

September 21, 2022

Posigen Solar
1600 Olden Avenue, Unit 10
Ewing, NJ 08638

Re: Engineering Services
Lawhorn Residence
3705 Louisiana Avenue Pkwy, New Orleans, LA
5.810 kW System

To Whom It May Concern:

We have received information regarding solar panel installation on the roof of the above referenced structure. Our evaluation of the structure is to verify the existing capacity of the roof system and its ability to support the additional loads imposed by the proposed solar system.

A. Site Assessment Information

1. Site visit documentation identifying attic information including size and spacing of framing for the existing roof structure.
2. Design drawings of the proposed system including a site plan, roof plan and connection details for the solar panels. This information will be utilized for approval and construction of the proposed system.
3. The addition of solar panels will not exceed the height of the existing building
4. The outermost part of the solar panels will be less than 6 inches off the existing slope of the existing roof.

B. Description of Structure:

Roof Framing: Prefabricated wood trusses at 24" on center. All truss members are constructed of 2 x 4 dimensional lumber.

Roof Material: Composite Asphalt Shingles

Roof Slope: 14 degrees

Attic Access: Accessible

Foundation: Permanent

C. Loading Criteria Used

- **Dead Load**
 - Existing Roofing and framing = 7 psf
 - New Solar Panels and Racking = 3 psf
 - TOTAL = 10 PSF
- **Live Load** = 20 psf (reducible) – 0 psf at locations of solar panels
- **Ground Snow Load** = 0 psf
- **Wind Load** based on ASCE 7-10
 - Ultimate Wind Speed = 144 mph (based on Risk Category II)
 - Exposure Category C

Analysis performed of the existing roof structure utilizing the above loading criteria is in accordance with the 2015 International Residential Code, including provisions allowing existing structures to not require strengthening if the new loads do not exceed existing design loads by 105% for gravity elements and 110% for seismic elements. This analysis indicates that the existing framing will support the additional panel loading without damage, if installed correctly.

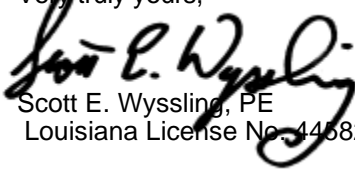
D. Solar Panel Anchorage

1. The solar panels shall be mounted in accordance with the most recent K2 Systems installation manual. 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.
2. The maximum allowable withdrawal force for a $\frac{5}{16}$ " lag screw is 235 lbs per inch of penetration as identified in the National Design Standards (NDS) of timber construction specifications. Based on a minimum penetration depth of $2\frac{1}{2}$ ", the allowable capacity per connection is greater than the design withdrawal force (demand). Considering the variable factors for the existing roof framing and installation tolerances, the connection using one $\frac{5}{16}$ " diameter lag screw with a minimum of $2\frac{1}{2}$ " embedment will be adequate and will include a sufficient factor of safety.
3. Considering the wind speed, roof slopes, size and spacing of framing members, and condition of the roof, the panel supports shall be placed no greater than 48" on center.
4. Panel supports connections shall be staggered to distribute load to adjacent framing members.

Based on the above evaluation, this office certifies that with the racking and mounting specified, the existing roof system will adequately support the additional loading imposed by the solar system. This evaluation is in conformance with the 2015 IRC, current industry standards, and is based on information supplied to us at the time of this report.

