Building Codes: 2017 NEC W/NC AMENDMENTS, 2018 NORTH CAROLINA RESIDENTIAL CODE, AND 2018 NORTH CAROLINA FIRE CODE and AHJ Amendments

VICINITY MAP SCALE: NTS

AERIAL MAP SCALE: NTS

GARCIA, MARIA LUISA PV SYSTEM 46 BLANCH JOHNSON ROAD . BROADWAY, NC, 27505 APN:

JURISDICTION: HARNETT COUNTY (NC)
GENERAL INFORMATION

SYSTEM SIZE: 14.800 kW-DC-STC

11.400 kW-AC ROOF PITCHED: 28 DEGREES

INVERTER: (1) SOLAREDGE SE11400H-US W/ P340 OPTIMIZERS

MODULES: (37) Q PEAK DUO BLK ML G10+ 400W

STRINGS: $(1) \times 15$, $(1) \times 11$, $(1) \times 11$ MODULE SERIES STRINGS

ELECTRICAL SERVICE RATING: 200A PV SYSTEM OVERCURRENT RATING: 60A

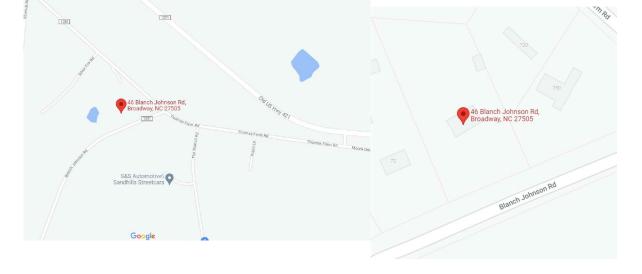
PV SYSTEM DISCONNECT SWITCH: EATON DG222NRB (60A / 2P)

ROOF TYPE: METAL TRAPEZOIDAL

ROOF FRAMING: MANUFACTURED/ENGINEERED TRUSS

RACKING: K2 SYSTEMS

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



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

- MODULES ARE LISTED UNDER UL 1703 AND CONFORM TO THE STANDARDS.
- 2. INVERTERS ARE LISTED UNDER UL 1741 AND CONFORM TO THE STANDARDS.
- 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.
- 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.

TABLE OF CONTENTS

REQUIRED INFORMATION SHEET NAME SHEET NUMBER SITE INFORMATION **COVER PAGE** SITE PLAN PV 2 MODULE AND EQUIPMENT LAYOUT LOCATION & QUANTITY OF PACKING & STANDOFFS PV LAYOUT PV 3 PV 3 RACKING LOAD & UPLIFT CALCULATIONS **PV LAYOUT ROOF ATTACHMENT DETAILS** DETAILS PV 4 PV 5 **ELECTRICAL 1 LINE DIAGRAM** ONE LINE PV 6 **ELECTRICAL 3 LINE DIAGRAM** THREE LINE OCP & WIRE SIZING CALCULATIONS 1 & 3 LINE PV 5 & 6 ARRAY & INVERTER ELECTRICAL SPECIFICATIONS 1 & 3 LINE PV 5 & 6 **EQUIPMENT SPECIFICATIONS** 1 & 3 LINE PV 5 & 6 **LABELS** LABEL NOTES PV 7 PV EQUIPMENT LABELING DETAIL **LABELS** PV 7 **DIRECTORY LABEL PLACARD** PV 8 JOB SAFETY PLAN SAFETY PLAN PV 9 PV EQUIPMENT SPECIFICATIONS EQUIPMENT SPEC. PV 10 - 16 DATA SHEETS & ADDITIONAL INFORMATION SUPPLEMENTAL MATERIAL

SOLAR POWER
525 W BASELINE RD., MESA AZ, 85210
CONTRACTOR LIC# CR-11 284331

GARCIA, MARIA LUISA RESIDENCE 46 BLANCH JOHNSON ROAD , BROADWAY, NC, 27505 LAT:35.421148, LON:-78.989467 TSP113588

08/25/2022

(37) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE11400H-US 14.800 kW DC SYSTEM SIZE 11.400 kW AC SYSTEM SIZE

