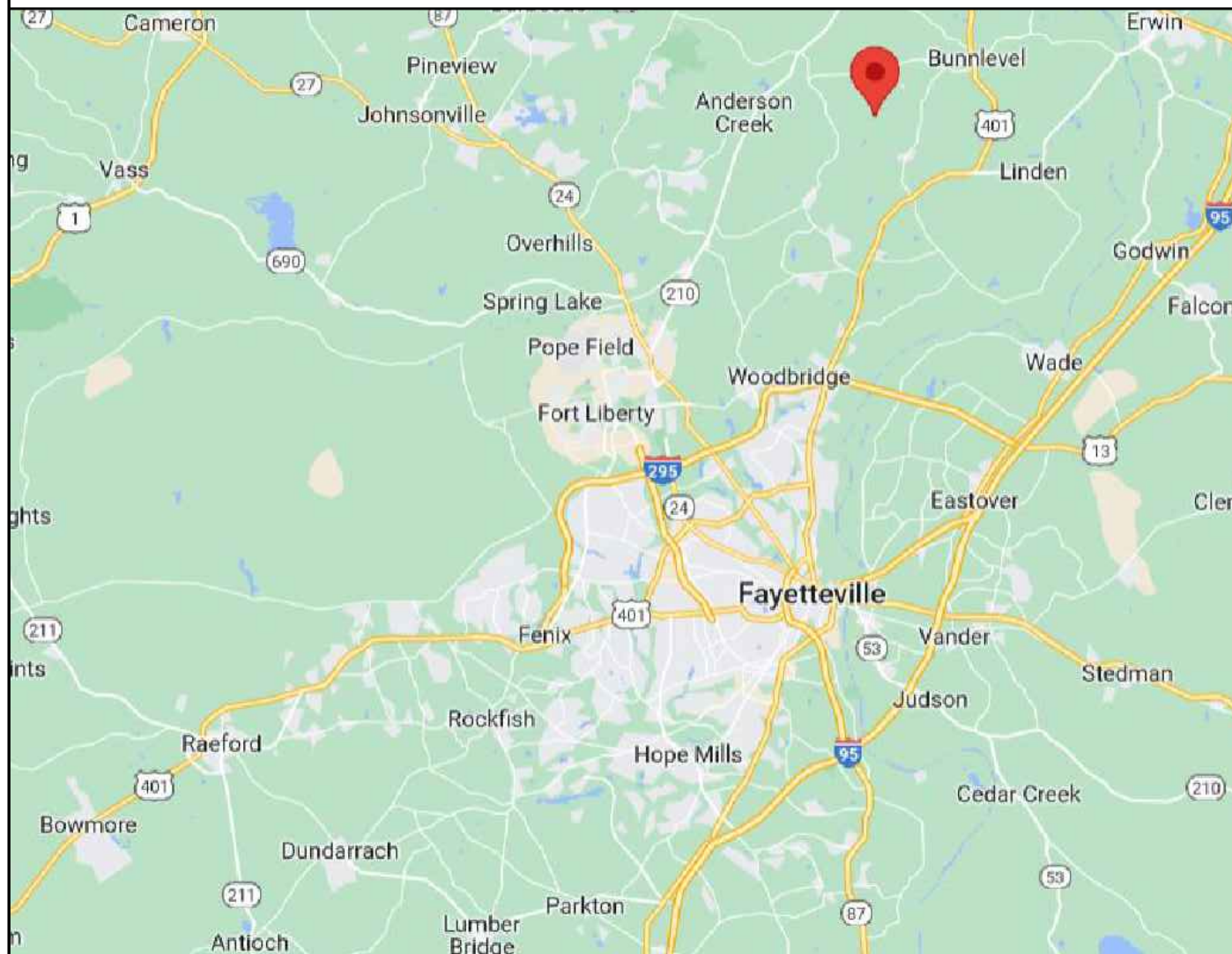


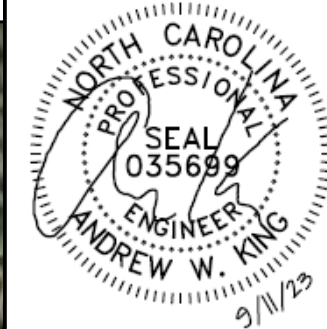
### VICINITY MAP



### 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**

9.720 kW DC INPUT  
7.600 kW AC EXPORT

Gonzalez Cruz, Kiddian Michelle  
1651 Raynor McLamb Rd  
Linden, NC 28356

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CLIENT:



ISSUED FOR:	DATE:
PERMIT	9/11/2023

PROJECT INFORMATION

# PV1.1

### SCOPE OF WORK

(24) REC405AA PURE  
(1) SOLAREEDGE SE7600H-US  
ROOF MOUNT: FLASHKIT PRO  
MOUNTING RAILS: UNIRAC SM LIGHT RAIL

### SITE CONDITION

ASCE 7-10 WIND SPEED - 118 MPH  
EXPOSURE CATEGORY - B  
RISK CATEGORY - II  
SNOW LOAD - 10 LBS/SQFT

### SHEET INDEX

PV1.1 - 1.2 PROJECT INFORMATION  
PV2.1 SITE INFORMATION  
PV3.1 STRUCTURAL INFORMATION  
PV4.1 - 4.2 ELECTRICAL INFORMATION  
PV5.1 - 5.5 LABELS, DETAILS & SPECS

### INTERCONNECTIONS TYPE

SUPPLY SIDE TAP

### CODE REFERENCES

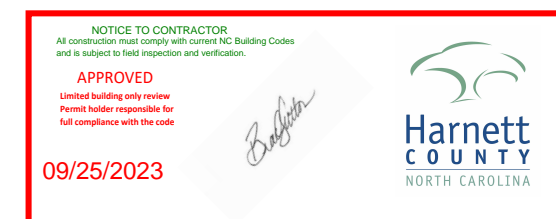
2017 NATIONAL ELECTRIC CODE  
2018 NORTH CAROLINA FIRE CODE  
2018 NORTH CAROLINA BUILDING CODE  
2018 NORTH CAROLINA RESIDENTIAL CODE

### UTILITY COMPANY

SOUTH RIVER EMC

### LEGEND

- DISCONNECT SWITCH
- FUSE
- CIRCUIT BREAKER
- EQUIP. GROUND







AURORA SOLAR SHADE ANALYSIS

GONZALEZ CRUZ, KIDDIAN MICHELLE  
 1651 RAYNOR MCLAMB RD  
 LINDEN, NC 28356  
 9.720 KW DC STC  
 7.600 KW AC

MODULES:

(24) REC405AA PURE

INVERTERS:

