTEM SIZE

DATE: 8/31/2023 REV: A

REV: A DRAWN BY: JS SAFETY PLAN

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
 UL1741 SA certified, for CPUC Rule 21 grid compliance
- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for longer strings

solaredge.com

CONTRACTOR LIC# U.34445

- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12

INVERTERS

- / Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- / Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)

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

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

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
APPLICABLE TO INVERTERS WITH PART NUMBER		SEXXXXH-XXXXXBXX4						
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage MinNomMax. (211 - 240 - 264)	·	✓	✓	✓	✓	✓	·	Vac
AC Output Voltage MinNomMax. (183 - 208 - 229)	-	~	-	✓	-	-	·	Va
AC Frequency (Nominal)				59.3 - 60 - 60.5(1)				Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	А
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	А
Power Factor			1	Adjustable - 0.85 to	0.85			
GFDI Threshold				1				A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds				Yes				
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V		5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded				Yes				
Maximum Input Voltage				480				Vd
Nominal DC Input Voltage		3	80			400		Vd
Maximum Input Current @240V ⁽²⁾	8.5	10.5	13.5	16.5	20	27	30.5	Ad
Maximum Input Current @208V ⁽²⁾	-	9	-	13.5	-	-	27	Ad
Max. Input Short Circuit Current		45						
Reverse-Polarity Protection		Yes						
Ground-Fault Isolation Detection		600k _Ω Sensitivity						
Maximum Inverter Efficiency	99	99 99.2						%
CEC Weighted Efficiency		99 9240V 98.5 @ 208V						
Nighttime Power Consumption				< 2.5				W

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

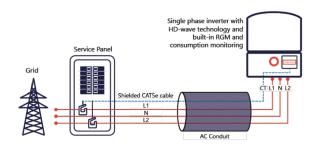
SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/ SE7600H-US / SE10000H-US / SE11400H-US

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US		
ADDITIONAL FEATURES									
Supported Communication Interfaces		RS485, Ethernet, ZigBee (optional), Cellular (optional)							
Revenue Grade Metering, ANSI C12.20				Optional ⁽³⁾					
Consumption metering									
Inverter Commissioning		With the Set	App mobile applicati	on using Built-in Wi-l	Fi Access Point for Lo	cal Connection			
Rapid Shutdown - NEC 2014 and 2017 690.12			Automatic Rapi	d Shutdown upon A	C Grid Disconnect				
STANDARD COMPLIANCE									
Safety		UL1741,	UL1741 SA, UL1699B,	CSA C22.2, Canadia	n AFCI according to	T.I.L. M-07			
Grid Connection Standards			IEE	1547, Rule 21, Rule 1	14 (HI)				
Emissions				FCC Part 15 Class E	3				
INSTALLATION SPECIFICA	TIONS								
AC Output Conduit Size / AWG Range		1"	Maximum / 14-6 AV	/G		1" Maximum	/14-4 AWG		
DC Input Conduit Size / # of Strings / AWG Range		1" Maxir	num / 1-2 strings / 14	I-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 ⁽⁴⁾						°F/°C	
Protection Rating		NEMA 4X (Inverter with Safety Switch)							

erter with Revenue Grade Meter F/N: 5:2000F1-05000BNL-8; inverter with Revenue Grade Produ ould be ordered separately: SEACTO750-200NA-20 or SEACTO750-400NA-20. 20 units per box power up to at least 50°C / 122°F; for power de-rating information refer to: https://www.solare

How to Enable Consumption Monitoring

By simply wiring current transformers through the inverter's existing AC conduits and connecting them to the service panel, homeohousehold energy usage helping them to avoid high electricity bills





solaredge

ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE, LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 525 W BASELINE RD., MESA AZ, 85210 TSP129199

(31) Q PEAK DUO BLK ML G10+ 400W (2) SOLAREDGE SE6000H-US 12.400 kW DC SYSTEM SIZE 12.000 kW AC SYSTEM SIZE

DATE: 8/31/2023 REV: A

DRAWN BY: JS

EQUIPMENT SPECIFICATIONS PV 10



Intertek 3933 US Route 11 Cortland, NY 13045 Telephone: 607-753-7311 www.intertek.com

Subject: ETL Evaluation of SolarEdge Products to Rapid Shutdown Requirements

To, whom it may concern

This letter represents the testing results of the below listed products to the requirements contained in the following standards:

The evaluation was done on the PV Rapid Shutdown System (PVRSS), and covers installations consisting of optimizers and inverters with part numbers listed below.