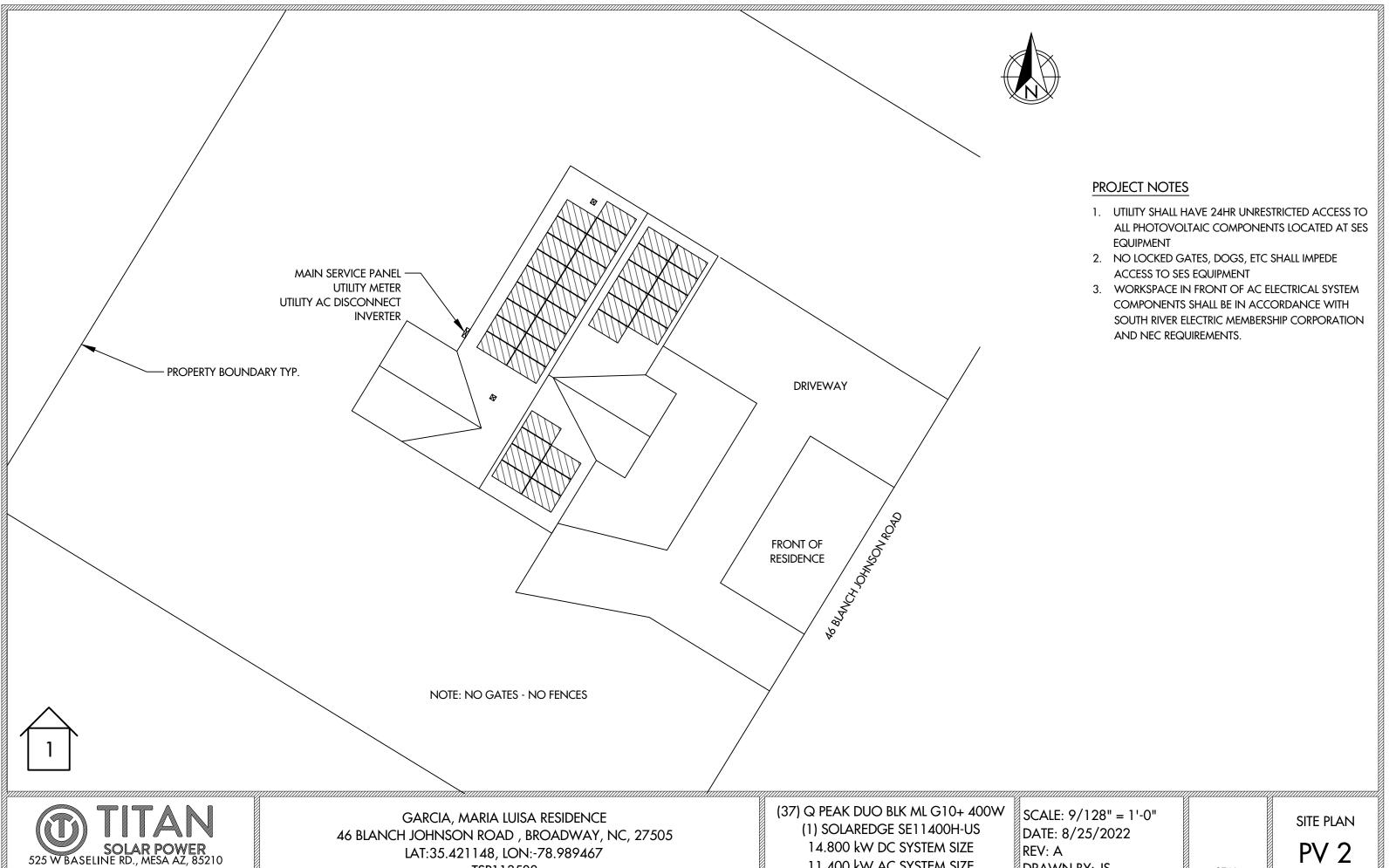
DATE: 8/25/2022

REV:A

DRAWN BY: JS

COVER PAGE

PV 1



CONTRACTOR LIC# CR-11 284331

LAT:35.421148, LON:-78.989467 TSP113588

11.400 kW AC SYSTEM SIZE

DRAWN BY: JS

ARRAY INFORMATION

AR-01

QUANTITY: 7

MOUNTING TYPE: FLUSH

ARRAY TILT: 28° AZIMUTH: 148°

ATTACHMENT SPACING: 4'
ROOF TYPE: METAL TRAPEZOIDAL

AR-02

QUANTITY: 11

MOUNTING TYPE: FLUSH

ARRAY TILT: 28° AZIMUTH: 148°

ATTACHMENT SPACING: 4'
ROOF TYPE: METAL TRAPEZOIDAL

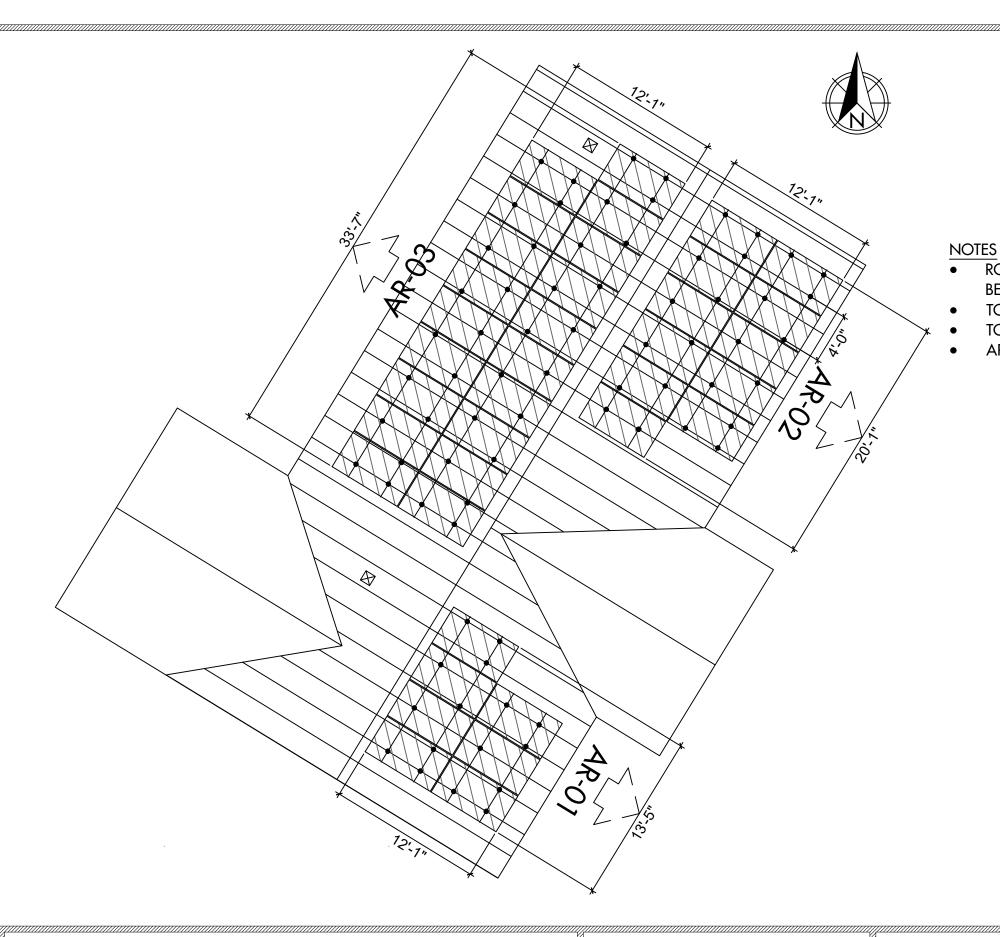
AR-03

QUANTITY: 19

MOUNTING TYPE: FLUSH

ARRAY TILT: 28° AZIMUTH: 330°

ATTACHMENT SPACING: 4'
ROOF TYPE: METAL TRAPEZOIDAL





GARCIA, MARIA LUISA RESIDENCE 46 BLANCH JOHNSON ROAD , BROADWAY, NC, 27505 LAT:35.421148, LON:-78.989467 TSP113588 (37) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE11400H-US 14.800 kW DC SYSTEM SIZE 11.400 kW AC SYSTEM SIZE

SCALE: 17/128" = 1'-0" DATE: 8/25/2022

REV:A

DRAWN BY: JS

PV LAYOUT PV 3

SEAL:

ROOF VENTS, SKYLIGHTS, WILL NOT

TOTAL ARRAY AREA = 781.47 SQ-FT

TOTAL ROOF AREA = 2009 SQ-FT

ARRAY COVERAGE = 38.90%

BE COVERED UPON PV INSTALLATION

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: METAL TRAPEZOIDAL
RAFTER/TRUSS SIZE: 2" x 4"
RAFTER/TRUSS SPACING: 2'

ARRAY 01: 7 MODULES

UPLIFT = 4435.38 LBS.

POINT LOAD = 22.75 LBS. PER MOUNTING POINT

PULLOUT STRENGTH = 8400.00 LBS.

DISTRIBUTED LOAD = 2.46 PSF

MODULE & RACKING WEIGHT = 364.00 LBS

ARRAY 02: 11 MODULES

