

Lucent Engineering, P.C.

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Lehi, UT 84043
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August 29, 2022

Encōr Solar, LLC
3049 Executive Pkwy, Ste 300
Lehi, UT 84043

RE: Engineering Services
Maynard Residence
81 Folly Ct, Linden, NC
11.4 kW System
Solo Job #2681609

To Whom It May Concern,

We have reviewed the following information regarding the solar panel installation for this project. Alterations to these documents or plans shall not be made without direct written consent of the Engineer of Record.

A. Assumptions from Field Observation provided by Encōr Solar, LLC

The following structural design regarding the proposed alterations have been prepared from these assumptions. The verification of the field observations is the responsibility of the contractor. **Prior to commencement of work, the contractor shall verify the framing sizes, spacings, and spans noted in the sealed plans, calculations, and/or certification letter and notify the Engineer of Record of any discrepancies.**

| | <u>Roof</u> |
|-----------------------------|----------------------------|
| Roof Finish : | Asphalt Shingle |
| Roof Underlayment : | OSB |
| Roof Profile : | Gable |
| Roof Structural System : | Metal Plate Trusses |
| Truss Top Chord/Setup : | 2 x 4 / Double Fink |
| Chord/Rafter Wood Grade : | Southern Pine #2 or better |
| Truss/Rafter Spacing : | 24" o.c. |
| Roof Slope : | 44 deg |
| Max Top Chord/Rafter Span : | 6.93 ft |
| Bearing Wall Type : | Convl Lt-Frame Constr |
| Foundation : | Permanent Concrete |
| Stories : | Two |

B. Building Design Criteria

| | | | |
|---------------------|--------------------------|-------------------|--------------|
| Code : | 2018 NCRC (ASCE 7-10) | Risk Category : | II |
| Roof Live Load : | 20 psf (0 psf at panels) | Occupancy Class : | R-3 |
| Ground Snow Load : | 10 psf | Roof Dead Load : | 6.5 psf |
| Ult Wind Speed : | 119 mph | PV Dead Load : | <u>3 psf</u> |
| Exposure Category : | C | Total Dead Load : | 9.5 psf |

C. Summary of Existing Structure Results

Roof

After review of the field observations and based on our calculations and in accordance with the applicable building codes and current industry standards, the existing roof structure supporting the proposed alterations consisting of the solar array has been determined to be:

- Adequate to support the additional imposed loads. **No structural upgrades are required.**

D. Solar Panel Support Bracket Anchorage

1. Solar panels shall be designed, mounted, and installed in accordance with the most recent "UniRac Manual", which can be found on the UniRac website (<http://unirac.com/>).
2. Manufacturer's Panel Bracket Connection to Roof Chord/Rafter Member:

Fastener : (1) 5/16" Lag Screw per Bracket
NDS Withdrawl Value : 307 lbs/inch
Min. Thread Length and Penetration Depth : 2.5"

3. Considering the existing roof's slope, size, spacing, condition, and calculated loads, the panel bracket supports shall be placed no greater than 48 in. o/c.
4. Panel supports connections shall be staggered to distribute load to adjacent trusses.

E. Overall Summary

Based on the information supplied to us at the time of this report, on the evaluation of the existing structure, and solar array panel bracket connection, it is our opinion that the roof system will adequately support the additional loads imposed by the solar array. This evaluation conforms to 2018 NCRC and current industry standards.

Should you have any questions regarding this letter or if you require further information, do not hesitate to contact me.

Sincerely,

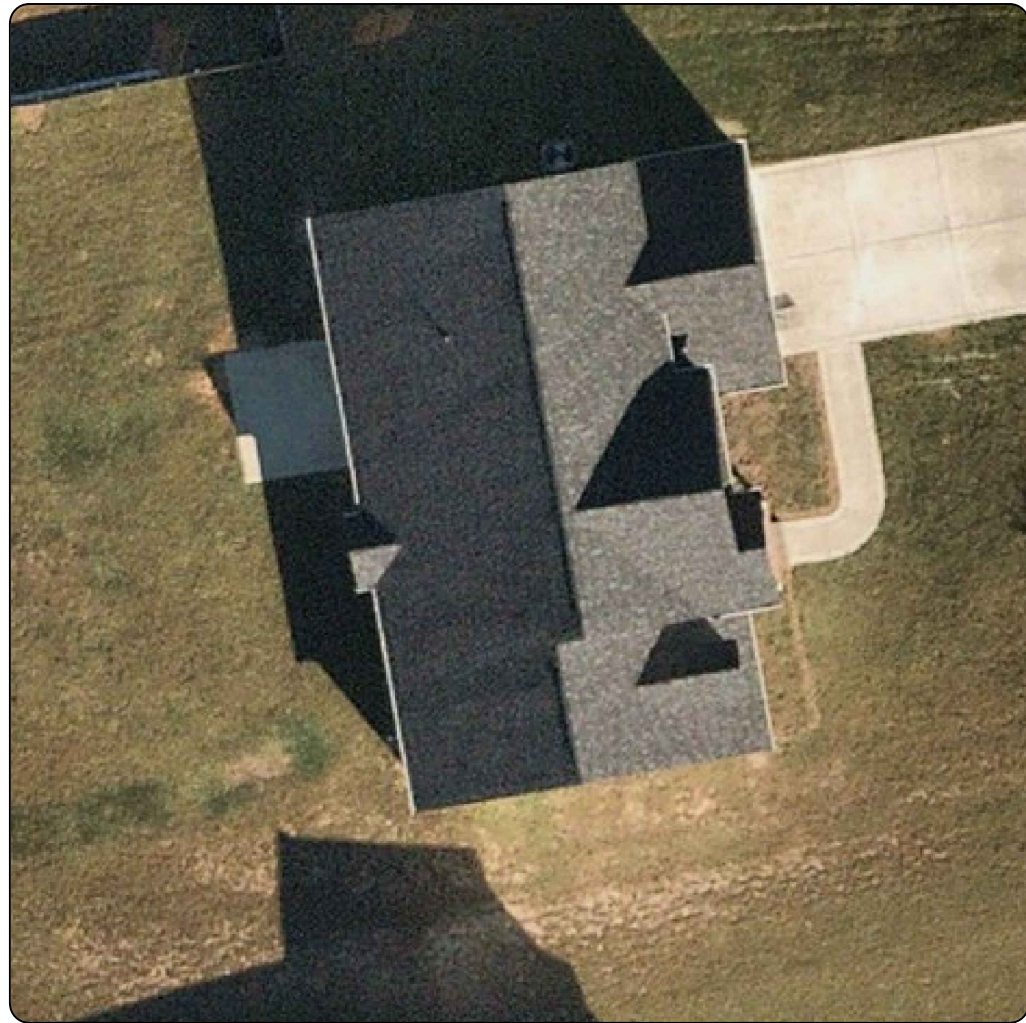


Michael Leeper, PE
License No. 47119

Limits of Scope of Work and Liability

The existing structure is assumed to have been designed and constructed following appropriate codes at the time of erection and assumed to have appropriated permits. The calculations performed are only for the roof framing supporting the solar array installation referenced in the stamped plans and were completed according to generally recognized structural analysis standards and procedures, professional engineering, and design experience opinions and judgements. Existing deficiencies which are unknown or were not observed during the time the site observation are not included in this scope of work. All solar panel modules, racking, and mounting equipment shall be designed and installed per the manufacturer's approved installation specifications. The Engineer of Record and the engineering consulting firm assume no responsibility for misuse or improper installation. This analysis is not stamped for water leakage. Framing was determined on information in provided plans and/or photos, along with engineering judgement. Prior to commencement of work, the contractor shall verify the framing sizes, spacings, and spans noted in the stamped plans, calculations, and/or certification letter and notify the Engineer of Record of any discrepancies prior to starting construction. If during solar panel installation, the roof framing members appear unstable or deflect non-uniformly, our office should be notified before proceeding with the installation. The contractor shall also verify that there are no damage/deficiencies (i.e., dry rot, water damage, termite damage, framing member/connection damage, etc.) to framing that was not addressed in the stamped plans, calculations, and/or certification letter and notify the Engineer of Record of any concerns prior to starting construction.

AERIAL VIEW:



STREET VIEW:



CONTRACTOR INFORMATION:
ENCOR SOLAR, LLC
3049 Executive Parkway
Suite 300
Lehi, UT 84043
License # 32830

SITE INFORMATION

Shannon And Danny Maynard
81 Folly Ct
Linden, NC 28356
AC System Size: 11.4 kW AC
DC System Size: 12.15 kW DC
Lat, 35.2526581
Long, -78.8526631
(30) Jinko Solar JKM405M-72HL-V
PV Modules
(1) SolarEdge SE11400H-US (240V)
Inverter(s)
(30) SolarEdge S440 Optimizers

South River EMC

SHEET INDEX:

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DRAWN BY: SoloCAD

DATE:
August 29, 2022

COVER PAGE - PV01

GENERAL NOTES

1. INSTALLATION OF SOLAR PHOTOVOLTAIC SYSTEM SHALL BE IN ACCORDANCE WITH NEC ARTICLE 690, AND ALL OTHER APPLICABLE NEC CODES WHERE NOTED OR EXISTING
2. PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL COMPLY WITH NEC ARTICLE 110
3. ALL WIRES, INCLUDING THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE IN ACCORDANCE WITH NEC ARTICLE 250
4. THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE; THIS SYSTEM IS UTILITY INTERACTIVE PER UL 1741 AND DOES NOT INCLUDE STORAGE BATTERIES OR OTHER ALTERNATIVE STORAGE SOURCES
5. ALL DC WIRES SHALL BE SIZED ACCORDING TO [NEC 690.8]
6. DC CONDUCTORS SHALL BE WITHIN PROTECTED RACEWAYS IN ACCORDANCE WITH [NEC 690.31]
7. ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL JURISDICTIONAL BUILDING CODE

PHOTOVOLTAIC (PV) SYSTEM SPECIFICATIONS

EQUIPMENT:
AC System Size: 11.4 kW AC
DC SYSTEM SIZE: 12.15 kW DC
(30) Jinko Solar JKM405M-72HL-V PV Modules
(1) SolarEdge SE11400H-US (240V) Inverter(s)
(30) SolarEdge S440 Optimizers
RACKING: Unirac - FLASHKIT PRO - 48" O.C.