The testing done has verified that controlled conductors are limited to:

- Not more than 30 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation outside the array.
- Not more than 80 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation inside the array.

The rapid shutdown initiation is performed by either disconnecting the AC feed to the inverter, or – if the inverter DC Safety switch is readily accessible – by turning off the DC Safety switch.

Applicable products:

(1) Power optimizers:

PB followed by 001 to 350; followed by -AOB or -TFI.
OP followed by 001 to 500; followed by -LV, -MV, -IV or -EV.
P followed by 001 to 1100.
SP followed by 001 to 350.

When optimizers are connected to 2 or more modules in series, the max input voltage may exceed 80V. Following the implementation of the NEC 2017 rapid shutdown value of 80V max inside of the array at the beginning of 2019, modules exceeding this combined input max voltage will be required to use optimizers with parallel inputs. Also meeting NEC 2020 rapid shutdown requirement

(2) 1 -PH Inverters

 $SE3000A-US\ /\ SE3800A-US\ /\ SE5000A-US\ /\ SE6000A-US\ /\ SE7600A-US\ /\ SE10000A-US\ /\ SE11400A-US\ /\ SE3000H-US\ /\ SE$

Inverter part number may be followed by a suffix.

(3) 3 -PH Inverters



Intertek 3933 US Route 11 Cortland, NY 13045 Telephone: 607-753-7311

SE9KUS / SE10KUS / SE14.4KUS/ SE16.7kUS / SE17.3kUS / SE20KUS/ SE24KUS / SE30KUS / SE33.3KUS / SE40KUS / SE40KUS / SE50KUS / SE66.6KUS / SE80KUS / SE85KUS / SE100KUS / SE120KUS; when the following label is labeled on the side of the inverter:

Please note, this Letter Report does not represent authorization for the use of any Intertek certification marks.

Brand Name(s) SolarEdge

Relevant Standard(s) UL 1741, UL 1741 CRD for rapid shutdown

National Electric Code, 2020, Section 690.12 requirement for

rapid shutdown

Verification Issuing Office 3933 US Route 11, Cortland, NY 13045

NRTL Disclaimer, Different for each NRTL — Example: "This Verification is for the exclusive use of NRTL's Client and is provided pursuant to the agreement between NRTL and its Client. NRTL's responsibility and liability are limited to the terms and conditions of the agreement. NRTL assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Verification. Only the Client is authorized to copy or distribute this Verification. Any use of the NRTL name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by NRTL. The observations and test results referenced from this Verification are relevant only to the sample tested. This Verification by itself does not imply that the material, product, or service is or has ever been under an NRTL certification program."

Signature:

Name: Mukund Rana Position: Staff Engineer Date:5/17/2021



Intertek 3933 US Route 11 Cortland, NY 13045 Telephone: 607-753-7311 www.intertek.com

Date	Engineer / Reviewer	Description		
5/17/2021 G104683664CRT	Dishant Patel	Added New 3-PH Inverter model SE50KUS, SE80KUS, SE85KUS and SE120KUS.		
	Mukund Rana	Updated Power optimizers from "P followed by 001 to 960" to "P followed by 001 to 1100"		
		Updated NEC standard from "National Electric Code, 2017, Section 690.12 requirement for rapid shutdown" To "National Electric Code, 2020, Section 690.12 requirement for rapid shutdown"		



Power Optimizer For Residential Installations

S440, S500



Enabling PV power optimization at the module level

- Specifically designed to work with SolarEdge residential inverters
- Detects abnormal PV connector behavior, preventing potential safety issues*
- / Module-level voltage shutdown for installer and
- Superior efficiency (99.5%)

- / Mitigates all types of module mismatch loss, from manufacturing tolerance to partial shading
- Faster installations with simplified cable management and easy assembly using a single bolt
- Flexible system design for maximum space utilization
- Compatible with bifacial PV modules