UPLIFT = 6969.88 LBS.

POINT LOAD = 24.87 LBS. PER MOUNTING POINT

PULLOUT STRENGTH = 12075.00 LBS.

DISTRIBUTED LOAD = 2.46 PSF

MODULE & RACKING WEIGHT = 572.00 LBS

ARRAY 03: 19 MODULES

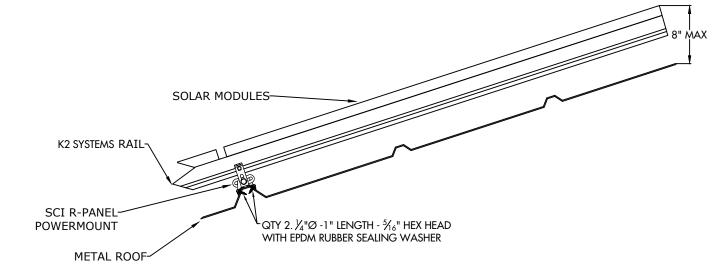
UPLIFT = 12038.88 LBS.

POINT LOAD = 27.44 LBS. PER MOUNTING POINT

PULLOUT STRENGTH = 18900.00 LBS.

DISTRIBUTED LOAD = 2.46 PSF

MODULE & RACKING WEIGHT = 988.00 LBS



PV MODULE

Q PEAK DUO BLK ML G10+ 400W

V = 400 W

ISC = 11.14 ADC VOC = 45.30 VDC

IMP = 10.77 ADCVMP = 37.13 VDC

TVOC = -0.270% / °C

WIRE SCHEDULE

- C (3) #6 AWG-CU THWN-2 WIRE (HR) (1) #8 AWG-CU THWN-2 WIRE (GND) 3/4" EMT
- A (6) #10 AWG-CU PV WIRE (HR)
 (1) #10 AWG-CU BARE COPPER WIRE (GND)
 IN FREE AIR
- B (6) #10 AWG-CU THWN-2 WIRE (HR) (1) #10 AWG-CU THWN-2 WIRE (GND) 3/4" EMT

08/25/2022 LOAD SIDE TAP W/ ILSCO IPC CONNECTORS Q PEAK DUO BLK ML G10+ 400W W/ SOLAREDGE POWER OPTIMIZERS P340 SOLAREDGE SE11400H-US W/ INTEGRATED DC DISCONNECT & INTERNAL GFDI UTILITY AC DISCONNECT (E) 200A MAIN SERVICE PANEL 8-48 VDC / 0-12 VAC INPUT KNIFE BLADE FUSED, 60A/240V 100KAIC 500VDC/240VAC, 60HZ, UL1741 500VDC / 15ADC MAX OUTPUT 1Ф, 3W, 120/240V, 60HZ W/ INTEGRATED RAPID SHUTDOWN (TRANSFORMERLESS INVERTER!) EATON DG222NRB W/ 60A R-CLASS FUSES (E) 200A MAIN BREAKE 15 /4\/6\/13\ 12 1/2/12 (E) 200A SUB PANEL (E) 200A TO UTILITY GRID

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 (15.00A X 1 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