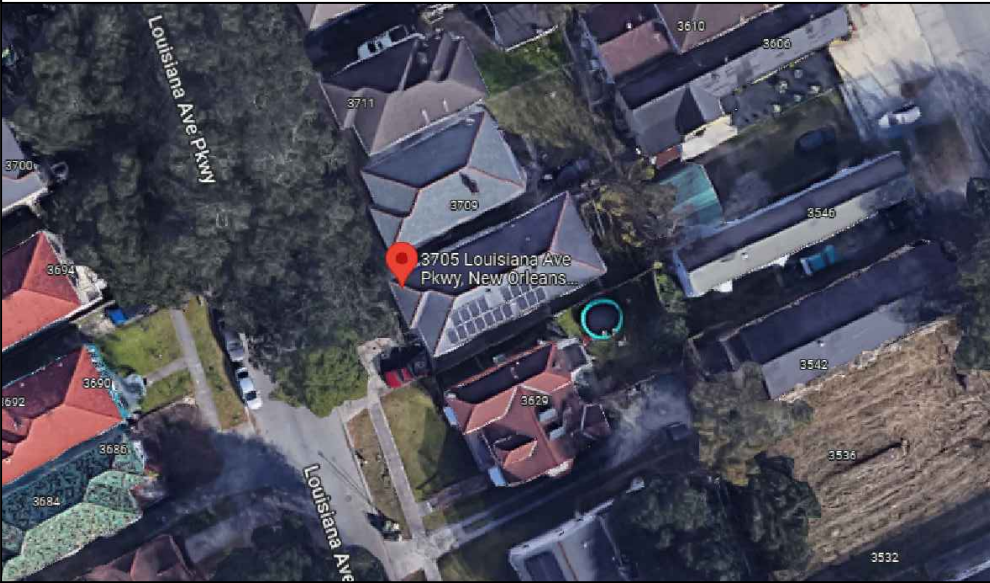
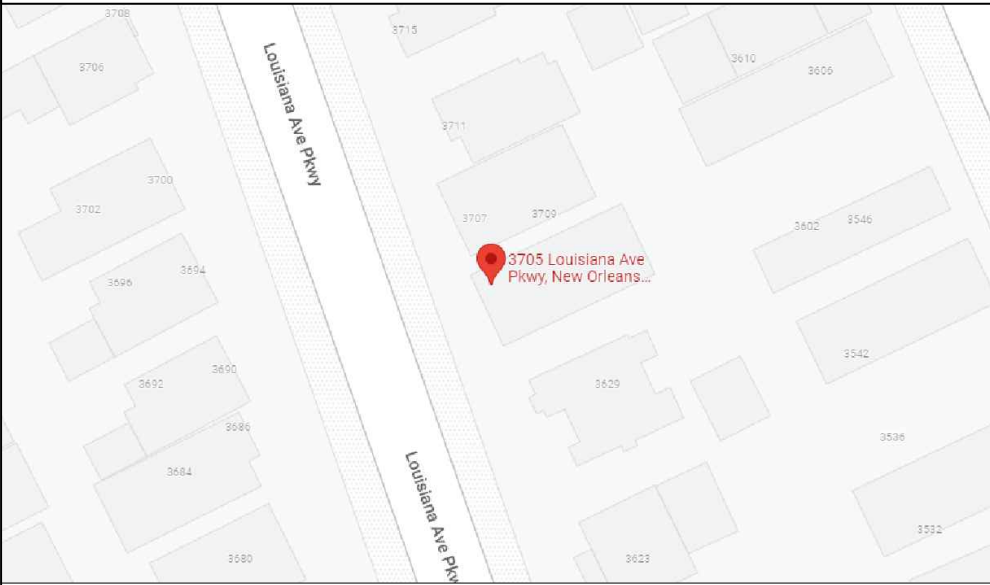
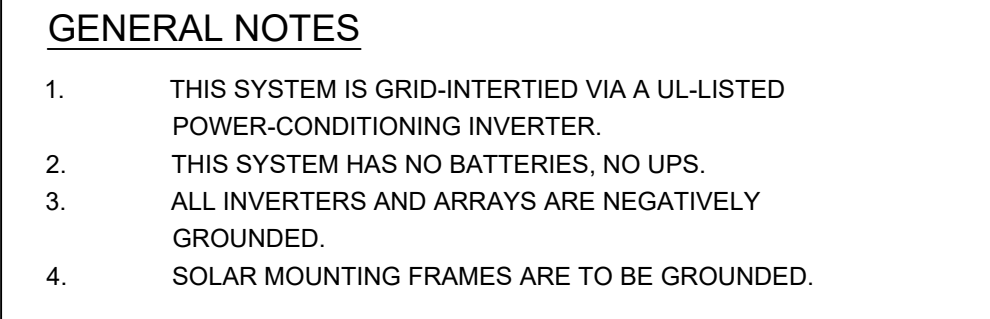
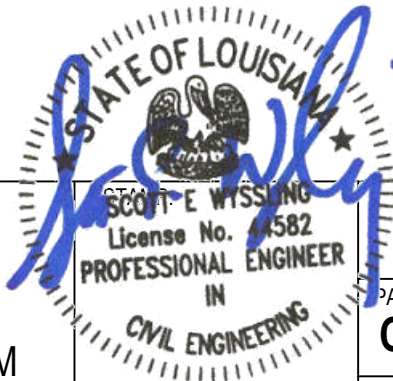
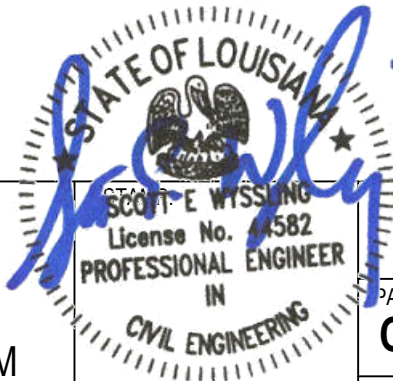

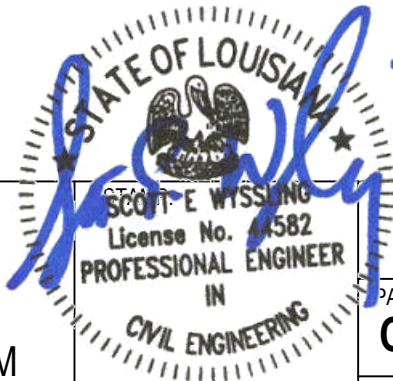
Should you have any questions regarding the above or if you require further information do not hesitate to contact me.