* Functionality subject to inverter model and firmware version

solaredge.com



/ Power Optimizer For Residential Installations

S440, S500

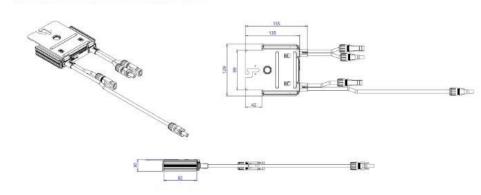
	S440	S500	UNIT	
*** (0.1 PM p. 0.1 p. 11p)	8-101			
Rated Input DC Power ⁽⁰⁾	440	500	W	
Absolute Maximum Input Voltage (Voc)	6	0	Vdc	
MPPT Operating Range	8-	60	Vdc	
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5	15	Adc	
Maximum Efficiency	99	9.5	%	
Weighted Efficiency	98	3.6	%	
Overvoltage Category		le l		
OUTPUT DURING OPERATION				
Maximum Output Current	1	5	Adc	
Maximum Output Voltage	6	0	Vdc	
OUTPUT DURING STANDBY (POWER OPTIMIZER DISC	ONNECTED FROM INVERTER OR	INVERTER OFF)		
Safety Output Voltage per Power Optimizer		1	Vdc	
STANDARD COMPLIANCE				
EMC	FCC Part 15 Class B, IEC61000-6-2	2, IEC61000-6-3, CISPR11, EN-55011		
Safety	IEC62109-1 (class	II safety), UL1741		
Material	UL94 V-0, U	JV Resistant		
RoHS	Y	es		
Fire Safety	VDE-AR-E 210	0-712:2013-05		
INSTALLATION SPECIFICATIONS				
Maximum Allowed System Voltage	10	00	Vdc	
Dimensions (W x L x H)	129 x 1	55 x 30	mm	
Weight (including cables)	655	/1.5	gr/l	
Input Connector	MC	420		
Input Wire Length	0.1		m	
Output Connector	MC4		ATT THE	
Output Wire Length	(+) 2.3, (-) 0.10		m	
Operating Temperature Range®	-40 to +85			
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 Usi Inverter	ng a SolarEdge	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	96
Maximum Nominal Power per String ⁽⁴⁾		5700	11250(5)	12750 ⁽⁶⁾	W
Parallel Strings of Different Lengths or Orientations		V	Yes		

- (4) If the inverters rated AC power s 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 230/4007 grid: it is allowed to install up to 13,500W per string when the maximum power difference between each string is 2,000W
 (6) For the 277/480V grid: it is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W
 (7) It is not allowed to mix S-series and P-series Power Optimizers in new installations



CE ROHS



ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE, LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 TSP129199

(31) Q PEAK DUO BLK ML G10+ 400W (2) SOLAREDGE SE6000H-US 12.400 kW DC SYSTEM SIZE 12.000 kW AC SYSTEM SIZE

DATE: 8/31/2023

REV: A DRAWN BY: JS

EQUIPMENT SPECIFICATIONS PV 12













BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9 %.



INDUSTRY'S MOST THOROUGH TESTING

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry:

The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology1, 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 warranty2.



INNOVATIVE ALL-WEATHER TECHNOLOGY



1 APT test conditions according to IEC / TS 62804-1:2015, method A (=1500 V, 96 h) 2 See data sheet on rear for further information.

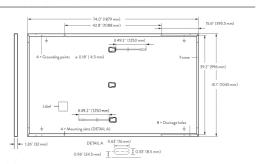
Q PEAK DUO BLK ML-G10+ 395-400

THE IDEAL SOLUTION FOR:

Rooftop arrays on residential buildings

MECHANICAL SPECIFICATION

FORMAT	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
WEIGHT	48.5 lbs (22.0 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 × 22 monocrystalline Q.ANTUM solar half cells
JUNCTION BOX	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
CABLE	4 mm² Solar cable; (+) ≥ 49.2 in (1250 mm), (-) ≥ 49.2 in (1250 mm)
CONNECTOR	Stäubli MC4: IP68