CONDUIT FILL FACTOR = 1 (3) CONDUCTORS

MAX. INVERTER CURRENT = 47.5A (PER INVERTER SPECS)

MIN. INVERTER OCP = 59.375A (47.5A X 1.25)

INVERTER OCP = 60A

#6 - AWG CU AMPACITY = 65.25A (75A X 1 X 0.87)



GARCIA, MARIA LUISA RESIDENCE 46 BLANCH JOHNSON ROAD , BROADWAY, NC, 27505 LAT:35.421148, LON:-78.989467 TSP113588 (37) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE11400H-US 14.800 kW DC SYSTEM SIZE 11.400 kW AC SYSTEM SIZE

DATE: 8/25/2022

REV:A

DRAWN BY: JS

ONE LINE

PV 5

PV MODULE

Q PEAK DUO BLK ML G10+ 400W

V = 400 W

ISC = 11.14 ADC VOC = 45.30 VDC

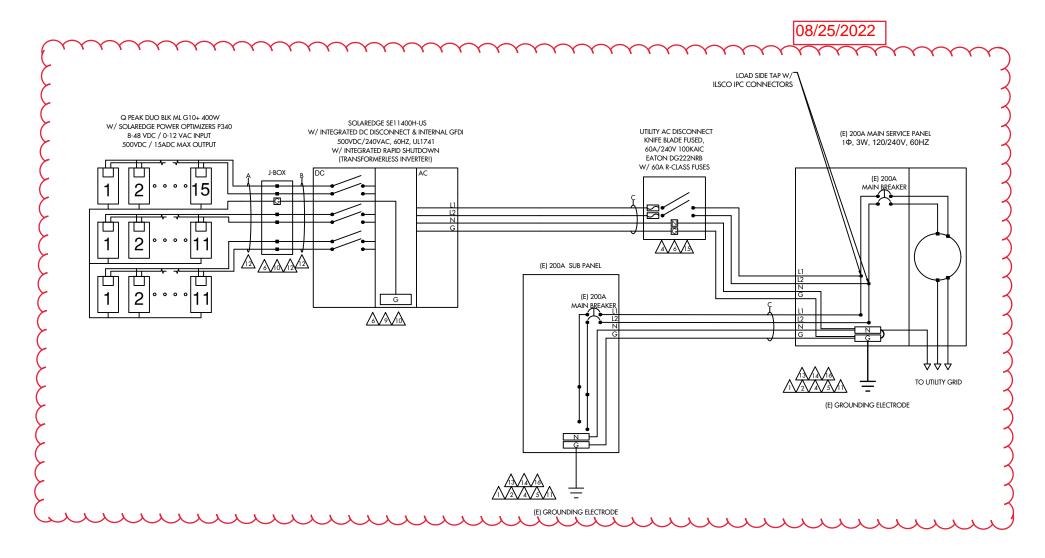
 $\begin{array}{rcl} IMP & = & 10.77 \text{ ADC} \\ VMP & = & 37.13 \text{ VDC} \end{array}$

TVOC = -0.270% / °C

WIRE SCHEDULE

- A (6) #10 AWG-CU PV WIRE (HR)
 (1) #10 AWG-CU BARE COPPER WIRE (GND)
 IN FREE AIR
- B (6) #10 AWG-CU THWN-2 WIRE (HR) (1) #10 AWG-CU THWN-2 WIRE (GND) 3/4" EMT

C - (3) #6 AWG-CU THWN-2 WIRE (HR) (1) #8 AWG-CU THWN-2 WIRE (GND) 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 (15.00A X 1 X 1.25) #10- AWG CU. AMPACITY = 47.85A (55A X 0.87)

FREE AIR

#10 - AWG CU. AMPACITY = $27.84A (40A \times 0.87 \times 0.80)$ ROOFTOP CONDUIT AC WIRING

CONDUIT FILL FACTOR = 1 (3) CONDUCTORS

MAX. INVERTER CURRENT = 47.5A (PER INVERTER SPECS)
MIN. INVERTER OCP = 59.375A (47.5A X 1.25)

INVERTER OCP = 60A

#6 - AWG CU AMPACITY = 65.25A (75A X 1 X 0.87)



GARCIA, MARIA LUISA RESIDENCE 46 BLANCH JOHNSON ROAD , BROADWAY, NC, 27505 LAT:35.421148, LON:-78.989467 TSP113588 (37) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE11400H-US 14.800 kW DC SYSTEM SIZE 11.400 kW AC SYSTEM SIZE

DATE: 8/25/2022

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)



M WARNING

DO NOT RELOCATE THIS OVERCURRENT DEVICE

LOCATION: BACKFED BREAKER

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



WARNING

(UTILITY) SIDE OF THE MAIN SERVICE DISCONNECT. FOLLOV THE PROPER LOCK-OUT/TAG-OUT PROCEDURES TO ENSURE THE PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH I

LOCATION: (IF APPLICABLE) SUPPLY SIDE TAP LOAD PANEL

CODE REF: UTILITY



PHOTOVOLTAIC AC DISCONNECT

ATED AC OPERATING CURRENT

NOMINAL OPERATING AC VOLTAGE:

240VAC

LOCATION: MAIN PANEL AC DISCONNECT(S) CODE REF: NEC 690.54



LOCATION: MAIN PANEL (EXTERIOR)

CODE REF: NEC 690.56(C)(3)