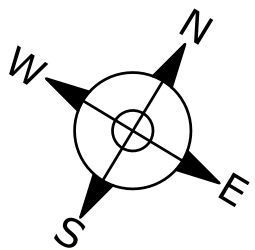
Very truly yours,


Scott E. Wyssling, PE
Louisiana License No. 44582



Date Signed 9/21/22

| ABBREVIATIONS | | ELECTRICAL NOTES | | AERIAL VIEW | | INDEX | | | |
|---|-------------------------------|------------------------------------|--|---|--|--|---------------------|--|--|
| A | AMPERE | 1. | WHERE ALL TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A SIGN WILL BE PROVIDED WARNING OF THE HAZARDS PER ART. 690.17. |  | | PV-1 | COVER SHEET | | |
| AC | ALTERNATING CURRENT | 2. | EACH UNGROUNDED CONDUCTOR OF THE MULTIWIRE BRANCH CIRCUIT WILL BE IDENTIFIED BY PHASE AND SYSTEM PER ART. 210.5. | | | PV-2 | SITE PLAN | | |
| BLDG | BUILDING | 3. | A NATIONALLY-RECOGNIZED TESTING LABORATORY SHALL LIST ALL EQUIPMENT IN COMPLIANCE WITH ART. 110.3. |  | | PV-3 | ATTACHMENT PLAN | | |
| CONC | CONCRETE | 4. | CIRCUITS OVER 250V TO GROUND SHALL COMPLY WITH ART. 250.97, 250.92(B) | | | PV-4 | ATTACHMENT DETAIL | | |
| C | COMBINER BOX | 5. | DC CONDUCTORS EITHER DO NOT ENTER BUILDING OR ARE RUN IN METALLIC RACEWAYS OR ENCLOSURES TO THE FIRST ACCESSIBLE DC DISCONNECTING MEANS PER ART. 690.31(E). |  | | PV-5 | SINGLE-LINE DIAGRAM | | |
| D | DISTRIBUTION PANEL | 6. | ALL WIRES SHALL BE PROVIDED WITH STRAIN RELIEF AT ALL ENTRY INTO BOXES AS REQUIRED BY UL LISTING. | | | PV-5.1 | ELECTRICAL NOTES | | |
| DC | DIRECT CURRENT | 7. | MODULE FRAMES SHALL BE GROUNDED AT THE UL-LISTED LOCATION PROVIDED BY THE MANUFACTURER USING UL LISTED GROUNDING HARDWARE. |  | | PV-6 | PLACARD | | |
| EGC | EQUIPMENT GROUNDING CONDUCTOR | 8. | ALL EXPOSED METAL PARTS (MODULE FRAMES, RAIL, BOXES, ETC.) SHALL BE GROUNDED USING UL LISTED LAY-IN LUGS LISTED FOR THE PURPOSE. POSTS SHALL BE MADE ELECTRICALLY CONTINUOUS WITH ATTACHED RAIL. | | | PV-7 | SAFETY LABELS | | |
| (E) | EXISTING | 9. | MODULE FRAMES, RAIL, AND POSTS SHALL BE BONDED WITH EQUIPMENT GROUND CONDUCTORS AND GROUNDED AT THE MAIN ELECTRIC PANEL. |  | | <div>APPLICABLE CODE</div> <div>INTERNATIONAL BUILDING CODE 2015 ((IBC 2015))</div> <div>INTERNATIONAL RESIDENTIAL CODE 2015 (IRC 2015)</div> <div>INTERNATIONAL FIRE CODE 2015 (IFC 2015)</div> <div>NATIONAL ELECTRICAL CODE 2014(NEC 2014)</div> | | | |
| EMT | ELECTRICAL METALLIC TUBING | 10. | THE DC GROUNDING ELECTRODE CONDUCTOR SHALL BE SIZED ACCORDING TO ART. 250.166(B) & 690.47. | | | <div>AHJ: NEW ORLEANS CITY</div> <div>UTILITY: ENTERGY</div> | | | |
| GALV | GALVANIZED | | | | | <div>PV-1</div> <div>PAGE NAME:</div> <div>COVER SHEET</div> | | | |
| GEC | GROUNDING ELECTRODE CONDUCTOR | | | | | <div>SCALE:</div> <div>NTS</div> | | | |
| GND | GROUND | | | | | <div>DATE:</div> <div>9/15/2022</div> | | | |
| HDG | HOT DIPPED GALVANIZED | | | | | <div>Signed 9/21/2022</div> <div>DESIGNED BY:</div> <div>ENERQUAL</div> | | | |
| I | CURRENT | | | | | <div>REV:</div> | | | |
| Imp | CURRENT AT MAX POWER | | | | | | | | |
| INVS | INVERTERS | | | | | | | | |
| Isc | SHORT CIRCUIT CURRENT | | | | | | | | |
| KVA | KILOVOLT AMPERE | | | | | | | | |
| kW | KILOWATT | | | | | | | | |
| LBW | LOAD BEARING WALL | | | | | | | | |
| MIN | MINIMUM | | | | | | | | |
| (N) | NEW | | | | | | | | |
| NEC | NATIONAL ELECTRIC CODE | | | | | | | | |
| NIC | NOT IN CONTRACT | | | | | | | | |
| NTS | NOT TO SCALE | | | | | | | | |
| OC | ON CENTER | | | | | | | | |
| P | PANEL BOARD | | | | | | | | |
| PL | PROPERTY LINES | | | | | | | | |
| PV | PHOTOVOLTAIC | | | | | | | | |
| PVC | POLYVINYL CHLORIDE | | | | | | | | |
| S | SUBPANEL | | | | | | | | |
| SCH | SCHEDULE | | | | | | | | |
| SS | STAINLESS STEEL | | | | | | | | |
| SSD | SEE STRUCTURAL DIAGRAMS | | | | | | | | |
| STC | STANDARD TESTING CONDITIONS | | | | | | | | |
| SWH | SOLAR WATER HEATER | | | | | | | | |
| TYP | TYPICAL | | | | | | | | |
| UON | UNLESS OTHERWISE NOTED | | | | | | | | |
| UPS | UNINTERRUPTIBLE POWER SUPPLY | | | | | | | | |
| V | VOLT | | | | | | | | |
| Vmp | VOLTAGE AT MAX POWER | | | | | | | | |
| Voc | VOLTAGE AT OPEN CIRCUIT | | | | | | | | |
| W | WATT | | | | | | | | |
| 3R | NEMA 3R, RAIN TIGHT | | | | | | | | |
|  | | JOB NUMBER: P-004975 | OWNER: | DESCRIPTION: | |  | | | |
| | | UTILITY: ENTERGY | MATEAL LAWHORN, 3705 LOUISIANA AVE PKWY, NEW ORLEANS, LA 70125 | | | | | | |
| POSIGEN DEVELOPER, LLC 819 CENTRAL AVE STE 210 JEFFERSON, LA 70121 LA ELECTRICAL LICENSE :74446 | | RACKING: K2 CROSSRAIL SYSTEM | ACCOUNT NUMBER : 85296663 | 5.81 kWDC ROOF SOLAR SYSTEM PRODUCTION: 6,910kWH | | <div>DESIGNED BY:</div> <div>ENERQUAL</div> | | | |
| | | MODULES: (14)CS3N-415MS | OPTIMIZER: (14) SOLAREEDGE S440 OPTIMIZER | | | | | | |
| | | INVERTER: (1)SOLAREEDGE SE6000H-US | | | | | | | |