ELECTRICAL CHARACTERISTICS

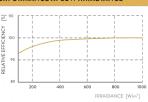
POV	VER CLASS			385	390	395	400	405
MIN	IMUM PERFORMANCE AT STANDARD	TEST CONDITIONS	s, STC 1 (PO)	WER TOLERANCE +5	W / -0 W)			
	POWER AT MPP	P _{MPP}	[W]	385	390	395	400	405
Σ	SHORT CIRCUIT CURRENT	I _{sc}	[A]	11.04	11.07	11.10	11.14	11.17
¥	OPEN CIRCUIT VOLTAGE	V _{oc}	[V]	45.19	45.23	45.27	45.30	45.34
Z	CURRENT AT MPP	I _{MPP}	[A]	10.59	10.65	10.71	10.77	10.83
~	VOLTAGE AT MPP	V_{MPP}	[V]	36.36	36.62	36.88	37.13	37.39
	EFFICIENCY	η	[%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
MIN	IMUM PERFORMANCE AT NORMAL O	PERATING CONDI	TIONS, NMOT	2				
)	POWER AT MPP	P _{MPP}	[W]	288.8	292.6	296.3	300.1	303.8
3	SHORT CIRCUIT CURRENT	I _{sc}	[A]	8.90	8.92	8.95	8.97	9.00
₹	OPEN CIRCUIT VOLTAGE	Voc	[V]	42.62	42.65	42.69	42.72	42.76
Z	CURRENT AT MPP	I _{MPP}	[A]	8.35	8.41	8.46	8.51	8.57
	VOLTAGE AT MPP	V _{MPP}	[V]	34.59	34.81	35.03	35.25	35.46

*Measurement tolerances Pupp ±3%; Ign; Vnn ±5% at STC; 1000 W/m², 25±2°C, AM 1.5 according to IEC 60904-3 • 2800 W/m², NMOT, spectrum AM 1.5

Q CELLS PERFORMANCE WARRANTY

first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86 % of nominal power up to

the warranty terms of the Q CELLS



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

TEMPERATURE COEFFICIENTS						
TEMPERATURE COEFFICIENT OF Isc	α	[%/K]	+0.04 TEMPERATURE COEFFICIENT OF Voc	β	[%/K]	-0.27
TEMPERATURE COEFFICIENT OF PMPP	γ	[%/K]	-0.34 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 ³	[lbs/ft ²]	75 (3600 Pa) / 55 (2660 Pa)	Permitted Module Temperature	-40°F up to +185°F
Max. Test Load, Push / Pull ³	[lbs/ft ²]	113 (5400 Pa) / 84 (4000 Pa)	on Continuous Duty	(-40°C up to +85°C)

QUALIFICATIONS AND CERTIFICATES







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ED	pack

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PACKAGING INFORMATION







UL 61730, CE-compliant



TITAN 525 W Baseline Rd., Mesa, AZ, 85210 TEL: 855.SAY.SOLAR





ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE, LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 TSP129199

(31) Q PEAK DUO BLK ML G10+ 400W (2) SOLAREDGE SE6000H-US 12.400 kW DC SYSTEM SIZE 12.000 kW AC SYSTEM SIZE

DATE: 8/31/2023 REV: A

DRAWN BY: JS

EQUIPMENT SPECIFICATIONS



Item Number Description Part Number 1 Splice Foot X 4000113 | Splice Foot X Kit, Mill 2 K2 FlexFlash Butyl 3 M5 x 60 lag screws 4 T-Bolt & Hex Nut Set

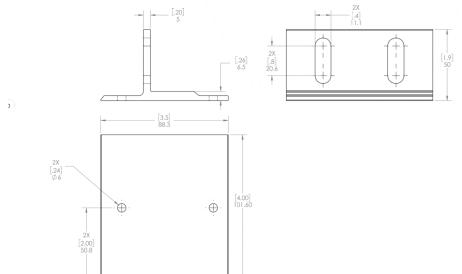
Technical Data

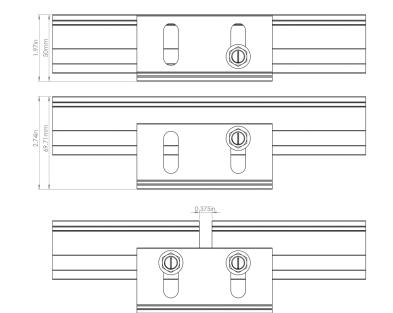
	Splice Foot X
Roof Type	Composition shingle
Material	Aluminum with stainless steel hardware
Finish	Mill
Roof Connection	M5 x 60 lag screws
Code Compliance	UL 2703
Compatibility	CrossRail 44-X, 48-X, 48-XL, 80