LOCATION: COMBINER PANEL AC DISCONNECT JUNCTION BOX



/

WARNING

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

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

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

LOCATION: DC DISCONNECT

CODE REF: UTILITY

LOCATION: DC DISCONNECT, COMBINE BOX

CODE REF: NEC 690.13(B)



M WARNING

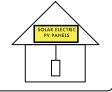
ELECTRICAL SHOCK HAZARD TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

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

CODE REF: UTILITY



WARNING

INVERTER OUTPUT CONNECTION

DO NOT RELOCATE THIS **OVERCURRENT DEVICE**

LOCATION: (IF APPLICABLE) SERVICE PANEL

CODE REF: NEC 705.12(7)

15

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# CR-11 284331

GARCIA, MARIA LUISA RESIDENCE 46 BLANCH JOHNSON ROAD, BROADWAY, NC, 27505 LAT:35.421148, LON:-78.989467 TSP113588

(37) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE11400H-US 14.800 kW DC SYSTEM SIZE 11.400 kW AC SYSTEM SIZE

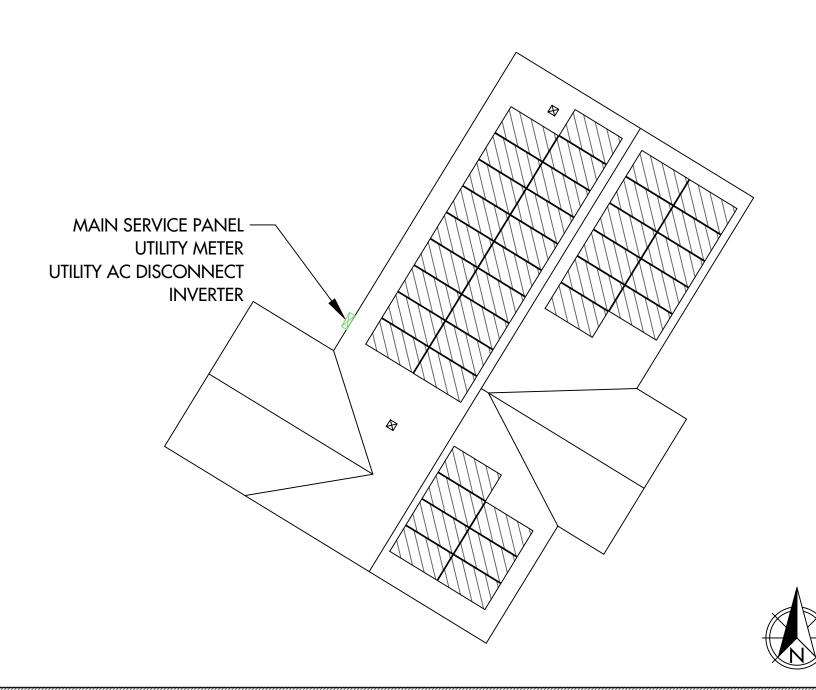
DATE: 8/25/2022 REV: A

DRAWN BY: JS

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

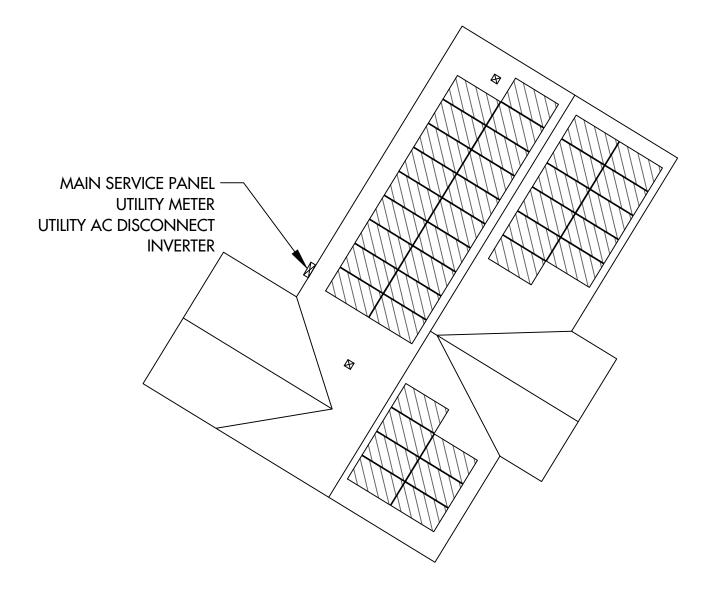


GARCIA, MARIA LUISA RESIDENCE 46 BLANCH JOHNSON ROAD , BROADWAY, NC, 27505 LAT:35.421148, LON:-78.989467 TSP113588 (37) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE11400H-US 14.800 kW DC SYSTEM SIZE 11.400 kW AC SYSTEM SIZE

DATE: 8/25/2022 REV: A DRAWN BY: JS PLACARD

PV 8

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# CR-11 284331

GARCIA, MARIA LUISA RESIDENCE 46 BLANCH JOHNSON ROAD , BROADWAY, NC, 27505 LAT:35.421148, LON:-78.989467 TSP113588 (37) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE11400H-US 14.800 kW DC SYSTEM SIZE 11.400 kW AC SYSTEM SIZE