NOTE :- "ALL BOS COMPONENTS SHALL BE INSTALLED WITHIN 10 FT OF ADJACENT COMPONENTS

ROOF SECTION(S):

① SLOPE - 14
AZIMUTH - 154
MATERIAL - COMP.
SHINGLE

LEGEND

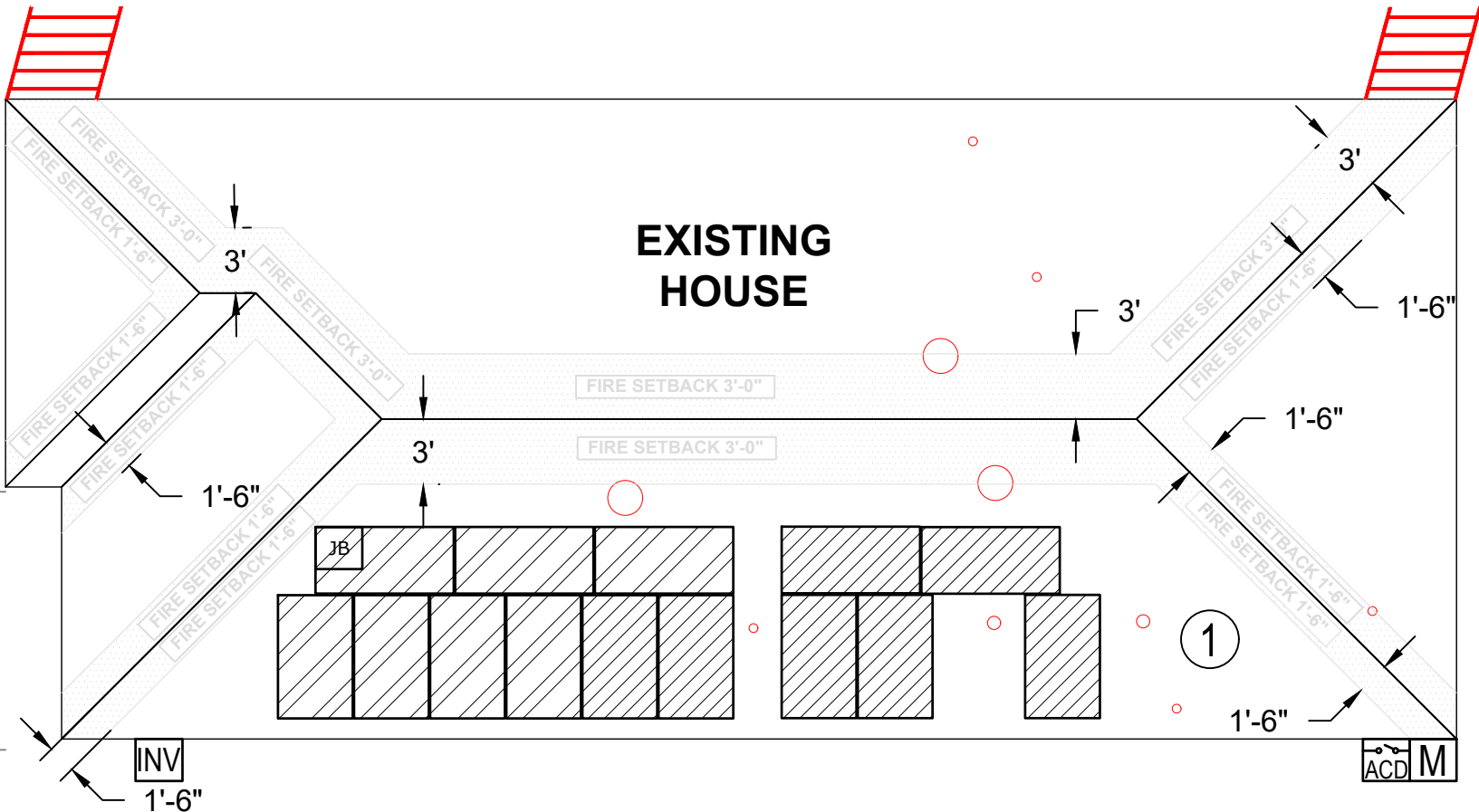
- M** METER
- PVM** PRODUCTION METER
- INV** INVERTER
- ACD** AC DISCONNECT
- MSP** MAIN SERVICE PANEL
- JB** JUNCTION BOX
- OBSTRUCTION**
- DRIVEWAY**
- SOLAR MODULE**
- STRING #1
7 MODULE**
- STRING #2
7 MODULE**
- FIRE CODE OFFSET**