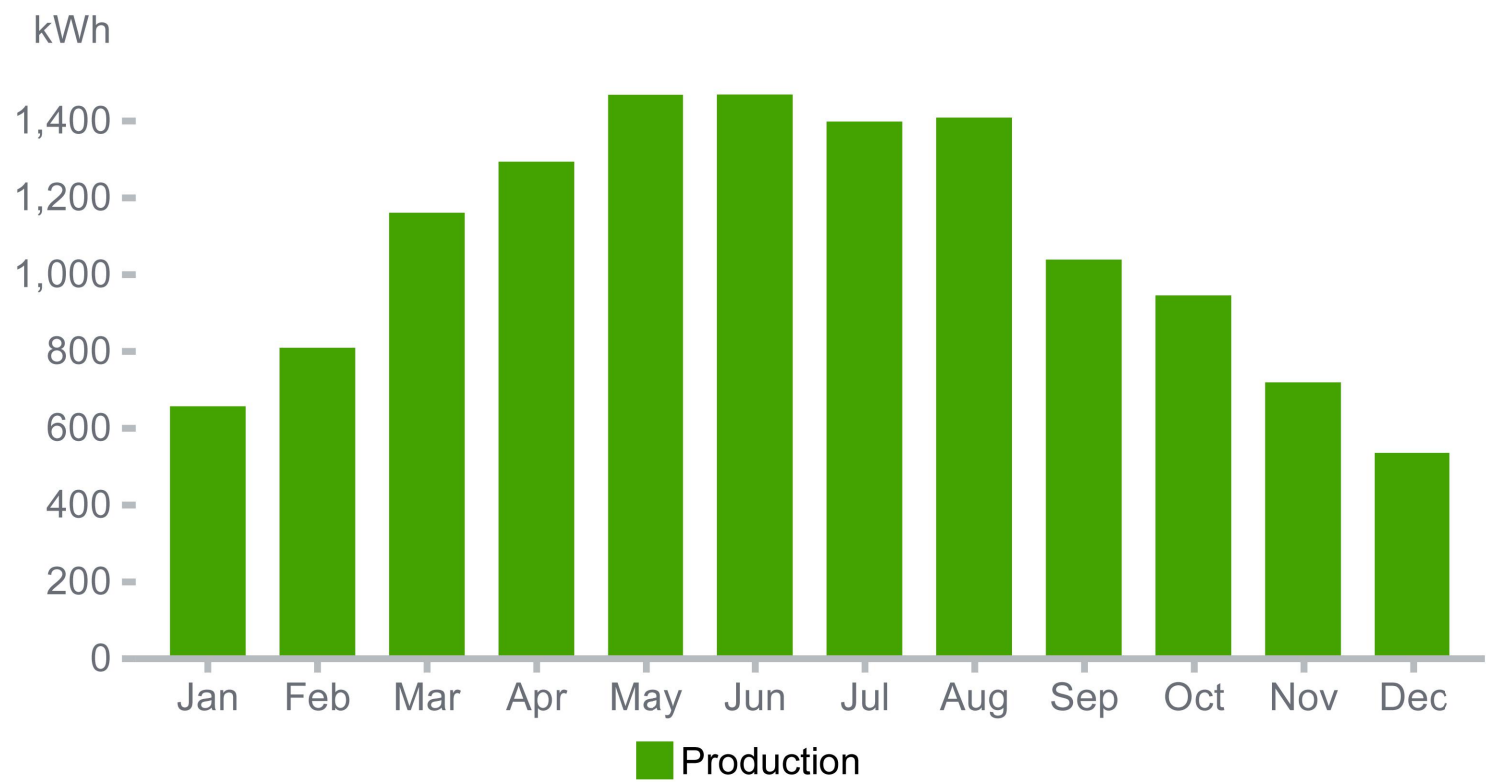
(1) SOLAREEDGE SE7600H-US

POWER OPTIMIZERS:

(24) S440

THE SYSTEM HAS A FIRST YEAR ANNUAL ENERGY PRODUCTION OF: 12,907 KWH/YEAR

THIS PRODUCTION IS AN ESTIMATE PREPARED USING AURORA SOLAR SHADE ANALYSIS SOFTWARE. ALL SOLAR SYSTEMS EXPERIENCE PERFORMANCE DEGRADATION OVER THEIR LIFETIME. THIS IS USUALLY APPROXIMATELY 1% PER YEAR, BUT VARIES BASED ON EQUIPMENT USED AND ENVIRONMENTAL CONDITIONS.



ENGINEER:



MODEL ENERGY  
 300 FAYETTEVILLE ST.  
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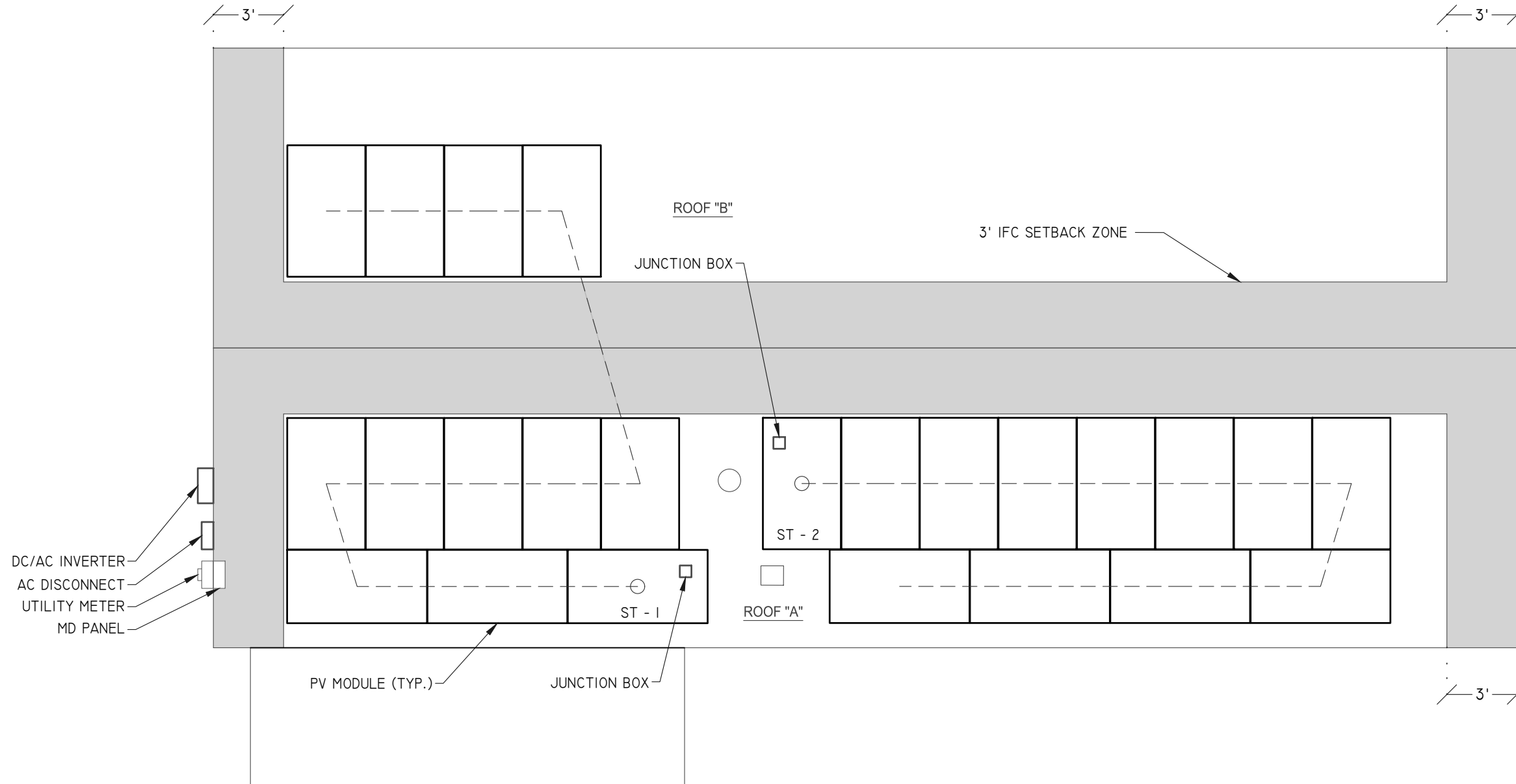
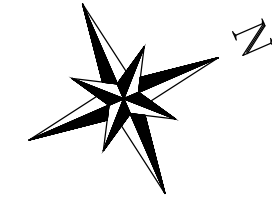