DATE: 8/25/2022 REV: A

REV: A DRAWN BY: JS SAFETY PLAN

PV 9

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
- Integrated arc fault protection and rapid shutdown for NEC 2014, NEC 2017 and NEC 2020 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,

solaredge.com



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

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

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
APPLICABLE TO INVERTERS WITH PART NUMBER			SE	xxxxh-xxxxx	BXX4	•		
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)	✓	1	✓	✓	✓	✓	✓	Vac
AC Output Voltage MinNomMax. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)				59.3 - 60 - 60.5 ⁽¹⁾				Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	Α
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	А
Power Factor		1, Adjustable - 0.85 to 0.85						
GFDI Threshold		1						Α
Utility Monitoring, Islanding Protection, Country Configurable Thresholds		Yes						
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded				Yes				
Maximum Input Voltage				480				Vdc
Nominal DC Input Voltage			380			400		Vdc
Maximum Input Current @240V ⁽²⁾	8.5	10.5	13.5	16.5	20	27	30.5	Add
Maximum Input Current @208V ⁽²⁾	-	9	-	13.5	-	-	27	Add
Max. Input Short Circuit Current				45				Add
Reverse-Polarity Protection				Yes			3	
Ground-Fault Isolation Detection				600kΩ Sensitivity				
Maximum Inverter Efficiency	99			9	19.2			%
CEC Weighted Efficiency				99			99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption				< 2.5				W

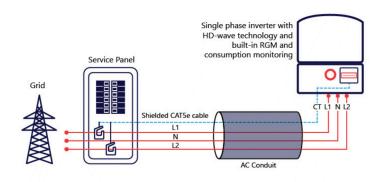
/ Single Phase Inverter with HD-Wave Technology for North America

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

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE/600H-US	SE10000H-US SE11400H-	US
ADDITIONAL FEATURES							
Supported Communication Interfaces			RS485, Ethernet	ZigBee (optional), C	ellular (optional)		
Revenue Grade Metering, ANSI C12.20				Optional ⁽³⁾			
Consumption metering				Optional**			
Inverter Commissioning		With the SetA	pp mobile applicatio	n using Built-in Wi-Fi	Access Point for Lo	cal Connection	
Rapid Shutdown - NEC 2014, NEC 2017 and NEC 2020, 690.12			Automatic Rapic	Shutdown upon AC	Grid Disconnect		
STANDARD COMPLIANCE							
Safety		UL1741, L	L1741 SA, UL1699B,	SA C22.2, Canadian	AFCI according to	T.I.L. M-07	
Grid Connection Standards		IEEE1547, Rule 21, Rule 14 (HI)					
Emissions		FCC Part 15 Class B					
INSTALLATION SPECIFICAT	IONS						
AC Output Conduit Size / AWG Range		1'	Maximum / 14-6 AV	VG		1" Maximum /14-4 AWG	
DC Input Conduit Size / # of Strings / AWG Range		1" Maxir	mum / 1-2 strings / 1	1-6 AWG		1" Maximum / 1-3 strings / 14-6 A	WG
Dimensions with Safety Switch (HxWxD)		17.7 x	14.6 x 6.8 / 450 x 37	0 x 174		21.3 x 14.6 x 7.3 / 540 x 370 x 18	5 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 +6	0(4)		*F/*C
Protection Rating			NEMA 4	(Inverter with Safety	y Switch)		

How to Enable Consumption Monitoring

By simply wiring current transformers through the inverter's existing AC conduits and connecting them to the service panel, homeowners will gain full insight into their household energy usage helping them to avoid high electricity bills



RoHS



GARCIA, MARIA LUISA RESIDENCE 46 BLANCH JOHNSON ROAD, BROADWAY, NC, 27505 LAT:35.421148, LON:-78.989467 TSP113588

(37) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE11400H-US 14.800 kW DC SYSTEM SIZE 11.400 kW AC SYSTEM SIZE

DATE: 8/25/2022 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
- Not more than 80 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation

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

(2) 1 -PH Inverters

SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US / SE7600A-US / SE10000A-US / SE11400A-US / SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US when the following label is labeled on the side of the inverter:

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 / SE43.2KUS / 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

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

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 is 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. 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 Incitation 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 Power Optimizer For North America P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505 25 YEAR **OPTIMIZE**

PV power optimization at the module-level

- Specifically designed to work with SolarEdge
- / Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial
- Flexible system design for maximum space

- Fast installation with a single bolt
- / Next generation maintenance with modulelevel monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- / Module-level voltage shutdown for installer and firefighter safety



solaredge.com

/ Power Optimizer For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / 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)	P401 (for high power 60 and 72 cell modules)	P405 (for high- voltage modules)	P485 (for high- voltage modules)	P505 (for higher current modules)	
INPUT									
Rated input DC Power ⁽ⁱ⁾	320	340	370	4	00	405	485	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	4	18	60	80	60	12	5(2)	83@	Vdc
MPPT Operating Range	8 -	48	8 - 60	8 - 80	8-60	12.5	- 105	12.5 - 83	Vdc
Maximum Short Circuit Current (Isc)		11		10.1	11.75	*	1	14	Add
Maximum Efficiency				99.	.5				95
Weighted Efficiency				98.8				98.6	%
Overvoltage Category				Ī					
OUTPUT DURING OPER	ATION (POV	VER OPTIMI	ZER CONNEC	TED TO OPE	RATING SOI	LAREDGE IN	VERTER)		
Maximum Output Current		15						Add	
Maximum Output Voltage		60 85						Vdc	
OUTPUT DURING STAND	DBY (POWER	(POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OF							OFF)
Safety Output Voltage per Power Optimizer		1±0.1						Vdd	
STANDARD COMPLIAN	CE								
EMC		FCC Part15 Class 3, IEC61000-6-2, IEC61000-6-3							
Safety		IEC62109-1 (class safety), U_1741							
Material		UL94 V-0 , UV Resistant							
RoHS		Yes							
INSTALLATION SPECIFIC	CATIONS								
Maximum Allowed System Voltage				100	00				Vdc
Compatible inverters			All SolarE	dge Single Phase	and Three Phase i	inverters			
Dimensions (W x L x H)	129 :	129 x 153 x 27.5 / 5.1 x 6 x 1.1						mn /in	
Weight (including cables)		630 / 1.4 750 / 1.7 655 / 1.5 845 / 1.9 1064 / 2.3						1064 / 2.3	gr/
Input Connector		$MC4^{(9)}$ Single or dua $MC4^{(9)}$ $MC4^{(9)}$						MC4 ⁽³⁾	
Input Wire Length				0.16 /	0.52				m/
Output Wire Type / Connector				Double Irsul					
Output Wire Length	0.9 /	2.95		·	1.2 /	3.9			m/
Operating Temperature Range ⁽⁵⁾				-40 - +85 /	-40 - +185				°C /
D 1 10 D D 10		-40 - +85 / -40 - +185 "0 IP68 / NEMA6P							
Protection Rating				IP06 / IN	EMADE				