LOUISIANA AVE PKWY

FRONT OF
RESIDENCE

EXISTING
DRIVEWAY

EXISTING
HOUSE



JOB NUMBER: P-004975

UTILITY: ENTERGY

RACKING: K2 CROSSRAIL SYSTEM

MODULES: (14)CS3N-415MS

OPTIMIZER: (14) SOLAREEDGE S440 OPTIMIZER

INVERTER: (1)SOLAREEDGE SE6000H-US

OWNER:
MATEAL LAWHORN,
3705 LOUISIANA AVE PKWY,
NEW ORLEANS, LA 70125

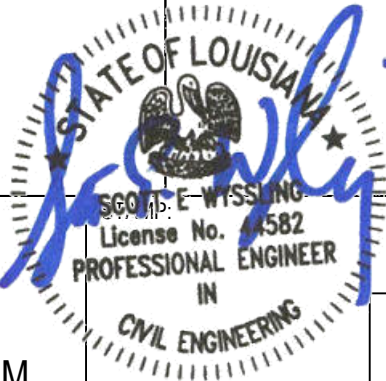
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DESCRIPTION:
MATEAL LAWHORN,
RESIDENCE
5.81 kWDC ROOF SOLAR SYSTEM
PRODUCTION: 6,910kWH

DESIGNED BY:
ENERQUAL

REV:

Signed 9/21/2022



PV-2

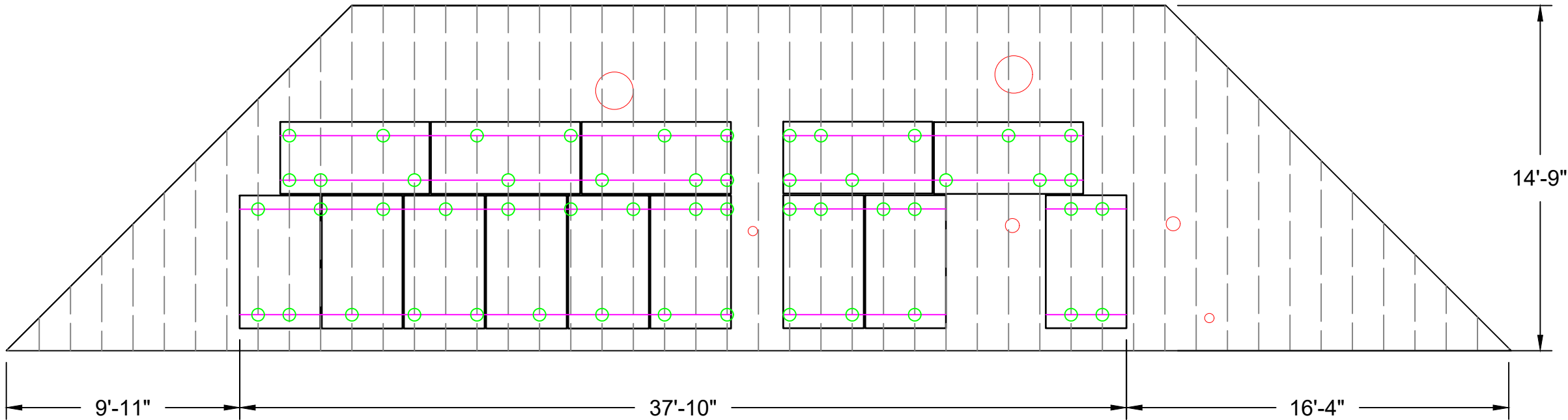
PAGE NAME:
SITE PLAN

SCALE:
1/8" = 1'

DATE:
9/15/2022

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JEFFERSON, LA 70121
LA ELECTRICAL LICENSE :74446

ARRAY 1



LEGEND

- ROOF
- RAFTERS
- RAIL
- MOUNT
- OBSTRUCTION

TOTAL PENETRATION COUNT: 52

| ARRAY 1 | |
|--------------------------|---------------|
| RAFTER PROFILE | 2"X6" |
| RAFTER SPACING | 16"OC |
| RIDGE PROFILE | 2"X8" |
| C.T. PROFILE | 2"X4" |
| C.T. SPACING | 32"OC |
| ARRAY PITCH | 14° |
| ARRAY AZIMUTH | 154° |
| ROOF SURFACE TYPE | COMP. SHINGLE |
| TOTAL NO. OF PENETRATION | 52 |
| STORIES | 1 |