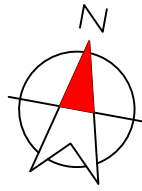
APPLICABLE GOVERNING CODES

2020 NATIONAL ELECTRICAL CODE
2018 NORTH CAROLINA STATE BUILDING CODE: RESIDENTIAL
2018 NORTH CAROLINA STATE BUILDING CODE: BUILDING
2018 NORTH CAROLINA STATE BUILDING CODE: FIRE

SITE SPECIFICATIONS

OCCUPANCY: R-3
ZONING: RESIDENTIAL

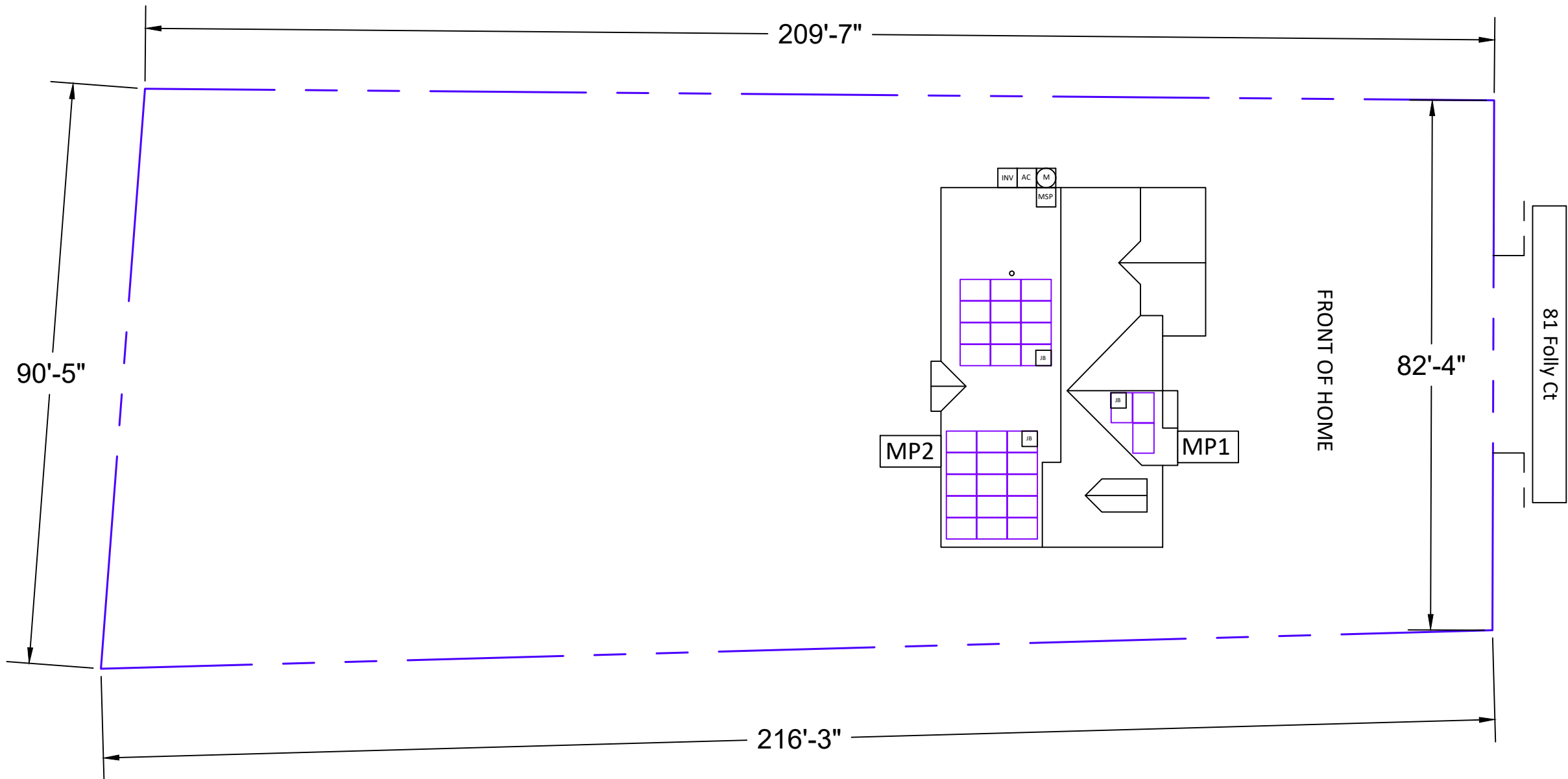




| ARRAY DETAILS: | | |
|-----------------|----------|-------|
| MOUNTING PLANE: | AZIMUTH: | TILT: |
| MP1 | 170° | 44° |
| MP2 | 260° | 44° |



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South River EMC



EQUIPMENT LEGEND:

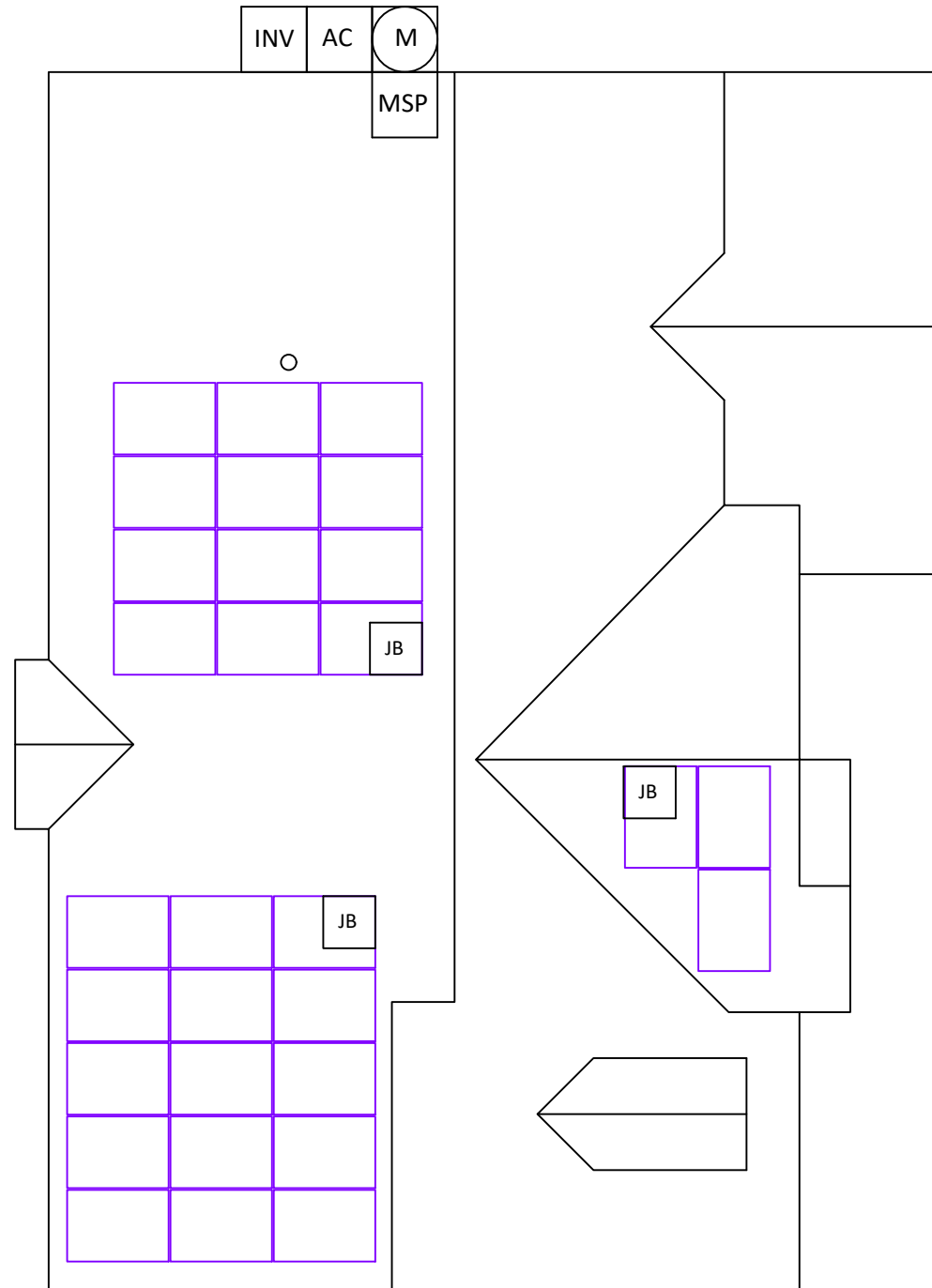
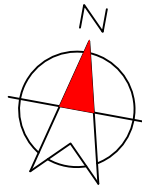
- UTILITY METER
- VISIBLE, LOCKABLE, LABELED AC DISCONNECT
- INVERTER
- SUB PANEL
- SERVICE DISCONNECT
- PV MODULES
- FIRE ACCESS PATHWAY (3' TYP)
- MAIN SERVICE PANEL
- METER SOCKET (FOR UTILITY PV METER)
- COMBINER BOX
- LOAD CENTER
- BATTERY(IES)
- JUNCTION BOX
- PROPERTY LINE