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PROJECT INFORMATION

PV1.2

FRONT OF  
RESIDENCE



ENGINEER:



MODEL ENERGY

300 FAYETTEVILLE ST.  
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P-1194

JOB TITLE:

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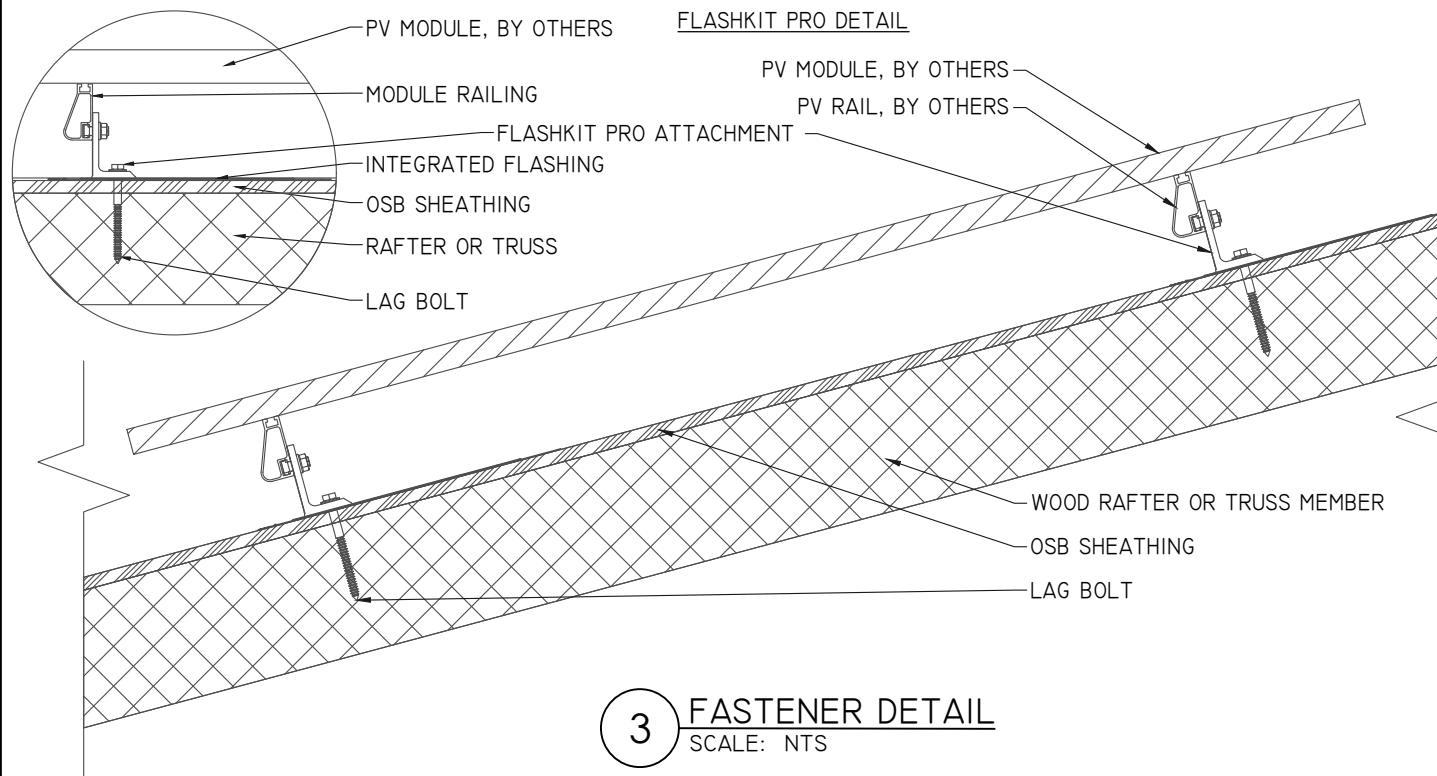

SITE  
INFORMATION

PV2.1

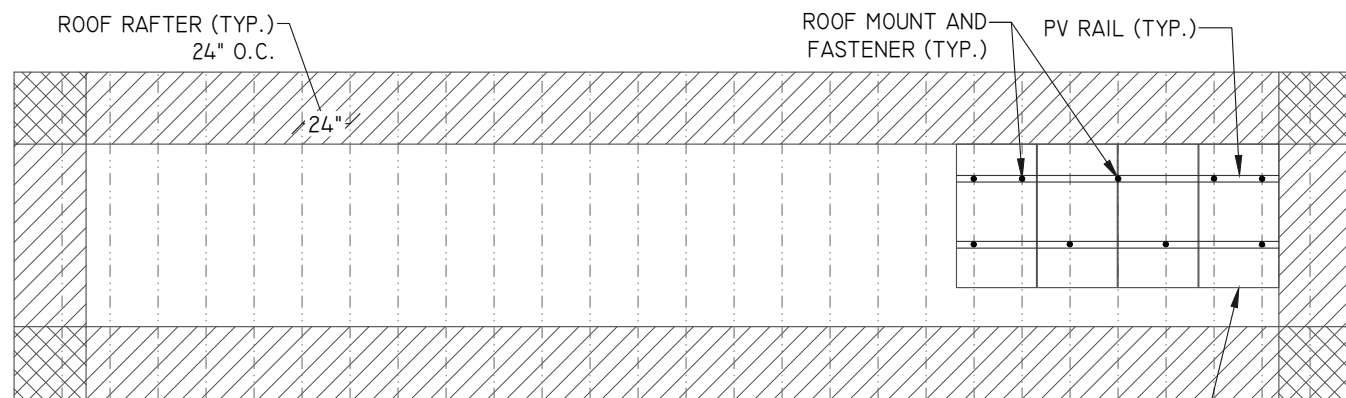
NOTE: PROVIDE ADDITIONAL JUNCTION BOXES AS  
REQUIRED TO COMBINE MODULES ON DIFFERENT  
ARRAYS INTO A SINGLE STRING

1 SITE PLAN  
SCALE: 3/16" = 1' -0"

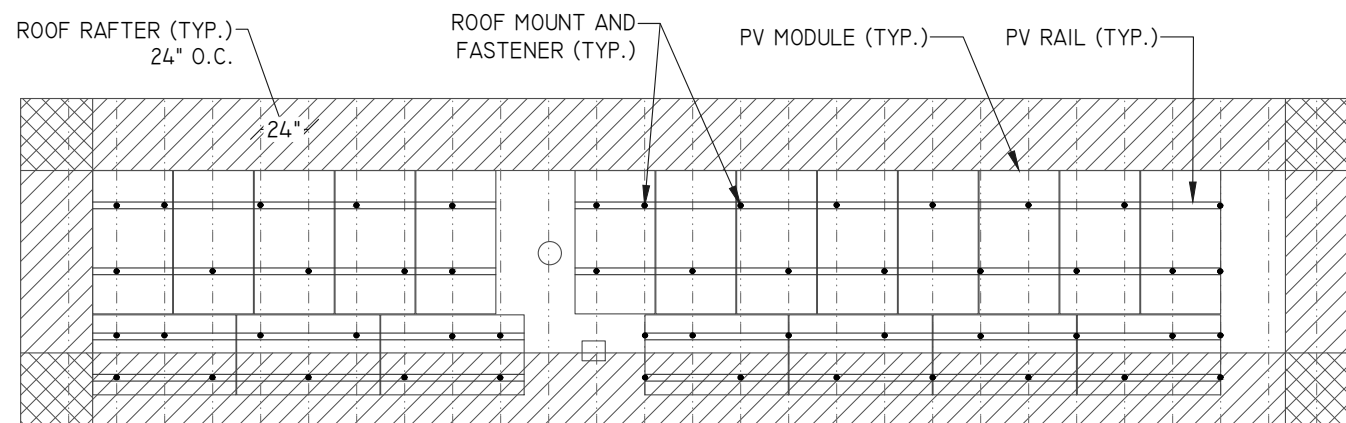
NFPA-1/FFPC SECTION 11.12.2.2.2 REQUIRED 3  
FEET ACCESS, PATHWAYS, AND SETBACKS. DO  
NOT PLACE ANY PV MODULES IN THIS SPACE.