(1) 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 (2) INCC 2017 requires maximput voltage be not more than 80V (3) For other connector Types place contact Standardige (4) For dual version for parallel connection of two modules use P485-4NMDMRM. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimizer connected to one PV module. When connecting a single module seal the unused input connectors with the supplied pair of seals.

(5) For ambient temperature above +85°C / +83°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details.

PV System Design Using a SolarEdge Inverter ⁽⁶⁾⁽⁷⁾		Single Phase HD-Wave	Single phase	Three Phase for 277/480V grid		
Minimum String Length	P320, P340, P370, P400, P401	3	3	10	18	
(Power Optimizers)	P405, P485, P505	É	i .	8	14	
Maximum String Length (Power	Optimizers)	2	5	25	50(8)	
Maximum Power per String		5700 (6000 with SE7600-US - SE11400- US)	5250	6000 ⁽⁹⁾	1275C ⁽¹⁰⁾	W
Parallel Strings of Different Leng	ths or Orientations		γ	'es	•	

(6) For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf
(7) It is not allowed to mix P405/P485/P505 with P320/P340/P370/P400/P401 in one string
(8) A string with more than 30 optimizers does not meet IRC rapid shutdown requirements; safety voltage will be above the 30V requirement
(9) For 208V grid. It is allowed to install up to 7,200W per string when the maximum power difference between each string is 1,000W
(10) For 21/1/480V grid. It is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W

© SolarEdge Technologies Ltd. All rights reserved. SOLAREDGE, the SolarEdge logo, OPTIMIZED BY SOLAREDGE are trademarks or registered trad All other trademarks mentioned herein are trademarks of their respective owners. Date: 07/2020/02/ENG NAM. Subject to change without notice







GARCIA, MARIA LUISA RESIDENCE 46 BLANCH JOHNSON ROAD, BROADWAY, NC, 27505 LAT:35.421148, LON:-78.989467 TSP113588

(37) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE11400H-US 14.800 kW DC SYSTEM SIZE 11.400 kW AC SYSTEM SIZE

DATE: 8/25/2022 REV: A

DRAWN BY: JS

EQUIPMENT SPECIFICATIONS PV 12



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 Technology, Anti PID Technology 1 , Hot-Spot Protect and Traceable Quality Tra.Q $^{\text{TM}}$.



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.

 $^{\rm 1}\,\mbox{APT}$ test conditions according to IEC/TS 62804-1:2015, method A (-1500 V, 96 h)

² See data sheet on rear for further information

THE IDEAL SOLUTION FOR:

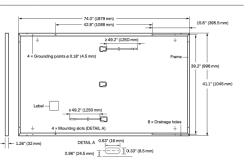


Engineered in Germany



MECHANICAL SPECIFICATION

Format	74.0 in \times 41.1 in \times 1.26 in (including frame) (1879 mm \times 1045 mm \times 32 mm)
Weight	48.5 lbs (22.0 kg)
Front Cover	0.13in (3.2mm) 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 \times 1.26 - 2.36 in \times 0.59 - 0.71 in (53 - 101 mm \times 32 - 60 mm \times 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

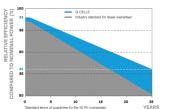


ELECTRICAL CHARACTERISTICS

M PERFORMANCE AT STANDARD wer at MPP¹ ort Circuit Current¹	TEST CONDITIO	NS, STC ¹ (PO)		5W/-0W)			
	P _{MPP}	[\A/]					
ort Circuit Current ¹		[4 4]	385	390	395	400	405
	I _{sc}	[A]	11.04	11.07	11.10	11.14	11.17
en Circuit Voltage¹	V _{oc}	[V]	45.19	45.23	45.27	45.30	45.34
rrent at MPP	I _{MPP}	[A]	10.59	10.65	10.71	10.77	10.83
Itage at MPP	V _{MPP}	[V]	36.36	36.62	36.88	37.13	37.39
iciency¹	η	[%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
M PERFORMANCE AT NORMAL OF	PERATING CONT	OITIONS, NMC	OT2				
wer at MPP	P _{MPP}	[W]	288.8	292.6	296.3	300.1	303.8
ort Circuit Current	I _{sc}	[A]	8.90	8.92	8.95	8.97	9.00
en Circuit Voltage	Voc	[V]	42.62	42.65	42.69	42.72	42.76
rrent at MPP	I _{MPP}	[A]	8.35	8.41	8.46	8.51	8.57
N	M PERFORMANCE AT NORMAL OF er at MPP rt Circuit Current in Circuit Voltage	M PERFORMANCE AT NORMAL OPERATING CONT er at MPP PMPP rt Circuit Current I _{SC} voc	PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMC er at MPP	PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT2	PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT2 Per at MPP	PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT2 Page 1 MPP	PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT ² Page 1