VISIBLE, LOCKABLE, LABELED AC DISCONNECT LOCATED WITHIN 10' OF UTILITY METER

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SITE PLAN - PV02



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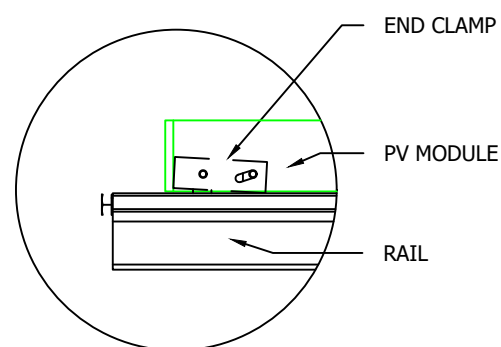


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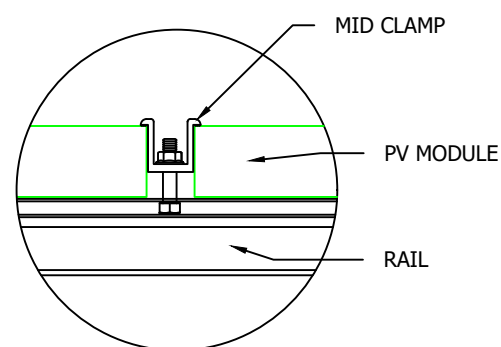
DATE:
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ROOF ATTACHMENTS - PV03

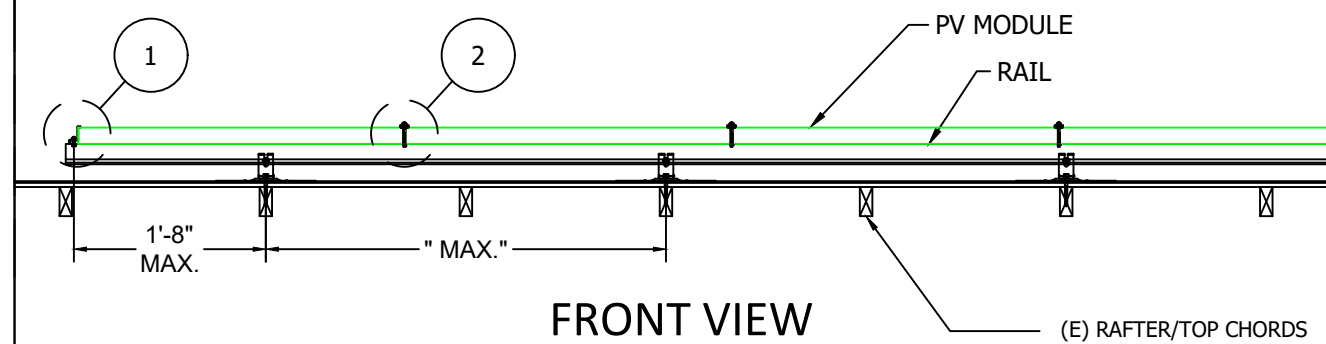
| EQUIPMENT INFORMATION: | | ROOF INFO: | | PHOTOVOLTAIC ARRAY STRUCTURAL CRITERIA: | |
|------------------------|-----------------------|---------------------------|--------------------|--|--|
| RAIL MANUFACTURER: | Unirac | ROOF TYPE: | Asphalt Shingle | PV MODULE COUNT: | 30 |
| RAIL PART NUMBER: | SM | ROOF FRAMING: | Manufactured Truss | ARRAY AREA: | MODULE COUNT * 21.66 ft ² = 649.8 |
| ATTACHMENTS | Unirac - FLASHKIT PRO | RAFTER/TOP CHORD SIZE: | 2x4 | ROOF AREA: | 2117 ft ² |
| ATTACHMENT QTY: | 68 | RAFTER/TOP CHORD SPACING: | 24" | PERCENT OF ROOF COVERED: | 31% |
| SPLICE QTY: | 6 | ATTACHMENT SPACING: | 48" | ARRAY WEIGHT: | MODULE COUNT * 50 lbs = 1500 lbs |
| MIDCLAMP QTY: | 44 | | | POINT LOAD: | ARRAY LBS/ATTACHMENTS = 22.06 |
| ENDCLAMP QTY: | 32 | | | DISTRIBUTED LOAD: (lbs/ft ²) | (ARRAY) WEIGHT/AREA = 2.31 lbs/ft ² |