**3 FASTENER DETAIL**  
SCALE: NTS



**2 ROOF "B" PLANAR VIEW**  
SCALE: 1/8" = 1'-0"



**1 ROOF "A" PLANAR VIEW**  
SCALE: 1/8" = 1'-0"

ARRAY "B" SUMMARY	
# MODULES	4
# ROOF MOUNTS	9
RAIL LENGTH	56 FT.
ARRAY AREA	80 SQFT.
ARRAY WEIGHT	207 LBS.
AZIMUTH @ SN	293°
TILT ANGLE	19°

ARRAY "A" SUMMARY	
# MODULES	20
# ROOF MOUNTS	52
RAIL LENGTH	141 FT.
ARRAY AREA	398 SQFT.
ARRAY WEIGHT	969 LBS.
AZIMUTH @ SN	113°
TILT ANGLE	19°

MOUNTING RAILS	
MAKE	UNIRAC
MODEL	SM LIGHT RAIL
MATERIAL	ALUMINUM
WEIGHT	0.49 LBS/SQFT
SPACING	34"

ROOF ZONES (PORTRAIT):		
ALL ZONES	MAX. RAIL OVERHANG =	16"
□ ZONE 1	MAX. FASTENER SPAN ZONE 1 =	48"
▨ ZONE 2	MAX. FASTENER SPAN ZONE 2 =	24"
▩ ZONE 3	DO NOT INSTALL MODULES IN ZONE 3	N/A

ROOF ZONES (LANDSCAPE):		
ALL ZONES	MAX. RAIL OVERHANG =	16"
□ ZONE 1	MAX. FASTENER SPAN ZONE 1 =	72"
▨ ZONE 2	MAX. FASTENER SPAN ZONE 2 =	48"
▩ ZONE 3	MAX. FASTENER SPAN ZONE 3 =	24"

ROOF "A" & "B" LOADING	
GROUND SNOW LOAD:	10 LBS./SQFT.
LIVE LOAD:	20 LBS./SQFT.
DEAD LOAD:	
ROOFING	3.9 LBS./SQFT.
PV ARRAY	2.5 LBS./SQFT.
STRUCTURAL	1.1 LBS./SQFT.
TOTAL	7.5 LBS./SQFT.
WIND LOAD:	
UPLIFT ZONE 1	-23.0 LBS/SQFT
UPLIFT ZONE 2	-38.0 LBS/SQFT
UPLIFT ZONE 3	-57.1 LBS/SQFT
DOWNWARD	13.6 LBS/SQFT
FASTENER LOAD:	
UPLIFT ZONE 1	-275 LBS
UPLIFT ZONE 2	-227 LBS
UPLIFT ZONE 3	N/A
DOWNWARD	163 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.

SIGNED: \_\_\_\_\_  
 NAME: ANDREW W. KING, PE  
 TITLE: PROFESSIONAL ENGINEER

ROOF MOUNT & FASTENER	
ROOF MOUNT:	
MAKE	UNIRAC
MODEL	FLASHKIT PRO
MATERIAL	ALUMINUM
FASTENER	
MAKE	GENERIC
MODEL	LAG BOLT
MATERIAL	SS LAG W/EPDM WASHER
SIZE	5/16" x 4"
GENERAL	
WEIGHT	1 LBS
FASTENERS PER MOUNT	1 PER MOUNT
MAX. PULL-OUT FORCE	800 LBS.
SAFETY FACTOR	2
DESIGN PULL-OUT FORCE	400 LBS.

- LAG BOLT EMBEDDED WITH 2.5" OF THREAD IN WOOD RAFTER OR TRUSSES MEMBER

ROOF SUMMARY	
STRUCTURE:	
TYPE	RAFTER
MATERIAL	SOUTHERN PINE #2
SIZE	2" X 6"
SPACING	24"
EFF. SPAN	
ROOF "A"	12'-10"
ROOF "B"	12'-10"
PITCH	
ROOF "A"	4/12
ROOF "B"	4/12
DENSITY	30 LBS./CU.FT.
DECKING:	
TYPE	OSB
MATERIAL	WOOD COMPOSITE
THICKNESS	7/16
WEIGHT	1.6 LBS./SQFT.
ROOFING:	
TYPE	ARCH SHINGLE
MATERIAL	ASPHALT
WEIGHT	2.3 LBS./SQFT.

PV MODULES	
MAKE	REC
MODEL	REC405AA PURE BLACK
WIDTH	40.0"
LENGTH	71.7"
THICKNESS	1.2"
WEIGHT	45 LBS

ENGINEER:

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

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 Gonzalez Cruz, Kiddian Michelle  
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CLIENT:

ISSUED FOR:	DATE:
PERMIT	9/11/2023

STRUCTURAL INFORMATION  
**PV3.1**



PV MODULES	
MAKE	REC
MODEL	REC405AA PURE BLACK
TECHNOLOGY	MONO-CRYST.
NOM. POWER (P <sub>nom</sub> )	405 WATTS
NOM. VOLT. (V <sub>mp</sub> )	37.39 VOLTS
O.C. VOLT. (V <sub>oc</sub> )	45.34 VOLTS
MAX. SYS. VOLT.	1000 V (UL)
TEMP. COEF. (V <sub>t</sub> )	-0.27 %/°C
NOM. CURR. (I <sub>mp</sub> )	10.83 AMPS
S.C. CURR. (I <sub>sc</sub> )	11.17 AMPS
MAX. SERIES FUSE	20 AMPS

MODULE OPTIMIZER	
MAKE	SOLAREEDGE
MODEL	S440
DC INPUT:	
RATED POWER	440 WATTS
VOLT. RANGE	8-60
MAX. SCC	14.5 AMPS
DC OUTPUT:	
MAX. CURRENT	15 AMPS
MAX. VOLT.	60 VOLTS
MAX. SYSTEM VOLT.	1000 VOLTS
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

NOTES:

- PROVIDE ADDITIONAL JUNCTION BOXES AS REQUIRED TO COMBINE MODULES ON DIFFERENT ARRAYS INTO A SINGLE STRING

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	BARE WIRE	-	-	-	FREE AIR	1
C2	4	10 AWG	COPPER	THWN-2	1	10 AWG	COPPER	THWN-2	1	1/2"	FMC/EMT/MC	EXT/INT	2,4
C3	3	8 AWG	COPPER	THWN	1	10 AWG	COPPER	THWN	1	3/4"	NOTE 5	EXTERIOR	2,4,5
C4	3	6 AWG	COPPER	THWN	-	-	-	-	1	3/4"	NOTE 5	EXT	2,4,5,6
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
5. PVC, EMT, ROMEX, LFNMC & FMC ARE ACCEPTABLE WHEN USED IN ACCORDANCE WITH ARTICLES 330, 334, 348, 350, 352, 356, & 358 OF THE 2017 NEC
6. SERVICE CONDUCTORS SHALL NOT TRAVEL MORE THAN 5' INSIDE OF THE BUILDING AND MORE THAN 10' IN TOTAL.