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UTILITY: ENTERGY

RACKING: K2 CROSSRAIL SYSTEM

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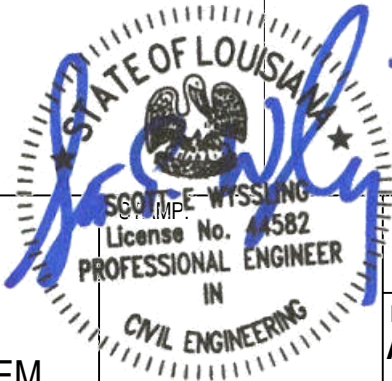
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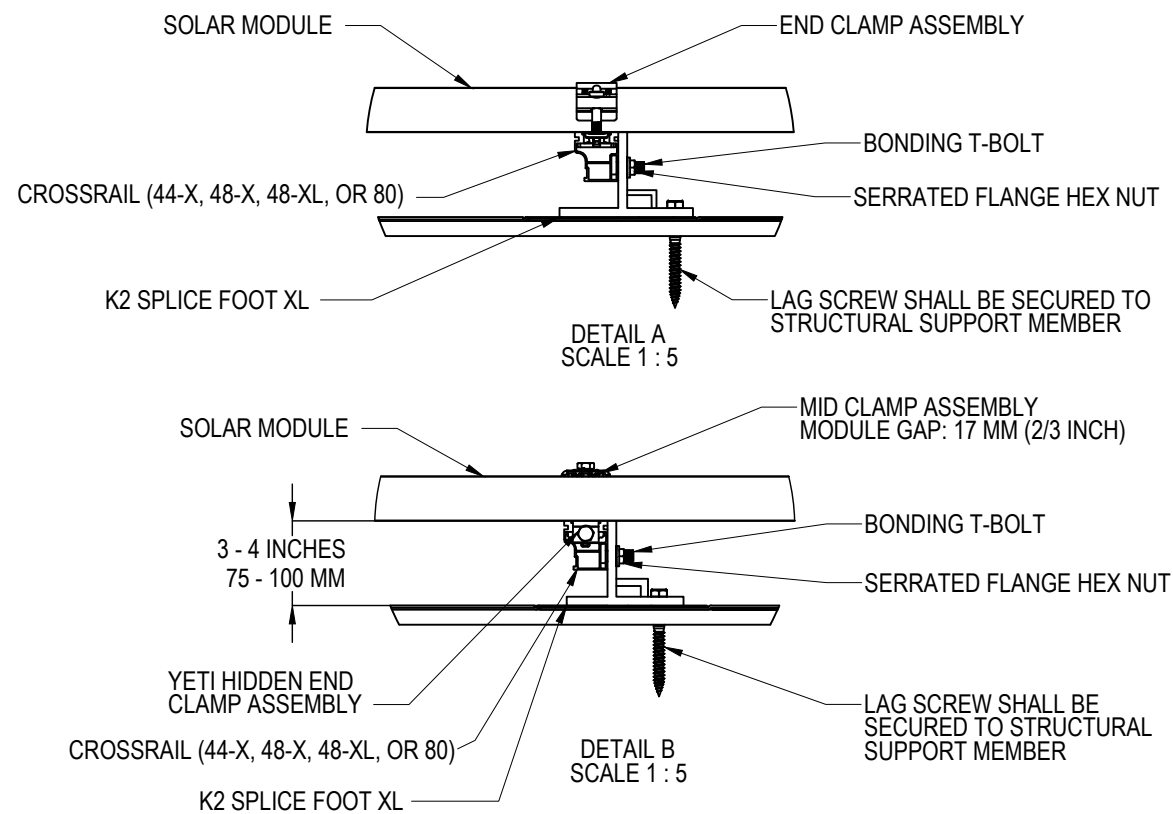
PV-3