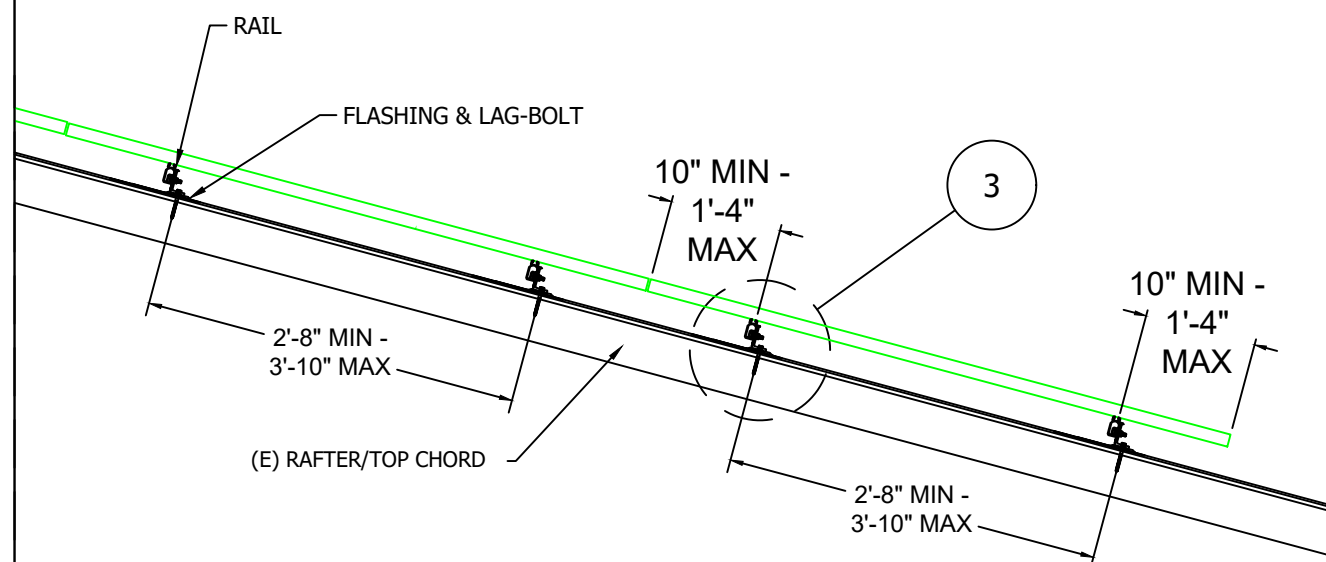
1 END CLAMP DETAILS



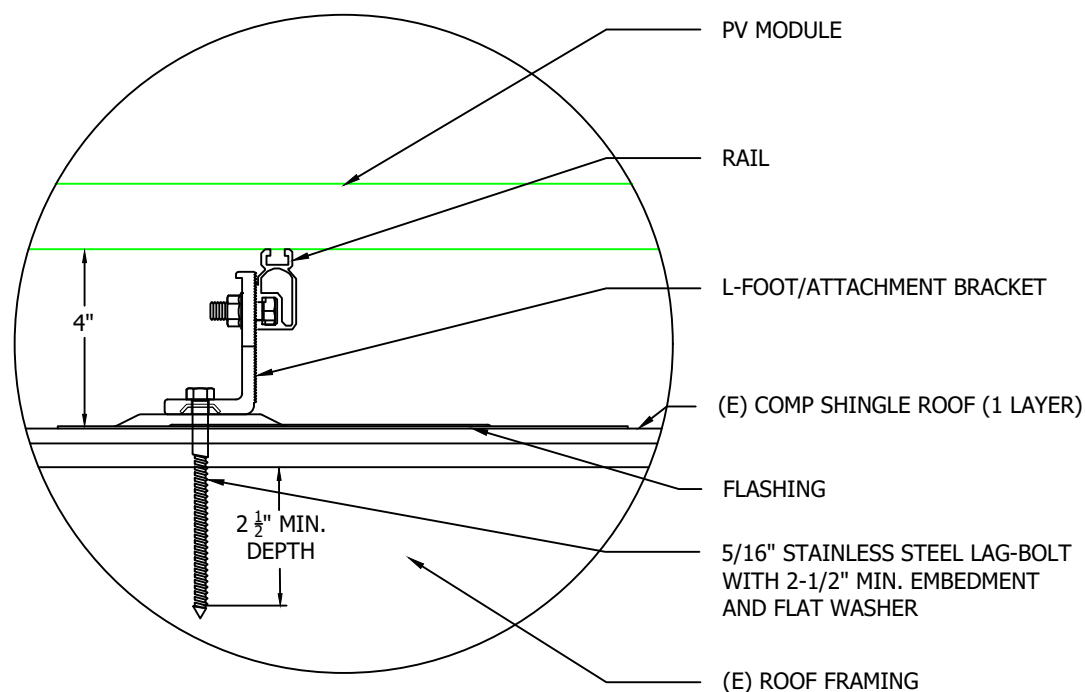
2 MID CLAMP DETAILS



FRONT VIEW



SIDE VIEW



3 DETAIL, MOUNTING AND FLASHING

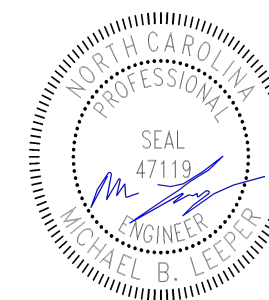


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MOUNTING DETAIL - PV04

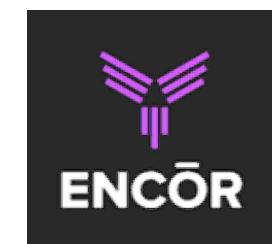
| EQUIPMENT INFORMATION: | | ROOF INFO: | | PHOTOVOLTAIC ARRAY STRUCTURAL CRITERIA: | |
|------------------------|-----------------------|---------------------------|--------------------|--|--|
| RAIL MANUFACTURER: | Unirac | ROOF TYPE: | Asphalt Shingle | PV MODULE COUNT: | 30 |
| RAIL PART NUMBER: | SM | ROOF FRAMING: | Manufactured Truss | ARRAY AREA: | MODULE COUNT * 21.66 ft ² = 649.8 |
| ATTACHMENTS | Unirac - FLASHKIT PRO | RAFTER/TOP CHORD SIZE: | 2x4 | ROOF AREA: | 2117 ft ² |
| ATTACHMENT QTY: | 68 | RAFTER/TOP CHORD SPACING: | 24" | PERCENT OF ROOF COVERED: | 31% |
| SPLICE QTY: | 6 | ATTACHMENT SPACING: | 48" | ARRAY WEIGHT: | MODULE COUNT * 50 lbs = 1500 lbs |
| MIDCLAMP QTY: | 44 | | | POINT LOAD: | ARRAY LBS/ATTACHMENTS = 22.06 |
| ENDCLAMP QTY: | 32 | | | DISTRIBUTED LOAD: (lbs/ft ²) | (ARRAY) WEIGHT/AREA = 2.31 lbs/ft ² |

| Jinko Solar JKM405M-72HL-V Specs | |
|--|--------|
| POWER MAX (P _{MAX}): | 405W |
| OPEN CIRCUIT VOLTAGE (V _{OC}): | 50.1V |
| MAX POWER-POINT CURRENT (I _{MP}): | 9.65A |
| MAX POWER-POINT VOLTAGE (V _{MPP}): | 42V |
| SHORT CIRCUIT CURRENT (I _{SC}): | 10.48A |
| SERIES FUSE RATING: | 20A |

| SolarEdge SE11400H-US (240V) Specs | |
|------------------------------------|---------|
| MAX INPUT VOLTAGE: | 480 V |
| MAX INPUT CURRENT: | 30.5 A |
| NOMINAL DC INPUT VOLTAGE: | 400 V |
| MAXIMUM OUTPUT POWER: | 11400 W |
| NOM. OUTPUT VOLTAGE: | 240 V |
| MAX OUTPUT CURRENT: | 47.5 A |
| 1-Phase, 60 HZ, UL 1741 Listed | |

| Equipment Schedule | | | |
|--------------------|------|--------------------------------|---------|
| TYPE: | QTY: | DESCRIPTION: | RATING: |
| MODULES: | (30) | Jinko Solar JKM405M-72HL-V | 405 W |
| INVERTERS: | (1) | SolarEdge SE11400H-US (240V) | 11400 W |
| AC DISCONNECTS: | (1) | PV AC Disconnect, 240V, 2-Pole | 60 A |
| DC OPTIMIZERS: | (30) | SolarEdge S440 | 15 Adc |

| Conduit & Conductor Schedule | | | | |
|------------------------------|-----|------------|-----------------------------------|----------------|
| TAG | QTY | WIRE GAUGE | DESCRIPTION | CONDUIT SIZE |
| 1 | (2) | 10 AWG | PV-WIRE, USE-2 COPPER - (L1, L2) | N/A - FREE AIR |
| | (1) | 6 AWG | THWN-2 COPPER - (GROUND) | |
| 2 | (2) | 10 AWG | THHN/THWN-2 COPPER - (L1, L2) | 3/4" EMT |
| | (1) | 10 AWG | THWN-2 COPPER - (GROUND) | |
| 3 | (6) | 10 AWG | THHN/THWN-2 (L1, L2) | 3/4" EMT |
| | (1) | 10 AWG | THWN-2 COPPER -(GROUND) | |
| 4 | (3) | 6 AWG | THWN-2 COPPER - (L1, L2, NEUTRAL) | 3/4" EMT |
| | (1) | 8 AWG | THWN-2 COPPER -(GROUND) | |



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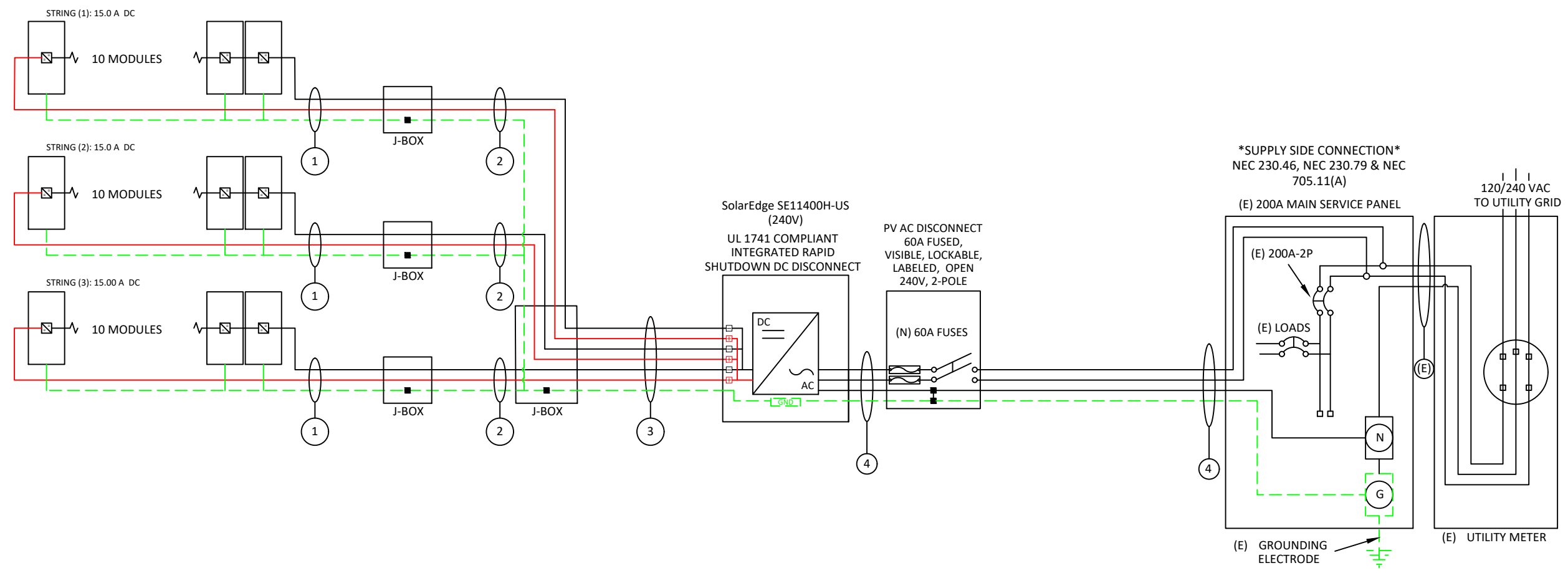
South River EMC

**VISIBLE, LOCKABLE,
 LABELED AC DISCONNECT
 LOCATED WITHIN 10'
 OF UTILITY METER**

DRAWN BY: SoloCAD

DATE:
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LINE DIAGRAM - PV05



| STRING CALCULATIONS | | | |
|------------------------------|-----------|-----------|-----------|
| SolarEdge SE11400H-US (240V) | STRING #1 | STRING #2 | STRING #3 |
| OPTIMIZER MAX OUTPUT CURRENT | 15A | 15A | 15A |
| OPTIMIZERS IN SERIES: | 10 | 10 | 10 |
| NOMINAL STRING VOLTAGE: | 400V | 400V | 400V |
| ARRAY OPERATING CURRENT: | 10A | 10A | 10A |
| ARRAY DC POWER: | 12150W | | |
| TOTAL MAX AC CURRENT: | 48A | | |

| NUMBER OF CURRENT CARRYING CONDUCTORS | PERCENT OF VALUES |
|---------------------------------------|-------------------|
| 4-6 | .80 |
| 7-9 | .70 |
| 10-20 | .50 |

| SYSTEM OCPD CALCULATIONS | |
|---|------------------------------|
| INVERTER MODEL(S): | SolarEdge SE11400H-US (240V) |
| # OF INVERTERS: | 1 |
| MAX OUTPUT CURRENT: | 47.5A |
| (# OF INVERTERS) X (MAX OUTPUT CURRENT) X 125% <= OCPD RATING | |
| (1 X 47.5A X 1.25) = 59.375A <= 60A, OK | |

| SUPPLY SIDE INTERCONNECTION | |
|-----------------------------|------|
| MAIN BUSBAR RATING: | 200A |
| MAIN DISCONNECT RATING: | 200A |
| PV OCPD RATING: | 60A |
| SERVICE RATING >= PV OCPD | |
| 200A >= 60A, OK | |

| Conduit & Conductor Schedule | | | | | | | | | | | |
|------------------------------|-----|------------|-----------------------------------|----------------|------------------|----------------------|--------------|--------------|------------------------|----------------------------|----------------|
| TAG | QTY | WIRE GAUGE | DESCRIPTION | CONDUIT SIZE | CONDUCTOR RATING | CONDUCTOR TEMP. RATE | AMBIENT TEMP | TEMP. DERATE | # OF CONDUCTORS DERATE | CONDUCTOR RATING W/DERATES | CONDUIT FILL |
| 1 | (2) | 10 AWG | PV-WIRE, USE-2 COPPER - (L1, L2) | N/A - FREE AIR | 40A | 90°C | 35°C | 0.96 | N/A - FREE AIR | 38.4A | N/A - FREE AIR |
| | (1) | 6 AWG | THWN-2 COPPER - (GROUND) | | | | | | | | |
| 2 | (2) | 10 AWG | THHN/THWN-2 COPPER - (L1, L2) | 3/4" EMT | 40A | 90°C | 35°C | 0.96 | 1 | 38.4A | 11.9% |
| | (1) | 10 AWG | THWN-2 COPPER - (GROUND) | | | | | | | | |
| 3 | (6) | 10 AWG | THHN/THWN-2 (L1, L2) | 3/4" EMT | 40A | 90°C | 35°C | 0.96 | 0.8 | 30.72A | 27.8% |
| | (1) | 10 AWG | THWN-2 COPPER -(GROUND) | | | | | | | | |
| 4 | (3) | 6 AWG | THWN-2 COPPER - (L1, L2, NEUTRAL) | 3/4" EMT | 65A | 75°C | 35°C | 0.94 | 1 | 61.1A | 35.5% |
| | (1) | 8 AWG | THWN-2 COPPER -(GROUND) | | | | | | | | |