DC/AC INVERTER	
MAKE	SOLAREEDGE
MODEL	SE7600H-US
TECHNOLOGY	TRANS-LESS
DC INPUT:	
MAX. POWER	11800 WATTS
MAX. VOLT.	480 VOLTS
NOM. VOLT.	400 VOLTS
MAX. CURRENT	20 AMPS
MAX. SCC	45 AMPS
STRINGS INPUTS	2 STRINGS
AC OUTPUT:	
RATED POWER	7600 WATTS
MAX. POWER	7600 WATTS
NOM. VOLT.	240 VOLTS
MAX. CURR.	32 AMPS
GFP (Y/N)	YES
RPP (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)	YES
FUSE RATING	40 AMPS

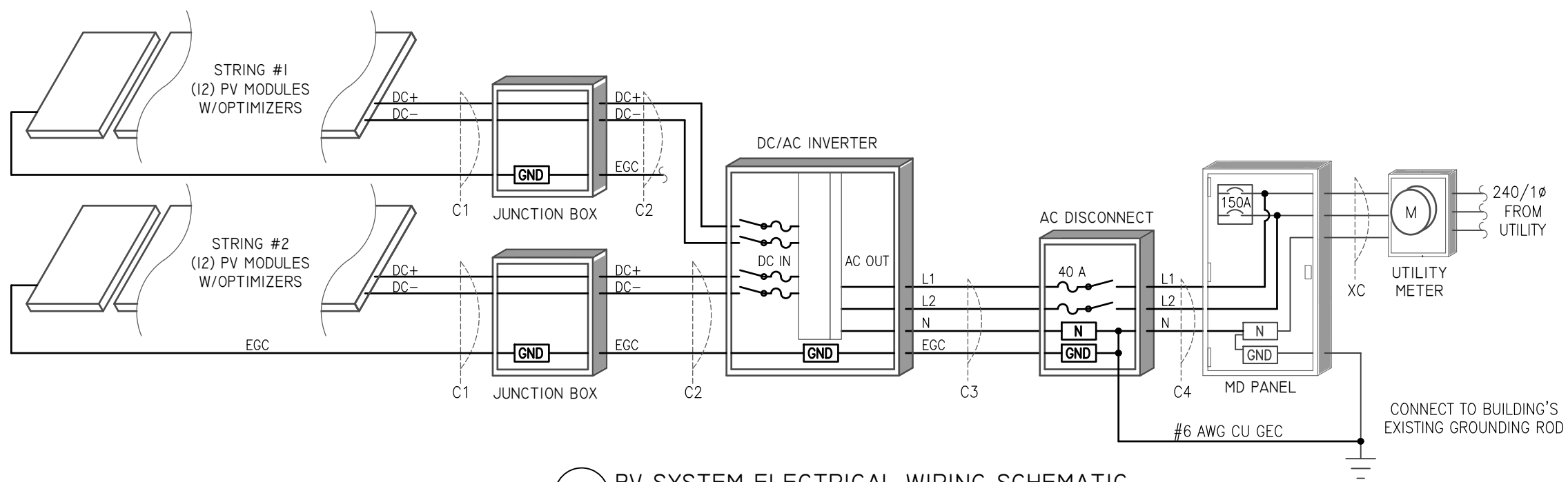
NOTES:

- 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
- SERVICE RATED
- PROVIDE NEUTRAL/GROUND BONDING JUMPER

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

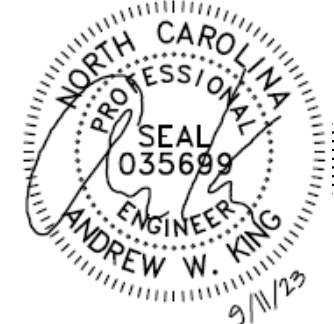
NOTES:

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



1 PV SYSTEM ELECTRICAL WIRING SCHEMATIC  
SCALE: NTS

ENGINEER:



MODEL ENERGY

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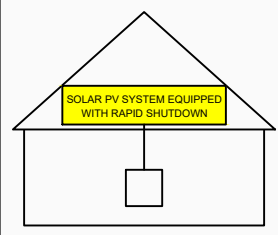
ELECTRICAL INFORMATION

PV4.1

## EQUIPMENT LABELS

### 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

### PV SYSTEM DISCONNECT

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

### 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

### 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: PHOTOVOLTAIC POWER SOURCE

NEC 690.31 (G)(3)&(4)  
PLACE ON ALL JUNCTION BOXES, EXPOSED RACEWAYS, AND OTHER WIRING METHODS EVERY 10' AND ON EVERY SECTION SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS.

### WARNING

FED BY MULTIPLE POWER SOURCES

TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING UTILITY OVERCURRENT DEVICE SHALL NOT EXCEED AMPACITY OF BUSBAR

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

#### EQUIPMENT LABEL NOTES

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

### RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

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

### DIRECT CURRENT PHOTOVOLTAIC POWER SOURCE

MAXIMUM VOLTAGE 600 VDC  
MAX CIR. CURRENT 30 AMPS

NEC 690.53  
PLACE ON ALL DC DISCONNECTING MEANS

### PHOTOVOLTAIC POWER SOURCE

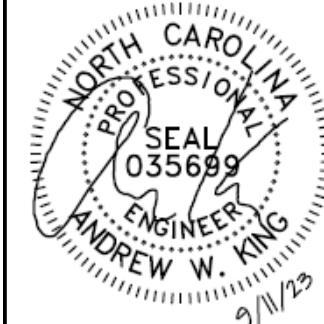
OPERATING AC VOLT. 240 VAC  
MAXIMUM OPERATING AC OUTPUT CURRENT 32 AMPS

NEC 690.54  
PLACE ON INTERCONNECTION DISCONNECTING MEANS

## 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
- 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)

ENGINEER:



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CLIENT:



ISSUED FOR:	DATE:
PERMIT	9/11/2023

ELECTRICAL INFORMATION

# PV4.2

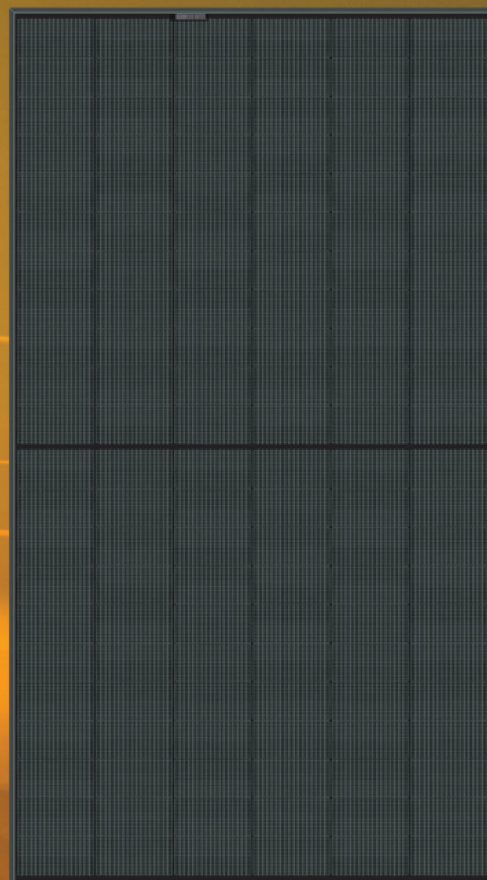


SOLAR'S MOST TRUSTED



# REC ALPHA<sup>®</sup> PURE BLACK SERIES

## PRODUCT SPECIFICATIONS



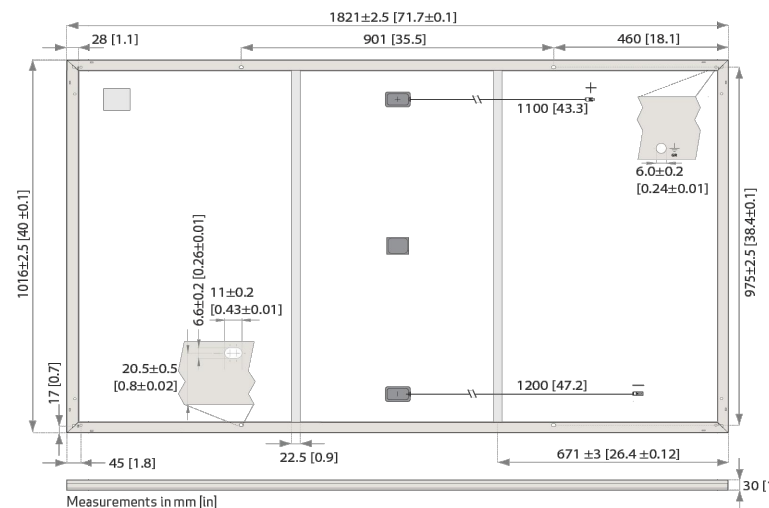
400WP  
20.1 W/FT<sup>2</sup>



ELIGIBLE



REC ALPHA PURE BLACK SERIES > PRODUCT SPECIFICATIONS



### GENERAL DATA

Cell type:	132 half-cut REC heterojunction cells with lead-free, gapless technology 6 strings of 22 cells in series	Connectors:	Stäubli MC4 PV-KBT4/KST4; 12AWG (4mm <sup>2</sup> ) in accordance with IEC 62852 IP68 only when connected
Glass:	0.13 in (3.2 mm) solar glass with anti-reflection surface treatment	Cable:	12AWG (4mm <sup>2</sup> ) PV wire, 43+47 in (11+1.2 m) accordance with EN50618
Backsheet:	Highly resistant polymer (black)	Dimensions:	71.7 x 40 x 1.2 in (1821 x 1016 x 30 mm)
Frame:	Anodized aluminum (black)	Weight:	45 lbs (20.5 kg)
Junction box:	3-part, 3 bypass diodes, IP67 rated in accordance with IEC 62790	Origin:	Made in Singapore

### ELECTRICAL DATA

	Product Code: RECxxxAA Pure Black				
Power Output - P <sub>MAX</sub> (Wp)	385	390	395	400	405
Watt Class Sorting - (W)	0/+5	0/+5	0/+5	0/+5	0/+5
Nominal Power Voltage - V <sub>MPP</sub> (V)	41.2	41.5	41.8	42.1	42.4
Nominal Power Current - I <sub>MPP</sub> (A)	9.35	9.40	9.45	9.51	9.56
Open Circuit Voltage - V <sub>OC</sub> (V)	48.5	48.6	48.7	48.8	48.9
Short Circuit Current - I <sub>SC</sub> (A)	9.99	10.03	10.07	10.10	10.14
Power Density (W/sq ft)	19.3	19.6	19.8	20.1	20.3
Panel Efficiency (%)	20.8	21.1	21.3	21.6	21.9
Power Output - P <sub>MAX</sub> (Wp)	293	297	301	305	309
Nominal Power Voltage - V <sub>MPP</sub> (V)	38.8	39.1	39.4	39.7	40.0
Nominal Power Current - I <sub>MPP</sub> (A)	7.55	7.59	7.63	7.68	7.72
Open Circuit Voltage - V <sub>OC</sub> (V)	45.7	45.8	45.9	46.0	46.1
Short Circuit Current - I <sub>SC</sub> (A)	8.07	8.10	8.13	8.16	8.19

Values at standard test conditions (STC: air mass AM1.5, irradiance 1000 W/m<sup>2</sup>, temperature 77°F (25°C), based on a production spread with a tolerance of P<sub>MAX</sub>, V<sub>OC</sub> & I<sub>SC</sub> ±3% within one watt class. Nominal module operating temperature (NMOT: air mass AM1.5, irradiance 800 W/m<sup>2</sup>, temperature 68°F (20°C), windspeed 3.3 ft/s (1 m/s). \*Where xxx indicates the nominal power class (P<sub>MAX</sub>) at STC above.

## PRODUCT SPECIFICATIONS

### CERTIFICATIONS

IEC 61215:2016, IEC 61730:2016, UL 61730 (Pending)  
ISO 14001:2004, ISO 9001:2015, OHSAS 18001:2007, IEC 62941



### WARRANTY

	Standard	REC ProTrust
Installed by an REC Certified Solar Professional	No	Yes
System Size	All	<25 kW 25-500 kW
Product Warranty (yrs)	20	25
Power Warranty (yrs)	25	25
Labor Warranty (yrs)	0	25
Power in Year 1	98%	98%
Annual Degradation	0.25%	0.25%
Power in Year 25	92%	92%

See warranty documents for details. Conditions apply

### MAXIMUM RATINGS

Operational temperature:	-40 ... +185°F (-40 ... +85°C)
Maximum system voltage:	1000 V
Maximum test load (front):	+7000 Pa (146 lbs/sq ft)
Maximum test load (rear):	-4000 Pa (83.5 lbs/sq ft)
Max series fuse rating:	25 A
Max reverse current:	25 A

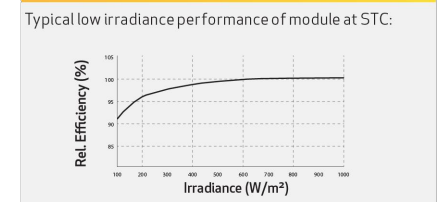
\*See installation manual for mounting instructions. Design load = Test load / 1.5 (safety factor)

### TEMPERATURE RATINGS\*

Nominal Module Operating Temperature:	44°C (±2°C)
Temperature coefficient of P <sub>MAX</sub> :	-0.26 %/°C
Temperature coefficient of V <sub>OC</sub> :	-0.24 %/°C
Temperature coefficient of I <sub>SC</sub> :	0.04 %/°C

\*The temperature coefficients stated are linear values

### LOW LIGHT BEHAVIOUR



Typical low irradiance performance of module at STC:

Specifications subject to change without notice.

Ref: PM-DS-12-01-Rev-A\_03.21

ENGINEER:

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

JOB TITLE:  
NEW SOLAR PV SYSTEM  
9.720 kW DC INPUT  
7.600 kW AC EXPORT  
Gonzalez Cruz, Kiddian Michelle  
1651 Raynor McLamb Rd  
Linden, NC 28356

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ISSUED FOR:	DATE:
PERMIT	9/11/2023

LABELS,  
DETAILS & SPECS

# PV5.1

Founded in 1996, REC Group is an international pioneering solar energy company dedicated to empowering consumers with clean, affordable solar power. As Solar's Most Trusted, REC is committed to high quality, innovation, and a low carbon footprint in the solar materials and solar panels it manufactures. Headquartered in Norway with operational headquarters in Singapore, REC also has regional hubs in North America, Europe, and Asia-Pacific.