*Measurement tolerances P_{MPP} ±3%; I_{SC}; V_{OC} ±5% at STC: 1000W/m², 25±2°C, AM 1.5 according to IEC 60904-3 • 2800W/m², NMOT, spectrum AM 1.5

Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during 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 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

rpical module performance under low irradiance conditions in

TEMPERATURE COEFFICIENTS							
Temperature Coefficient of I _{sc}	α	[%/K]	+0.04	Temperature Coefficient of Voc	β	[%/K]	-0.27
Temperature Coefficient of P _{MPP}	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

© C COURTE US





			[lb]	1O-O	40'HC	
Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	1656 lbs 751 kg	24 pallets	24 pallets	32 modules

PACKAGING INFORMATION

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 this product.

Hanwha Q CELLS America Inc.

UL 61730, CE-compliant, Quality Controlled PV - TÜV Rheinl IEC 61215:2016, IEC 61730:2016,

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

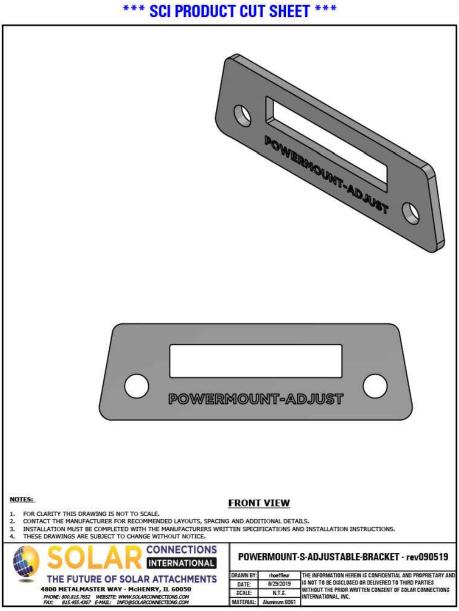
TITAN
SOLAR POWER
525 W BASELINE RD., MESA AZ, 85210
CONTRACTOR LIC# CR-11 284331

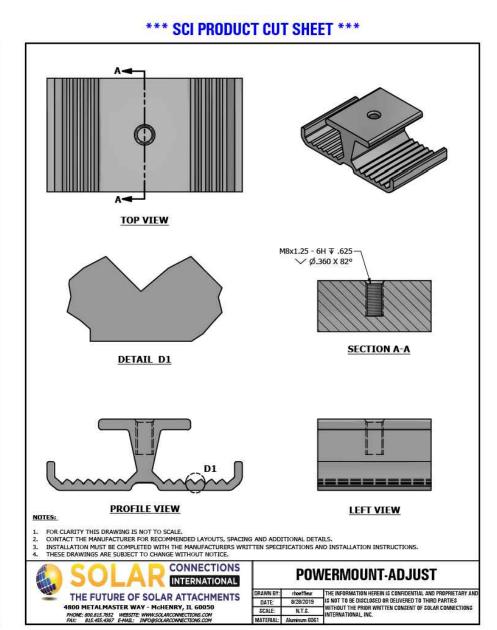
GARCIA, MARIA LUISA RESIDENCE 46 BLANCH JOHNSON ROAD , BROADWAY, NC, 27505 LAT:35.421148, LON:-78.989467 TSP113588 (37) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE11400H-US 14.800 kW DC SYSTEM SIZE 11.400 kW AC SYSTEM SIZE

DATE: 8/25/2022 REV: A

REV: A DRAWN BY: JS EQUIPMENT SPECIFICATIONS PV 13









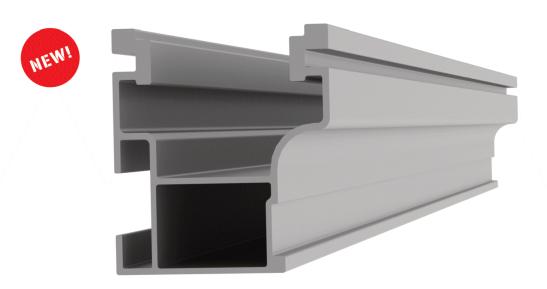
GARCIA, MARIA LUISA RESIDENCE 46 BLANCH JOHNSON ROAD , BROADWAY, NC, 27505 LAT:35.421148, LON:-78.989467 TSP113588 (37) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE11400H-US 14.800 kW DC SYSTEM SIZE 11.400 kW AC SYSTEM SIZE

DATE: 8/25/2022

REV: A DRAWN BY: JS EQUIPMENT SPECIFICATIONS PV 14

Mounting systems for solar technology





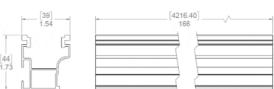
NEW PRODUCT

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.



GARCIA, MARIA LUISA RESIDENCE 46 BLANCH JOHNSON ROAD , BROADWAY, NC, 27505 LAT:35.421148, LON:-78.989467 TSP113588

(37) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE11400H-US 14.800 kW DC SYSTEM SIZE 11.400 kW AC SYSTEM SIZE

DATE: 8/25/2022

REV: A

DRAWN BY: JS

EQUIPMENT SPECIFICATIONS PV 15