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ELECTRICAL CALCS - PV06

GROUNDING & GENERAL NOTES:

- PV INVERTER IS UNGROUNDED, TRANSFORMER-LESS TYPE.
- DC GEC AND AC EGC TO BE SPLICED TO EXISTING ELECTRODE
- ANY EXISTING WIRING INVOLVED WITH PV SYSTEM CONNECTION THAT IS FOUND TO BE INADEQUATE PER CODE SHALL BE CORRECTED PRIOR TO FINAL INSPECTION.
- JUNCTION BOX QUANTITIES, AND PLACEMENT SUBJECT TO CHANGE IN THE FIELD - JUNCTION BOXES DEPICTED ON ELECTRICAL DIAGRAM REPRESENT WIRE TYPE TRANSITIONS.
- AC DISCONNECT NOTED IN EQUIPMENT SCHEDULE OPTIONAL IF OTHER AC DISCONNECTING MEANS IS LOCATED WITHIN 10' OF SERVICE DISCONNECT.

INTERCONNECTION NOTES:

- GROUND FAULT PROTECTION IN ACCORDANCE WITH [NEC 215.9] & [NEC 230.95]
- SUPPLY SIDE INTERCONNECTION ACCORDING TO [NEC 705.11] WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH [NEC 240.21]

DISCONNECT NOTES:

- DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS)
- AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH.
- FUSED AC DISCONNECT TO BE USED.

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

LABEL 1
 PLACED ON THE MAIN DISCONNECTING MEANS FOR THE PV SYSTEM.
 [NEC 690.13(B)]

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

LABEL 2
 FOR PV DISCONNECTING MEANS WHERE THE LINE AND LOAD TERMINALS MAY BE ENERGIZED IN THE OPEN POSITION.
 [NEC 690.13(B)]

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

LABEL 3
 PLACED ADJACENT TO THE BACK-FED BREAKER FROM THE INVERTER IF TIE IN CONSISTS OF LOAD SIDE CONNECTION TO BUSBAR.
 [NEC 705.12(B)(3)(2)]

CAUTION
 MULTIPLE SOURCES OF POWER

LABEL 4
 PLACED ON EQUIPMENT CONTAINING OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO A BUSBAR OR CONDUCTOR SUPPLIED FROM MULTIPLE SOURCES
 [NEC 705.10]

WARNING
 THIS EQUIPMENT IS FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR.

LABEL 5
 EQUIPMENT CONTAINING OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO A BUSBAR OR CONDUCTOR SUPPLIED FROM MULTIPLE SOURCES SHALL BE MARKED TO INDICATE THE PRESENCE OF ALL SOURCES.[NEC 705.12(B)(3)(3)]

PHOTOVOLTAIC AC DISCONNECT

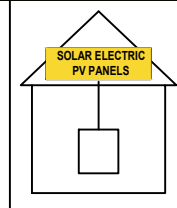
RATED AC OUTPUT CURRENT: 48
 NOMINAL OPERATING AC VOLTAGE: 240

LABEL 6
 MARKED AT AC DISCONNECTING MEANS.
 [NEC 690.54]

PHOTOVOLTAIC POWER SOURCE

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 ARRAY



LABEL 7
 AT DIRECT-CURRENT EXPOSED RACEWAYS, CABLE TRAYS, COVERS AND ENCLOSURES OF JUNCTION BOXES, AND OTHER WIRING METHODS; SPACED AT MAXIMUM 10FT SECTION OR WHERE SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS.
 [NEC 690.31(D)(2)]

LABEL 8
 FOR PV SYSTEMS THAT SHUT DOWN THE ARRAY AND CONDUCTORS LEAVING THE ARRAY:
 SIGN TO BE LOCATED ON OR NO MORE THAN 3 FT AWAY FROM SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED AND SHALL INDICATE THE LOCATION OF ALL IDENTIFIED RAPID SHUTDOWN SWITCHES IF NOT AT THE SAME LOCATION.
 [NEC 690.56(C)(1)]

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL 9
 SIGN LOCATED ON OR NO MORE THAN 3FT FROM INITIATION DEVICE
 [NEC 690.56(C)(2)].



CONTRACTOR INFORMATION:
 ENCOR SOLAR, LLC
 3049 Executive Parkway
 Suite 300
 Lehi, UT 84043
 License # 32830

SITE INFORMATION

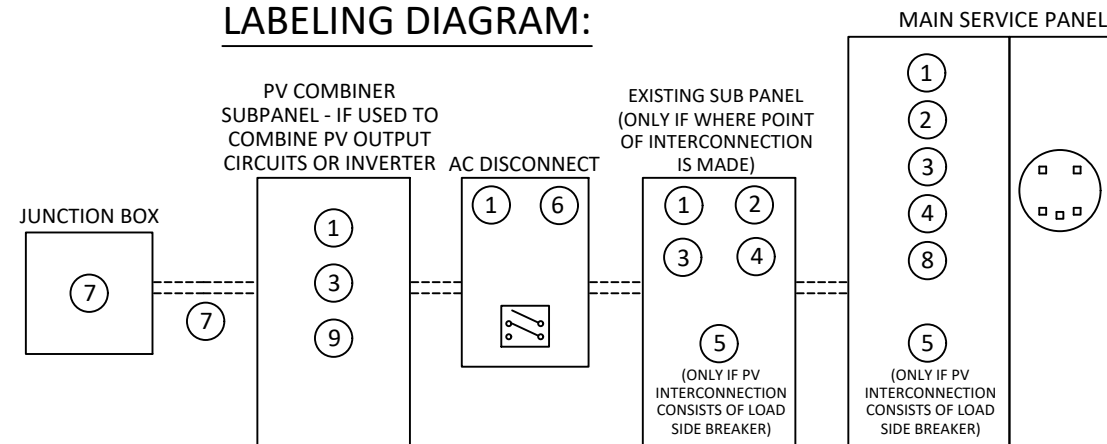
Shannon And Danny Maynard
 81 Folly Ct
 Linden, NC 28356
 AC System Size: 11.4 kW AC
 DC System Size: 12.15 kW DC
 Lat, 35.2526581
 Long, -78.8526631
 (30) Jinko Solar JKM405M-72HL-V PV Modules
 (1) SolarEdge SE11400H-US (240V) Inverter(s)
 (30) SolarEdge S440 Optimizers

South River EMC

LABELING NOTES:

1. LABELS CALLED OUT ACCORDING TO ALL COMMON CONFIGURATIONS. ELECTRICIAN TO DETERMINE EXACT REQUIREMENTS IN THE FIELD PER CURRENT NEC AND LOCAL CODES AND MAKE APPROPRIATE ADJUSTMENTS.
2. LABELING REQUIREMENTS BASED ON THE 2020 NATIONAL ELECTRIC CODE, OSHA STANDARD 19010.145, ANSI Z535.
3. MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
4. LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED [NEC 110.21]
5. LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8", WHITE ON RED BACKGROUND; REFLECTIVE, AND PERMANENTLY AFFIXED [NEC 690.31(D)(2)]

LABELING DIAGRAM:



** ELECTRICAL DIAGRAM SHOWN ABOVE IS FOR LABELING PURPOSES ONLY. NOT AN ACTUAL REPRESENTATION OF EQUIPMENT AND CONNECTIONS TO BE INSTALLED. LABEL LOCATIONS PRESENTED MAY VARY DEPENDING ON TYPE OF INTERCONNECTION METHOD AND LOCATION PRESENTED ELECTRICAL DIAGRAM PAGE. **