# Power Optimizer For Residential Installations

S440, S500



POWER OPTIMIZER

## Enabling PV power optimization at the module level

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

\* Functionality subject to inverter model and firmware version

[solaredge.com](http://solaredge.com)



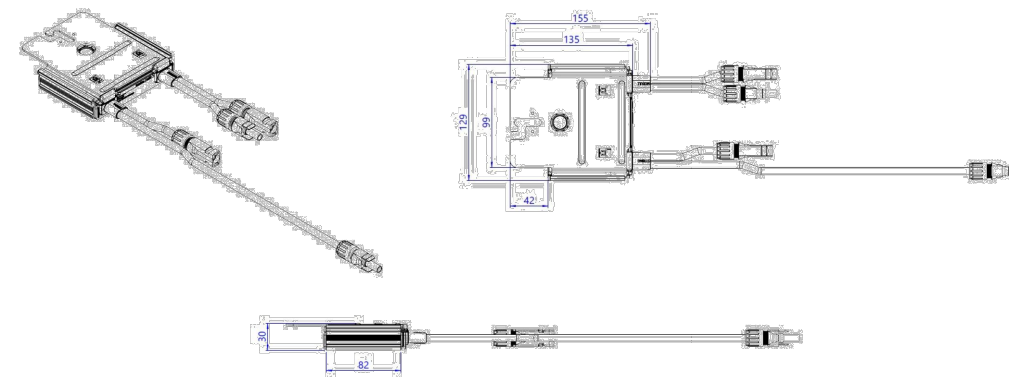
## Power Optimizer For Residential Installations S440, S500

	S440	S500	UNIT
Rated Input DC Power <sup>(1)</sup>	440	500	W
Absolute Maximum Input Voltage (Voc)		60	Vdc
MPPT Operating Range		8 - 60	Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5	15	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overtoltage Category		II	
<b>OUTPUT DURING OPERATION</b>			
Maximum Output Current		15	Adc
Maximum Output Voltage		60	Vdc
<b>OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)</b>			
Safety Output Voltage per Power Optimizer		1	Vdc
<b>STANDARD COMPLIANCE</b>			
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3, CISPR11, EN-55011		
Safety	IEC62109-1 (class II safety), UL1741		
Material	UL94 V-0, UV Resistant		
RoHS	Yes		
Fire Safety	VDE-AR-E 2100-712:2013-05		
<b>INSTALLATION SPECIFICATIONS</b>			
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 155 x 30	mm
Weight (including cables)		655 / 1.5	gr / lb
Input Connector		MC4 <sup>(2)</sup>	
Input Wire Length		0.1	m
Output Connector		MC4	
Output Wire Length		(+) 2.3, (-) 0.10	m
Operating Temperature Range <sup>(3)</sup>		-40 to +85	°C
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 - 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed  
 (2) For other connector types please contact SolarEdge  
 (3) For ambient temperature above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details

PV System Design Using a SolarEdge Inverter		Single Phase HD-Wave	Three Phase	Three Phase for 277/480V Grid	
Minimum String Length (Power Optimizers)	S440, S500	8	16	18	
Maximum String Length (Power Optimizers)		25	50		
Maximum Nominal Power per String <sup>(4)</sup>		5700	11250 <sup>(5)</sup>	12750 <sup>(6)</sup>	W
Parallel Strings of Different Lengths or Orientations			Yes		

(4) If the inverters rated AC power ≤ maximum nominal power per string, then the maximum power per string will be able to reach up to the inverters maximum input DC power Refer to: <https://www.solaredge.com/sites/default/files/se-power-optimizer-single-string-design-application-note.pdf>  
 (5) For the 230/400V grid: It is allowed to install up to 13,500W per string when the maximum power difference between each string is 2,000W  
 (6) For the 277/480V grid: It is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W  
 (7) It is not allowed to mix S-series and P-series Power Optimizers in new installations



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CE RoHS

ENGINEER:



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#1430  
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919-274-9905  
MODELENERGY.COM  
P-1194

JOB TITLE:

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9.720 kW DC INPUT  
7.600 kW AC EXPORT

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Michelle  
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ISSUED FOR: PERMIT  
DATE: 9/11/2023

EQUIPMENT  
SPEC SHEETS

PV5.2



# Single Phase Inverter with HD-Wave Technology

for North America

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



**12-25**  
YEAR  
WARRANTY

**INVERTERS**

## Optimized installation with HD-Wave technology

- / Specifically designed to work with power optimizers
- / Record-breaking efficiency
- / Fixed voltage inverter for longer strings
- / Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- / UL1741 SA certified, for CPUC Rule 21 grid compliance
- / Extremely small
- / Built-in module-level monitoring
- / Outdoor and indoor installation
- / Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)

[solaredge.com](http://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

	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	600ka 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	1" Maximum / 14-6 AWG				1" Maximum /14-4 AWG				
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1-2 strings / 14-6 AWG				1" Maximum / 1-3 strings / 14-6 AWG				
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174				21.3 x 14.6 x 7.3 / 540 x 370 x 185				in / mm
Weight with Safety Switch	22 / 10	25.1 / 11.4	26.2 / 11.9	38.8 / 17.6				lb / kg	
Noise	< 25				<50				dBA
Cooling	Natural Convection								
Operating Temperature Range	-13 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

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**RoHS**

ENGINEER:



MODEL ENERGY

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RALEIGH, NC 27602  
919-274-9905  
MODELENERGY.COM  
P-1194

JOB TITLE:

**NEW SOLAR PV SYSTEM**

9.720 kW DC INPUT  
7.600 kW AC EXPORT

Gonzalez Cruz, Kiddian  
Michelle  
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CLIENT:



ISSUED FOR: DATE:  
PERMIT 9/11/2023


EQUIPMENT SPEC SHEETS

**PV5.3**



# FLASHKIT PRO



**FLASHKIT PRO** is the complete attachment solution for composition shingle roofs. Featuring Unirac's patented **SHED & SEAL** technology, a weather proof system which provides the ultimate protection against roof leaks. Kitted in 10 packs for maximum convenience, flashings and hardware are available in Mill or Dark finishes. With **FLASHKIT pro**, you have everything you need for a quick, professional installation.



**TRUSTED WATER SEAL FLASHINGS**  
FEATURING SHED & SEAL TECHNOLOGY



**YOUR COMPLETE SOLUTION**  
Flashings, lags, continuous slot L-Feet and hardware



**CONVENIENT 10 PACKS**  
Packaged for speed and ease of handling

## THE COMPLETE ROOF ATTACHMENT SOLUTION

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

# FLASHKIT PRO

## INSTALLATION GUIDE



**FLASHKIT PRO** IS THE COMPLETE FLASHING AND ATTACHMENT SOLUTION FOR COMPOSITION ROOFS.



INSTALL **FLASHKIT PRO** FLASHING



INSTALL L-FOOT



ATTACH L-FOOT TO RAIL

### PRE-INSTALL

- Locate roof rafters and snap chalk lines to mark the installation point for each roof attachment.
- Drill a 7/32" pilot hole at each roof attachment. Fill each pilot hole with sealant.

### STEP 1 INSTALL FLASHKIT PRO FLASHING

- Add a U-shaped bead of roof sealant to the underside of the flashing with the open side of the U pointing down the roof slope. Slide the aluminum flashing underneath the row of shingles directly up slope from the pilot hole as shown. Align the indicator marks on the lower end of the flashing with the chalk lines on the roof to center the raised hole in the flashing over the pilot hole in the roof. When installed correctly, the flashing will extend under the two courses of shingles above the pilot hole.