We support PV systems
Formerly Everest Solar Systems



Units: [in] mm





k2-systems.com



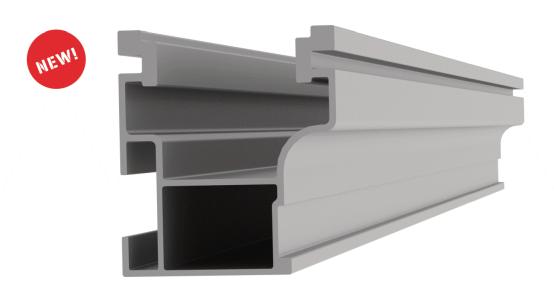
ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE , LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 TSP129199 (31) Q PEAK DUO BLK ML G10+ 400W
(2) SOLAREDGE SE6000H-US
12.400 kW DC SYSTEM SIZE
12.000 kW AC SYSTEM SIZE

DATE: 8/31/2023 REV: A

REV: A DRAWN BY: JS EQUIPMENT SPECIFICATIONS PV 14

Mounting systems for solar technology





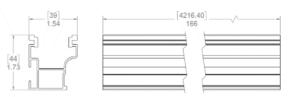
NEW PRODUCT

CrossRail 44-X

- Optimized rail profile
- ▶ One rail for all markets
- ▶ Built-in wire management
- ► Maintains same structural integrity as 48-X
- ▶ Tested up to 200 mph winds
- ▶ Tested up to 100 PSF snow loads



Part Number	Description
4000019	CrossRail 44-X 166'', Mill
4000020	CrossRail 44-X 166'', Dark
4000021	CrossRail 44-X 180", Mill
4000022	CrossRail 44-X 180", Dark
4000051	RailConn Set, CR 44-X, Mill
4000052	RailConn Set, CR 44-X, Dark
4000067	End Cap, Black, CR 44-X



www.everest-solarsystems.com

CrossRail 44-X Product Sheet US01 | 0520 · Subject to change · Product illustrations are exemplary and may differ from the original.



ASWELL, PAMELA B RESIDENCE 239 EXECUTIVE DRIVE, LILLINGTON, NC, 27546 LAT:35.326084, LON:-78.989356 TSP129199

(31) Q PEAK DUO BLK ML G10+ 400W (2) SOLAREDGE SE6000H-US 12.400 kW DC SYSTEM SIZE 12.000 kW AC SYSTEM SIZE

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EQUIPMENT SPECIFICATIONS **PV 15**



Recommended OCPD Size per Grid

Inverter	Maximum Output Current (A)	Minimum Fuse Rating (A)	Maximum Fuse Rating (A)	
SE3000H-US	12.5	20	50	
SE3800H-US	16	20	50	
CEEOOOH IIC	24 @ 208V	20	F0	
SE5000H-US	21 @ 240V	30	50	
SE6000H-US	24 @ 208V	30 @ 208V	F0	
	25 @ 240V	35 @ 240V	50	
SE7600H-US	32	40	50	
SE10000H-US	42	60	80	
SE11400H-US	48.5 @ 208V	70 @ 208V	80	
3E11400H-03	47.5 @ 240V	60 @ 240V		

SolarEdge Single Phase Inverter with HD-Wave Technology Installation MAN-01-00541-1.1

ASWELL, PAMELA B RESIDENCE

239 EXECUTIVE DRIVE, LILLINGTON, NC, 27546

LAT:35.326084, LON:-78.989356

TSP129199



(31) Q PEAK DUO BLK ML G10+ 400W
(2) SOLAREDGE SE6000H-US
12.400 kW DC SYSTEM SIZE
12.000 kW AC SYSTEM SIZE

DATE: 8/31/2023

REV: A DRAWN BY: JS equipment specifications PV 16