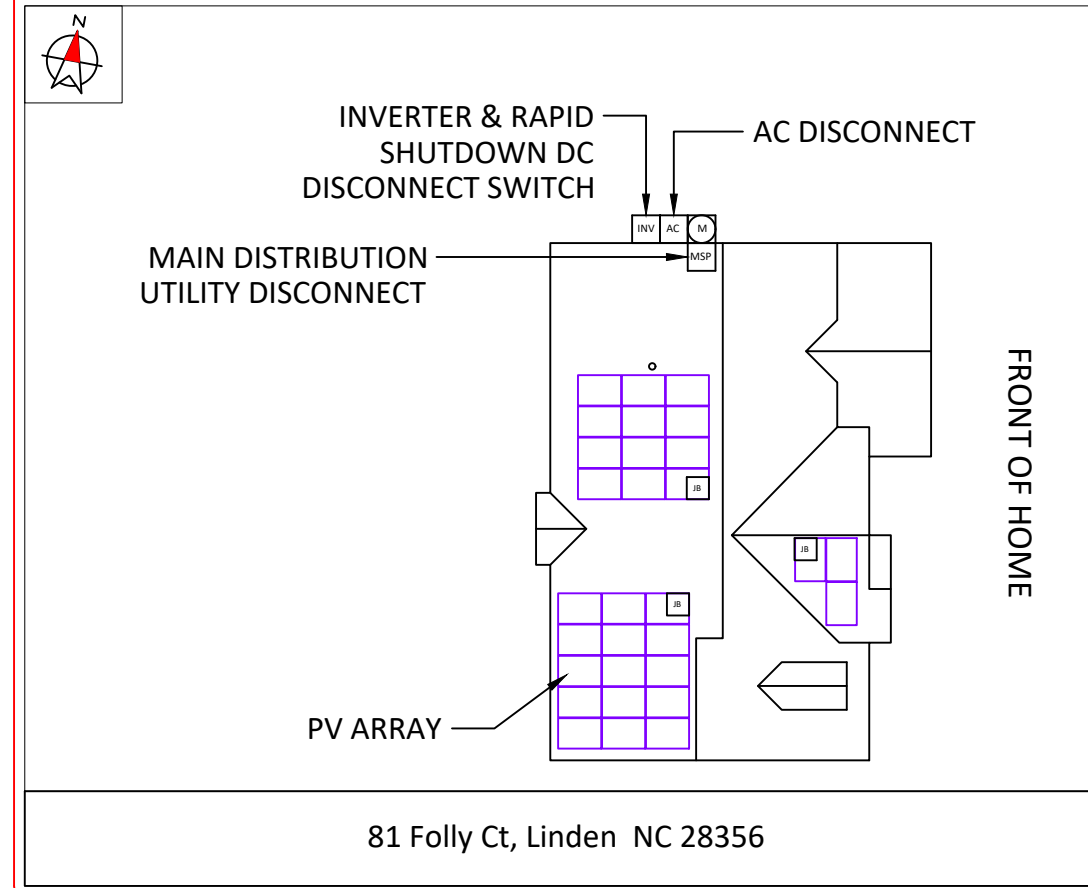
DRAWN BY: SoloCAD

DATE:
 August 29, 2022

LABELS - PV07

CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM ROOF MOUNTED SOLAR ARRAYS WITH SAFETY DISCONNECTS AS SHOWN:



DIRECTORY

PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM.

(ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS OUTLINED WITHIN:
NEC 690.56(B)&(C), [NEC 705.10])



CONTRACTOR INFORMATION:

ENCOR SOLAR, LLC
3049 Executive Parkway
Suite 300
Lehi, UT 84043
License # 32830

SITE INFORMATION

Shannon And Danny Maynard

81 Folly Ct

Linden, NC 28356

AC System Size: 11.4 kW AC

DC System Size: 12.15 kW DC

Lat, 35.2526581

Long, -78.8526631

(30) Jinko Solar JKM405M-72HL-V
PV Modules

(1) SolarEdge SE11400H-US (240V)
Inverter(s)

(30) SolarEdge S440 Optimizers

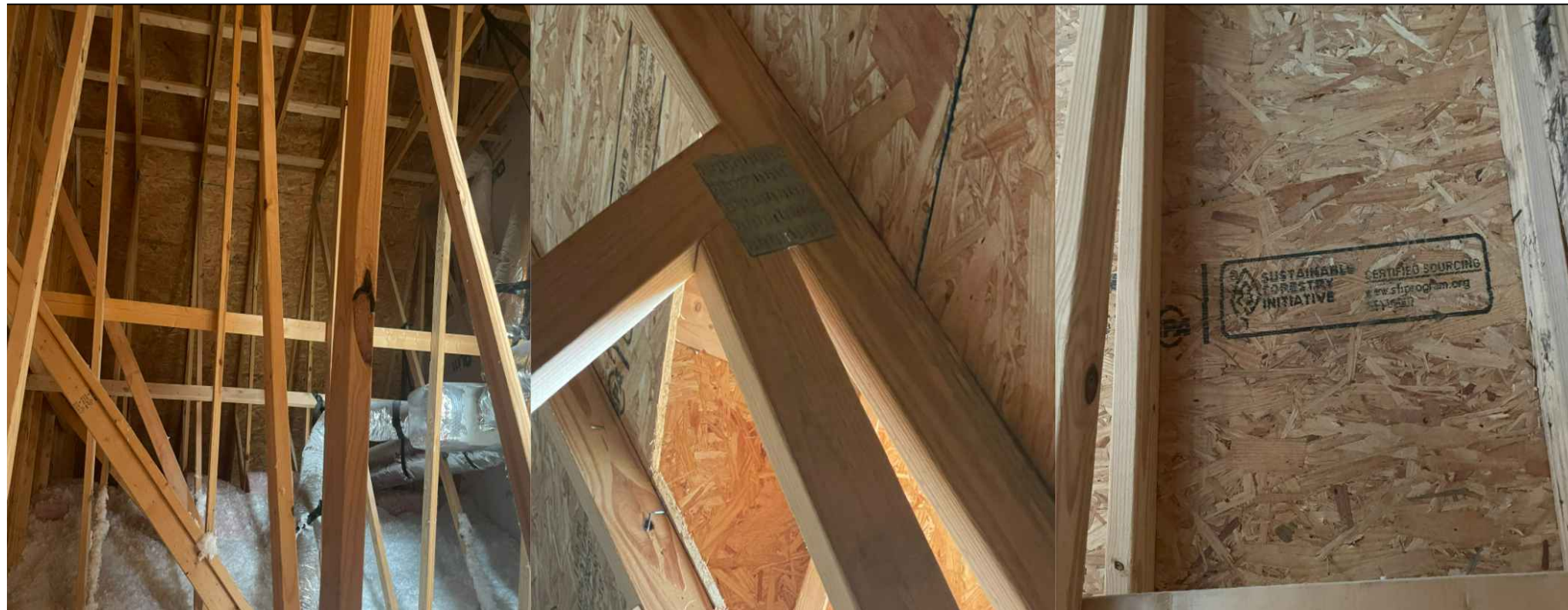
South River EMC

DRAWN BY: SoloCAD

DATE:
August 29, 2022

PLACARD - PV08

SITE PHOTOS:



CONTRACTOR INFORMATION:
ENCOR SOLAR, LLC
 3049 Executive Parkway
 Suite 300
 Lehi, UT 84043
 License # 32830

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 (30) SolarEdge S440 Optimizers

South River EMC

DRAWN BY: SoloCAD

DATE:
 August 29, 2022

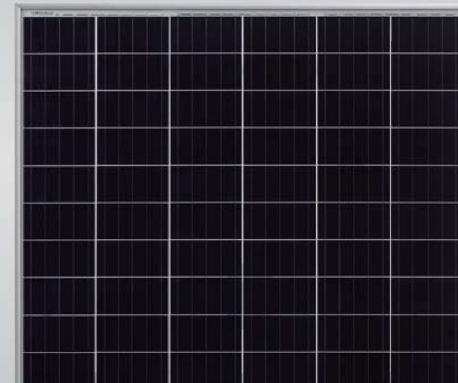
SITE PHOTOS - PV09

Eagle 72HM G2

390-410 Watt

MONO PERC HALF CELL MODULE

Positive power tolerance of 0~+3%

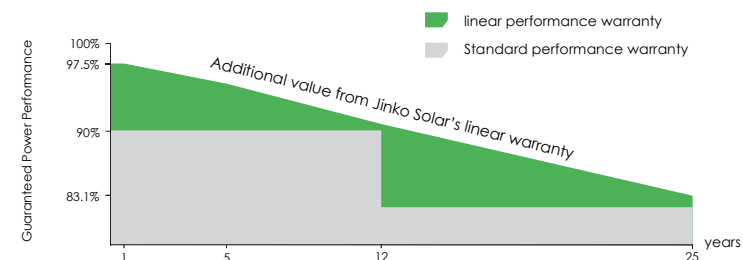


KEY FEATURES

- Diamond Cell Technology**
Uniquely designed high performance 5 busbar mono PERC half cell
- 1500V High Voltage**
UL and IEC 1500V certified; lowers BOS costs and yields better LCOE
- Higher Module Power**
Decrease in current loss yields higher module efficiency
- Shade Tolerance**
More shade tolerance due to twin arrays
- PID FREE**
Reinforced cell prevents potential induced degradation
- Strength and Durability**
Certified for high snow (5400Pa) and wind (2400 Pa) loads

LINEAR PERFORMANCE WARRANTY

12 Year Product Warranty • 25 Year Linear Power Warranty



- ISO9001:2008 Quality Standards
- ISO14001:2004 Environmental Standards
- OHSAS18001 Occupational Health & Safety Standards
- IEC61215, IEC61730 certified products
- UL1703 certified products

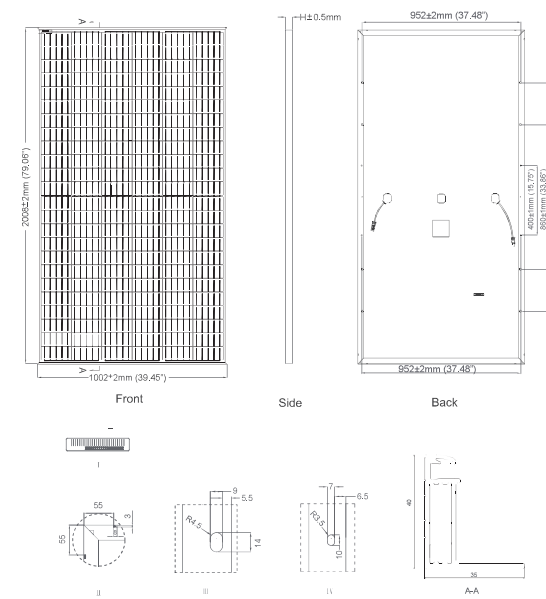
Nomenclature:

JKM410M-72HL-V

| Code | Cell | Code | Cell | Code | Certification |
|------|------|------|---------|------|---------------|
| null | Full | null | Normal | null | 1000V |
| H | Half | L | Diamond | V | 1500V |



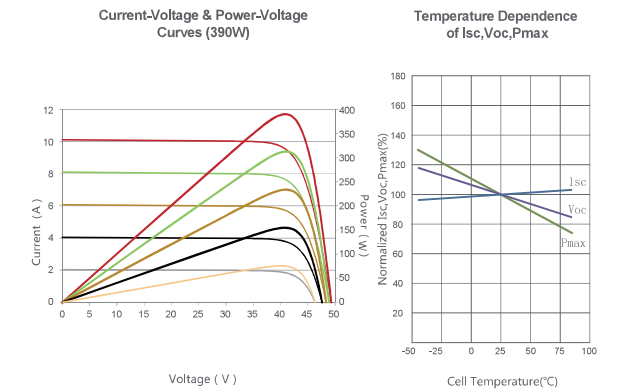
Engineering Drawings



Packaging Configuration

(Two pallets = One stack)
27pcs/pallet, 54pcs/stack, 594pcs/40' HQ Container

Electrical Performance & Temperature Dependence



Mechanical Characteristics

| | |
|-------------------|---|
| Cell Type | Mono PERC Diamond Cell (158.75 x 158.75 mm) |
| No. of Half-cells | 144 (6x24) |
| Dimensions | 2008 x 1002 x 40mm (79.06 x 39.45 x 1.57 inch) |
| Weight | 22.5 kg (49.6 lbs) |
| Front Glass | 3.2mm, Anti-Reflection Coating, High Transmission, Low Iron, Tempered Glass |
| Frame | Anodized Aluminium Alloy |
| Junction Box | IP67 Rated |
| Output Cables | 12 AWG, (+) 1400mm(55.12 in), (-) 1400mm(55.12 in) or Customized Length |
| Fire Type | Type 1 |

SPECIFICATIONS

| Module Type | JKM390M-72HL-V | | JKM395M-72HL-V | | JKM400M-72HL-V | | JKM405M-72HL-V | | JKM410M-72HL-V | |
|---|--------------------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|
| | STC | NOCT | STC | NOCT | STC | NOCT | STC | NOCT | STC | NOCT |
| Maximum Power (Pmax) | 390Wp | 294Wp | 395Wp | 298Wp | 400Wp | 302Wp | 405Wp | 306Wp | 410Wp | 310Wp |
| Maximum Power Voltage (Vmp) | 41.1V | 39.1V | 41.4V | 39.3V | 41.7V | 39.6V | 42.0V | 39.8V | 42.3V | 40.0V |
| Maximum Power Current (Imp) | 9.49A | 7.54A | 9.55A | 7.60A | 9.60A | 7.66A | 9.65A | 7.72A | 9.69A | 7.76A |
| Open-circuit Voltage (Voc) | 49.3V | 48.0V | 49.5V | 48.2V | 49.8V | 48.5V | 50.1V | 48.7V | 50.4V | 48.9V |
| Short-circuit Current (Isc) | 10.12A | 8.02A | 10.23A | 8.09A | 10.36A | 8.16A | 10.48A | 8.22A | 10.60A | 8.26A |
| Module Efficiency STC (%) | 19.38% | | 19.63% | | 19.88% | | 20.13% | | 20.38% | |
| Operating Temperature (°C) | -40°C~+85°C | | | | | | | | | |
| Maximum System Voltage | 1500VDC(UL)/1500VDC(IEC) | | | | | | | | | |
| Maximum Series Fuse Rating | 20A | | | | | | | | | |
| Power Tolerance | 0~+3% | | | | | | | | | |
| Temperature Coefficients of Pmax | -0.36%/°C | | | | | | | | | |
| Temperature Coefficients of Voc | -0.28%/°C | | | | | | | | | |
| Temperature Coefficients of Isc | 0.048%/°C | | | | | | | | | |
| Nominal Operating Cell Temperature (NOCT) | 45±2°C | | | | | | | | | |

STC: ☀ Irradiance 1000W/m² 📡 Cell Temperature 25°C ☁ AM=1.5

NOCT: ☀ Irradiance 800W/m² 📡 Ambient Temperature 20°C ☁ AM=1.5 🌀 Wind Speed 1m/s

* Power measurement tolerance: ± 3%

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.
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JKM390-410M-72HL-V-A2-US

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 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
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- 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)

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 | 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 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 ⁽¹⁾ | | | | | | | Hz | |
| Maximum Continuous Output Current @240V | 12.5 | 16 | 21 | 25 | 32 | 42 | 47.5 | A | |
| Maximum Continuous Output Current @208V | - | 16 | - | 24 | - | - | 48.5 | A | |
| Power Factor | 1, Adjustable - 0.85 to 0.85 | | | | | | | | |
| GFDI Threshold | 1 | | | | | | | A | |
| Utility Monitoring, Islanding Protection, Country Configurable Thresholds | Yes | | | | | | | | |
| 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 | Adc | |
| Maximum Input Current @208V ⁽²⁾ | - | 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 | |

(1) For other regional settings please contact SolarEdge support

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

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

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

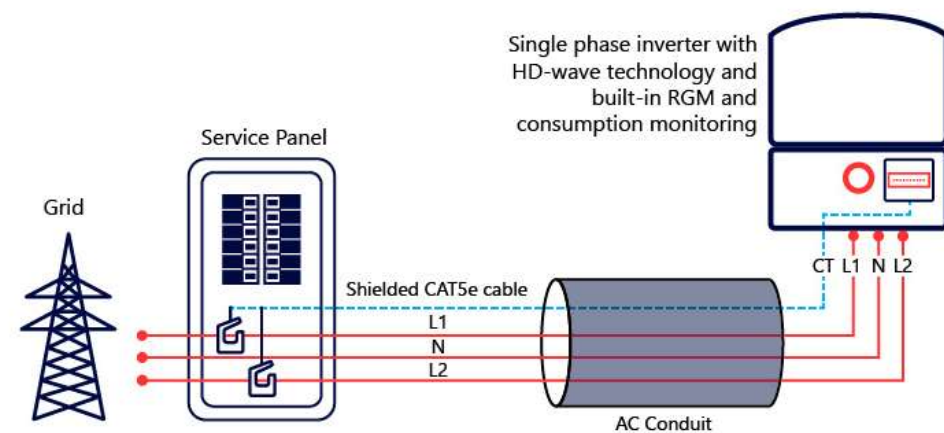
| MODEL NUMBER | SE3000H-US | SE3800H-US | SE5000H-US | SE6000H-US | SE7600H-US | SE10000H-US | SE11400H-US |
|--|---|-------------|-------------|-------------------------------------|------------|-------------|-------------|
| ADDITIONAL FEATURES | | | | | | | |
| Supported Communication Interfaces | RS485, Ethernet, ZigBee (optional), Cellular (optional) | | | | | | |
| Revenue Grade Metering, ANSI C12.20 | Optional ⁽³⁾ | | | | | | |
| Consumption metering | | | | | | | |
| Inverter Commissioning | With the SetApp mobile application using Built-in Wi-Fi Access Point for Local Connection | | | | | | |
| Rapid Shutdown - NEC 2014, NEC 2017 and NEC 2020, 690.12 | Automatic Rapid Shutdown upon AC Grid Disconnect | | | | | | |
| STANDARD COMPLIANCE | | | | | | | |
| Safety | UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCL according to T.I.L. M-07 | | | | | | |
| Grid Connection Standards | IEEE1547, Rule 21, Rule 14 (H) | | | | | | |
| Emissions | FCC Part 15 Class B | | | | | | |
| INSTALLATION SPECIFICATIONS | | | | | | | |
| 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 | | | |
| Weight with Safety Switch | 22 / 10 | 25.1 / 11.4 | 26.2 / 11.9 | 38.8 / 17.6 | | | |
| Noise | < 25 | | | < 50 | | | |
| Cooling | Natural Convection | | | | | | |
| Operating Temperature Range | -40 to +140 / -40 to +60 ⁽⁴⁾ | | | | | | |
| Protection Rating | NEMA 4X (Inverter with Safety Switch) | | | | | | |

(3) Inverter with Revenue Grade Meter P/N: SExxxH-US000BNC4; Inverter with Revenue Grade Production and Consumption Meter P/N: SExxxH-US000BN4. For consumption metering, current transformers should be ordered separately: SEACT0750-200NA-20 or SEACT0750-400NA-20, 20 units per box

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

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



Power Optimizer For North America

S440, S500



POWER OPTIMIZER

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 firefighter safety
- 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
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