### STEP 2 INSTALL L-FOOT

- Fasten L-foot and Flashing into place by passing the included lag bolt and pre-installed stainless steel-backed EPDM washer through the L-foot EPDM grommet, and the raised hole in the flashing, into the pilot hole in the roof rafter.

- Drive the lag bolt down until the L-foot is held firmly in place. It is normal for the EPDM on the underside of the stainless steel backed EPDM washer to compress and expand beyond the outside edge of the steel washer when the proper torque is applied.

#### TIP:

- Use caution to avoid over-torquing the lag bolt if using an impact driver.
- Repeat Steps 1 and 2 at each roof attachment point.

### STEP 3 ATTACH L-FOOT TO RAIL

- Insert the included 3/8"-16 T-bolts into the lower slot on the Rail (sold separately), spacing the bolts to match the spacing between the roof attachments.
- Position the Rail against the L-Foot and insert the threaded end of the T-Bolt through the continuous slot in the L-Foot. Apply anti-seize to bolt threads to prevent galling of the T-bolt and included 3/8" serrated flange nut. Place the 3/8" flange nut on the T-bolt and finger tighten. Repeat STEP 3 until all L-Feet are secured to the Rail with a T-bolt. Adjust the level and height of the Rail and torque each bolt to 30ft-lbs.

## FASTER INSTALLATION. 25-YEAR WARRANTY.

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

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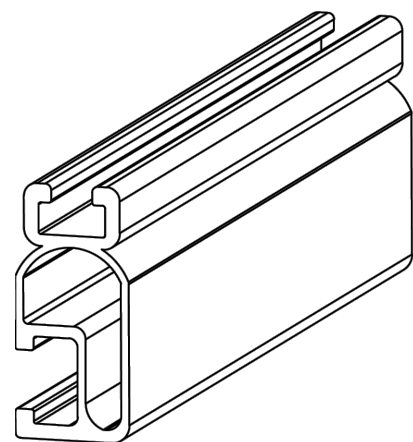


ISSUED FOR:	DATE:
PERMIT	9/11/2023


EQUIPMENT  
SPEC SHEETS

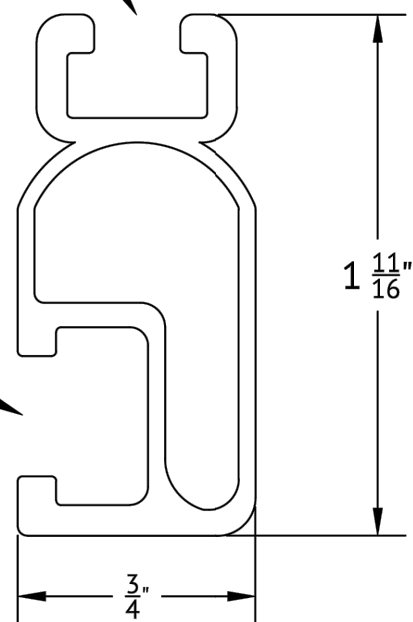
# PV5.4



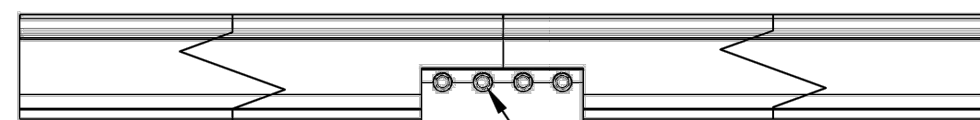
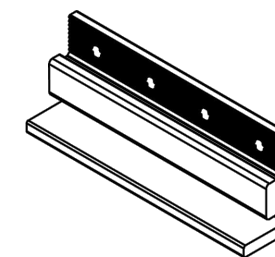
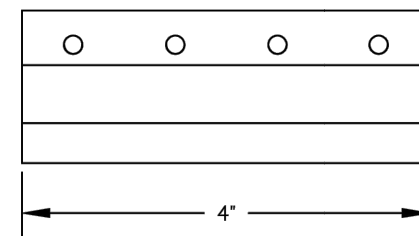
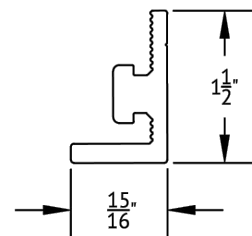


1/4" BOLT LOCATION

3/8" BOLT LOCATION

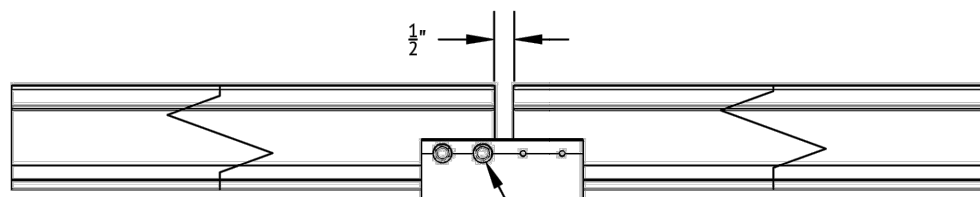


BONDING SPLICE BAR



#12 X 3/4" SELF DRILLING SS SCREWS INCLUDED

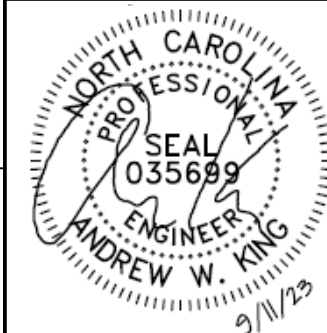
TYPICAL SPLICE BAR DETAIL



TYPICAL EXPANSION JOINT DETAIL

NOTE THAT ONLY 2 SCREWS ARE USED AT AN EXPANSION JOINT. THE SPLICE BAR DOES NOT BOND ACROSS AN EXPANSION JOINT.

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9/11/2023

**UNIRAC**  
1411 BROADWAY BLVD NE  
ALBUQUERQUE, NM 87102 USA  
WWW.UNIRAC.COM

<b>PRODUCT LINE:</b>	SOLARMOUNT
<b>DRAWING TYPE:</b>	PART DETAIL
<b>DESCRIPTION:</b>	LIGHT RAIL
<b>REVISION DATE:</b>	APRIL 2016

DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE  
OR MORE US PATENTS

LEGAL NOTICE

SM-P02

SHEET

**UNIRAC**  
1411 BROADWAY BLVD NE  
ALBUQUERQUE, NM 87102 USA  
WWW.UNIRAC.COM

<b>PRODUCT LINE:</b>	SOLARMOUNT
<b>DRAWING TYPE:</b>	PART & ASSEMBLY
<b>DESCRIPTION:</b>	BONDING SPLICE BAR
<b>REVISION DATE:</b>	APRIL 2016

DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE  
US PATENTS

LEGAL NOTICE

SM-A01

SHEET

EQUIPMENT  
SPEC SHEETS

PV5.5

Customer: Gonzalez Cruz, Kiddian Michelle  
Installer: SmartSun  
Subject: PV System Structural Compliance  
Date: 9/11/2023



To whom it may concern:

Model Energy, PLLC has reviewed the installation details of the proposed PV system that is to be installed by SmartSun at 1651 Raynor McLamb Rd, Linden, NC 28356. The conditions of the existing structure have been reviewed and validated by Model Energy, PLLC. The existing roof structure has been designed to support the additional loads of the proposed PV system. In addition, the racking and fastening system shall be capable of securing the system to the structure under design conditions when installed properly and in accordance with the racking and fastening arrangement detailed within the accompanying permit set. The installation design is compliant with current 2018 North Carolina state and national building codes.

Thank you,

Andrew King, PE