* Expected availability in 2022

solaredge.com



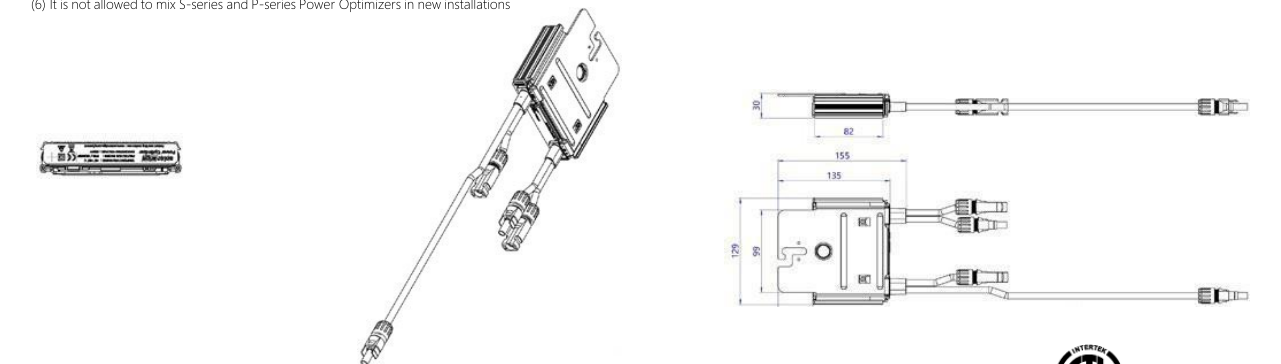
Power Optimizer For North America S440, S500

| | S440 | S500 | Unit |
|---|---|------|---------|
| INPUT | | | |
| Rated Input DC Power ⁽¹⁾ | 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 | | |
| OUTPUT DURING OPERATION | | | |
| Maximum Output Current | 15 | | Adc |
| Maximum Output Voltage | 60 | | Vdc |
| OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF) | | | |
| Safety Output Voltage per Power Optimizer | 1 +/- 0.1 | | Vdc |
| STANDARD COMPLIANCE | | | |
| Photovoltaic Rapid Shutdown System | NEC 2014, 2017 & 2020 | | |
| EMC | FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3 | | |
| Safety | IEC62109-1 (class II safety), UL1741 | | |
| Material | UL94 V-0, UV Resistant | | |
| RoHS | Yes | | |
| Fire Safety | VDE-AR-E 2100-712:2013-05 | | |
| INSTALLATION SPECIFICATIONS | | | |
| Maximum Allowed System Voltage | 1000 | | Vdc |
| Dimensions (W x L x H) | 129 x 153 x 30 / 5.07 x 6.02 x 1.18 | | mm / in |
| Weight (including cables) | 655 / 1.5 | | gr / lb |
| Input Connector | MC4 ⁽²⁾ | | |
| Input Wire Length | 0.1 / 0.32 | | m / ft |
| Output Connector | MC4 | | |
| Output Wire Length | (+) 2.3, (-) 0.10 / (+) 7.54, (-) 0.32 | | m / ft |
| Operating Temperature Range ⁽³⁾ | -40 to +85 | | °C |
| Protection Rating | IP68 / Type6B | | |
| 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 for 208V grid | Three Phase for 277/480V grid | |
|---|----------------------|--------------------------------------|-------------------------------|-------------------|
| Minimum String Length (Power Optimizers) | S440, S500 | 8 | 14 | 18 |
| Maximum String Length (Power Optimizers) | | 25 | | 50 ⁽⁴⁾ |
| Maximum Nominal Power per String | | 5700 (6000 with SE7600-US-SE11400-U) | 6000 | 12750 |
| Maximum Allowed Connected Power per String ⁽⁵⁾ (Permitted only when the difference in connected power between strings is 1,000W or less) | Refer to Footnote 5 | One String 7200W | Two strings or more 7800W | 15,000W |
| Parallel Strings of Different Lengths or Orientations | | Y | | |

(4) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement
 (5) 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>
 (6) It is not allowed to mix S-series and P-series Power Optimizers in new installations



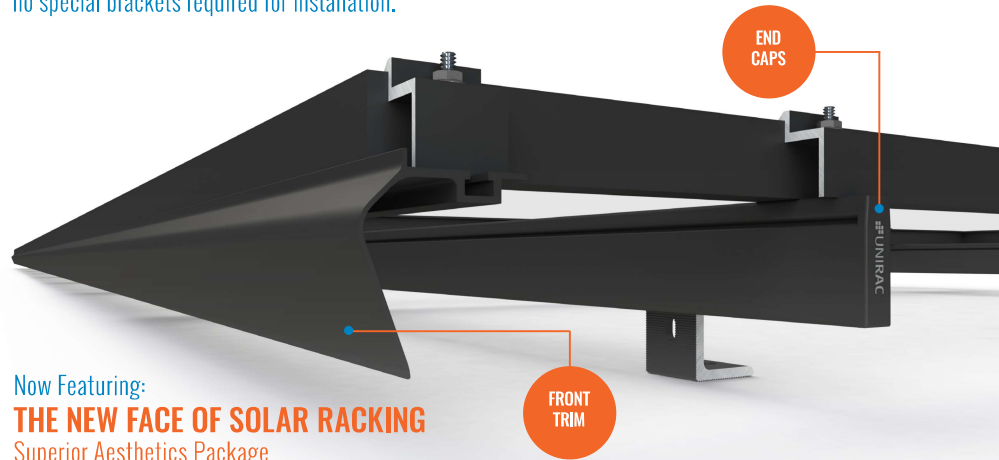
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SOLARMOUNT



SOLARMOUNT defined the standard in solar racking. Features are designed to get installers off the roof faster. Our grounding & bonding process eliminates copper wire and grounding straps to reduce costs. Systems can be configured with standard or light rail to meet your design requirements at the lowest cost possible. The superior aesthetics package provides a streamlined clean edge for enhanced curb appeal, with no special brackets required for installation.



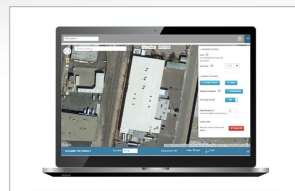
Now Featuring:
THE NEW FACE OF SOLAR RACKING
Superior Aesthetics Package



LOSE ALL OF THE COPPER & LUGS
System grounding through Enphase microinverters and trunk cables



SMALL IS THE NEXT NEW BIG THING
Light Rail is Fully Compatible with all SM Components



ENHANCED DESIGN & LAYOUT TOOLS
Featuring Google Map Capabilities within U-Builder

FAST INSTALLATION. SUPERIOR AESTHETICS

OPTIMIZED COMPONENTS • VERSATILITY • DESIGN TOOLS • QUALITY PROVIDER

SOLARMOUNT



OPTIMIZED COMPONENTS

INTEGRATED BONDING & PRE-ASSEMBLED PARTS

Components are pre-assembled and optimized to reduce installation steps and save labor time. Our new grounding & bonding process eliminates copper wire and grounding straps or bonding jumpers to reduce costs. Utilize the microinverter mount with a wire management clip for an easier installation.

VERSATILITY

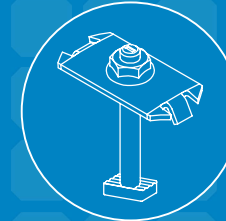
ONE PRODUCT - MANY APPLICATIONS

Quickly set modules flush to the roof or at a desired tilt angle. Change module orientation to portrait or landscape while securing a large variety of framed modules on flat, low slope or steep pitched roofs. Available in mill, clear and dark anodized finishes to outperform your projects financial and aesthetic aspirations.

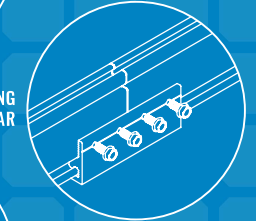
AUTOMATED DESIGN TOOL

DESIGN PLATFORM AT YOUR SERVICE

Creating a bill of materials is just a few clicks away with U-Builder, a powerful online tool that streamlines the process of designing a code compliant solar mounting system. Save time by creating a user profile, and recall preferences and projects automatically when you log in. You will enjoy the ability to share projects with customers: there's no need to print results and send to a distributor, just click and share.



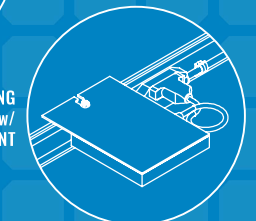
INTEGRATED BONDING MIDCLAMP



INTEGRATED BONDING SPLICE BAR



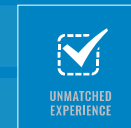
INTEGRATED BONDING L-FOOT w/ T-BOLT



INTEGRATED BONDING MICROINVERTER MOUNT w/ WIRE MANAGEMENT

LISTED UL2703 BONDING & GROUNDING MECHANICAL LOADING SYSTEM FIRE CLASSIFICATION

UNIRAC CUSTOMER SERVICE MEANS THE HIGHEST LEVEL OF PRODUCT SUPPORT



UNMATCHED EXPERIENCE



CERTIFIED QUALITY



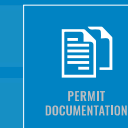
ENGINEERING EXCELLENCE



BANKABLE WARRANTY



DESIGN TOOLS



PERMIT DOCUMENTATION

TECHNICAL SUPPORT

Unirac's technical support team is dedicated to answering questions & addressing issues in real time. An online library of documents including engineering reports, stamped letters and technical data sheets greatly simplifies your permitting and project planning process.

CERTIFIED QUALITY PROVIDER

Unirac is the only PV mounting vendor with ISO certifications for 9001:2015, 14001:2015 and OHSAS 18001:2007, which means we deliver the highest standards for fit, form, and function. These certifications demonstrate our excellence and commitment to first class business practices.

BANKABLE WARRANTY

Don't leave your project to chance. Unirac has the financial strength to back our products and reduce your risk. Have peace of mind knowing you are receiving products of exceptional quality. SOLARMOUNT is covered by a twenty five (25) year limited product warranty and a five (5) year limited finish warranty.

PROTECT YOUR REPUTATION WITH QUALITY RACKING SOLUTIONS BACKED BY ENGINEERING EXCELLENCE AND A SUPERIOR SUPPLY CHAIN

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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

FLASHKIT PRO

INSTALLATION GUIDE



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



STEP 1
INSTALL FLASHKIT PRO FLASHING



STEP 2
INSTALL L-FOOT



STEP 3
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

THE COMPLETE ROOF ATTACHMENT SOLUTION

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