PAGE NAME:
ATTACHMENT PLAN

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

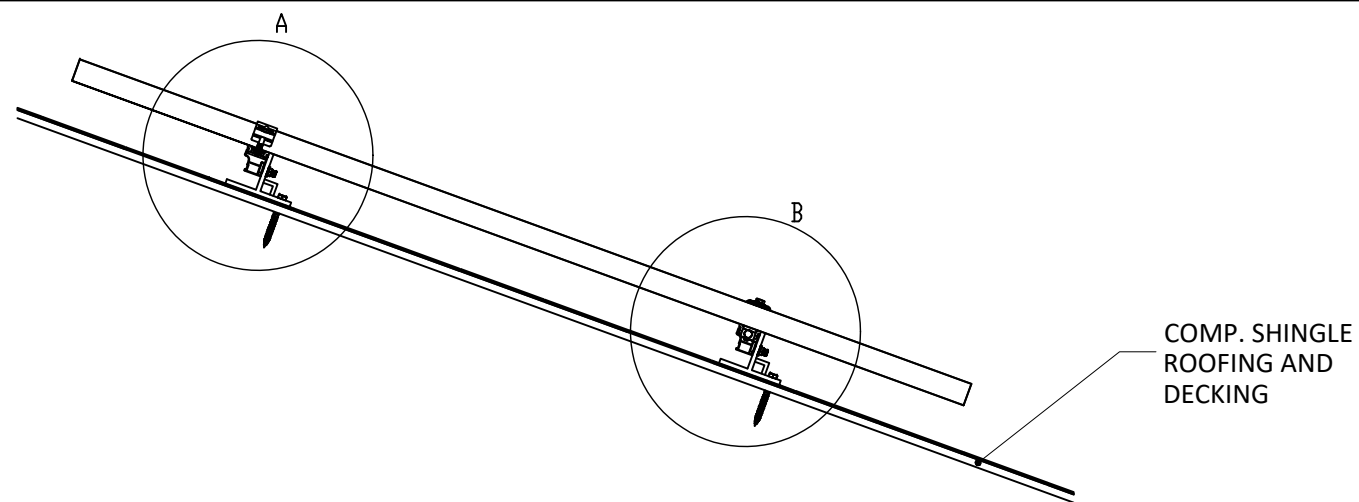
DATE:
9/15/2022

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JEFFERSON, LA 70121
LA ELECTRICAL LICENSE :74446



1 ENLARGED VIEW

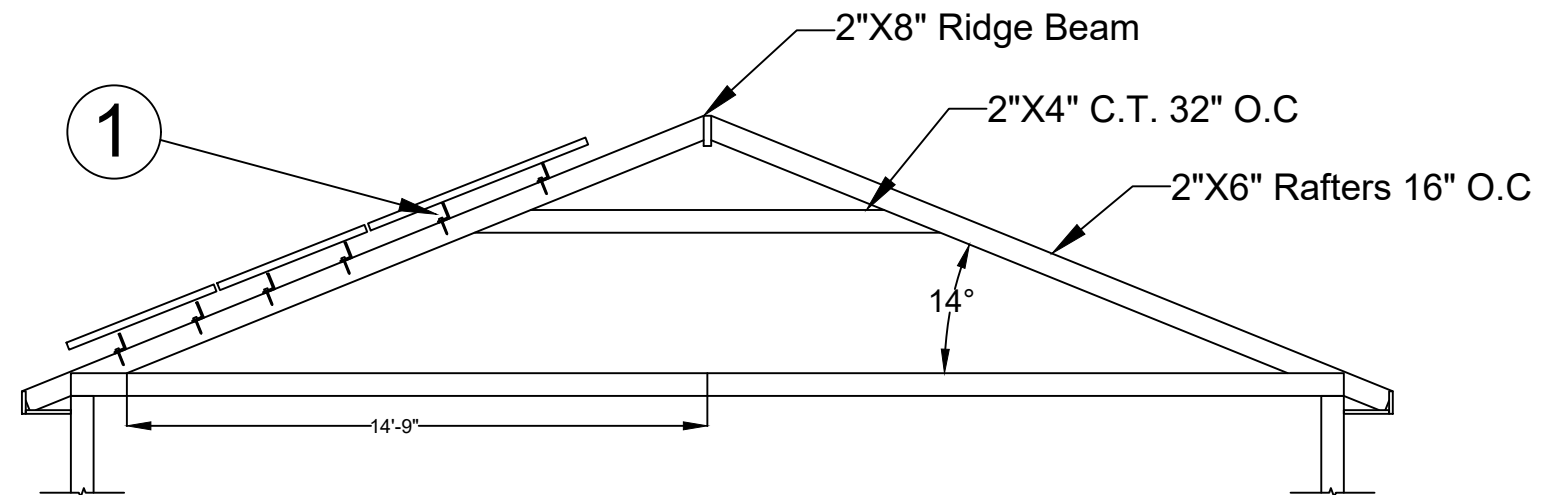
SCALE: NTS



2 ATTACHMENT DETAIL (SIDE VIEW)

SCALE: NTS

FRAME SECTION 1



JOB NUMBER: P-004975

UTILITY: ENTERGY

RACKING: K2 CROSSRAIL SYSTEM

MODULES: (14)CS3N-415MS

OPTIMIZER: (14) SOLAREEDGE S440 OPTIMIZER

INVERTER: (1)SOLAREEDGE SE6000H-US

OWNER:

MATEAL LAWHORN,
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DESCRIPTION:

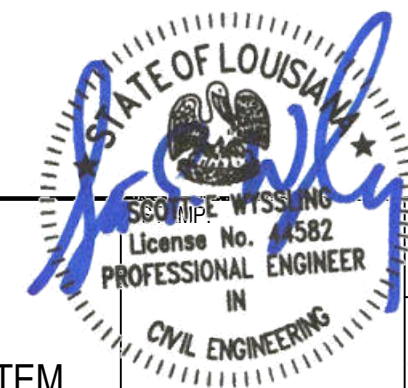
MATEAL LAWHORN,
RESIDENCE

5.81 kWDC ROOF SOLAR SYSTEM
PRODUCTION: 6,910kWH

DESIGNED BY:

ENERQUAL

REV:



Signed 9/21/2022

PV-4

PAGE NAME:

ATTACHMENT DETAIL

SCALE:

NTS

DATE:

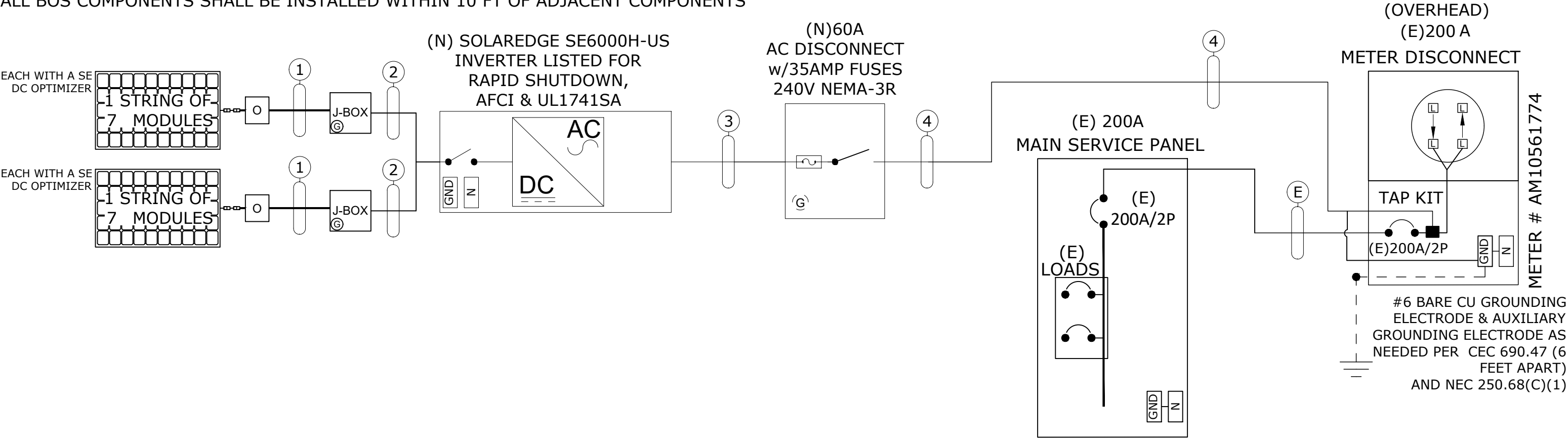
9/15/2022


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JEFFERSON, LA 70121
LA ELECTRICAL LICENSE :74446


| WIRE TAG # | CONDUIT | WIRE QTY | WIRE GAUGE: | WIRE TYPE | TEMP RATING: | WIRE AMP | TEMP DE-RATE: | CONDUIT FILL: | WIRE OCP: | TERMINAL 75°C RATING: | STRING WATTAGE / OPERATING VOLTAGE = STRING AMPS x NEC: = MAX AMPS | MAX. SYSTEM VOLTAGE | GRND SIZE | GRND WIRE TYPE |
|------------|----------|----------|-------------|-----------|--------------|----------|---------------|---------------|-----------|-----------------------|--|---------------------|-----------|----------------|
| ① | Open Air | 2 | #10 | PV WIRE | 90° | 40 | x 0.96 | x 1 | = 38.40A | 35 A | 2905 / 380 = 7.64 x 1.25 = 9.56 A | 480 | #6 | SBC |
| ② | 3/4" EMT | 2 | #10 | THWN-2 | 90° | 40 | x 0.96 | x 1 | = 38.40A | 35 A | 2905 / 380 = 7.64 x 1.25 = 9.56 A | 480 | #10 | THWN-2 |
| ③ | 3/4" EMT | 3 | #10 | THWN-2 | 90° | 40 | x 0.96 | x 1 | = 38.40A | 35 A | / = 25 x 1.25 = 31.25 A | 240 | #10 | THWN-2 |
| ④ | 3/4" EMT | 3 | #6 | THWN-2 | 90° | 75 | x 0.96 | x 1 | = 72.00A | 65 A | / = 25 x 1.25 = 31.25 A | 240 | #8 | THWN-2 |

| INVERTER SPECS | | OPTIMIZER SPECS | | DISCONNECTS | | MODULE SPECS | | | | ASHRAE AMBIENT TEMPERATURE SPECS | | |
|------------------------------|--|--------------------------|--|------------------------------|--|--------------------|------|--------------------------|--------------|----------------------------------|-----------------------------------|---------|
| INVERTER:SE6000H-US QTY:1 | | OPTIMIZER:S440 QTY:14 | | MAKE:EATON DG222NRB QTY:1 | | MODULE TYPE: | QTY: | WATTAGE: | FRAME COLOR: | High Temp | DISTANCE ABOVE ROOF | EXTREME |
| VOLTAGE: 240 | | WATTAGE: 6000 | | NEC EFF: 99% | | CELL: 60 | | MAX STRING WATTAGE: 5700 | | 2% Avg. | 1" | MIN |
| | | | | | | RATED CURRENT: 60A | | MAX RATED VOLTAGE: 240V | | 34.2° C | NO TEMP ADDER PER 310.15(B)(3)(C) | -1.4° C |

UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS LOCATED AT THE SERVICE ENTRANCE.
CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC ARTICLE 300.6 (C) (1) AND ARTICLE 310.10 (D).
CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC ARTICLE 310.10 (C).
ALL BOS COMPONENTS SHALL BE INSTALLED WITHIN 10 FT OF ADJACENT COMPONENTS

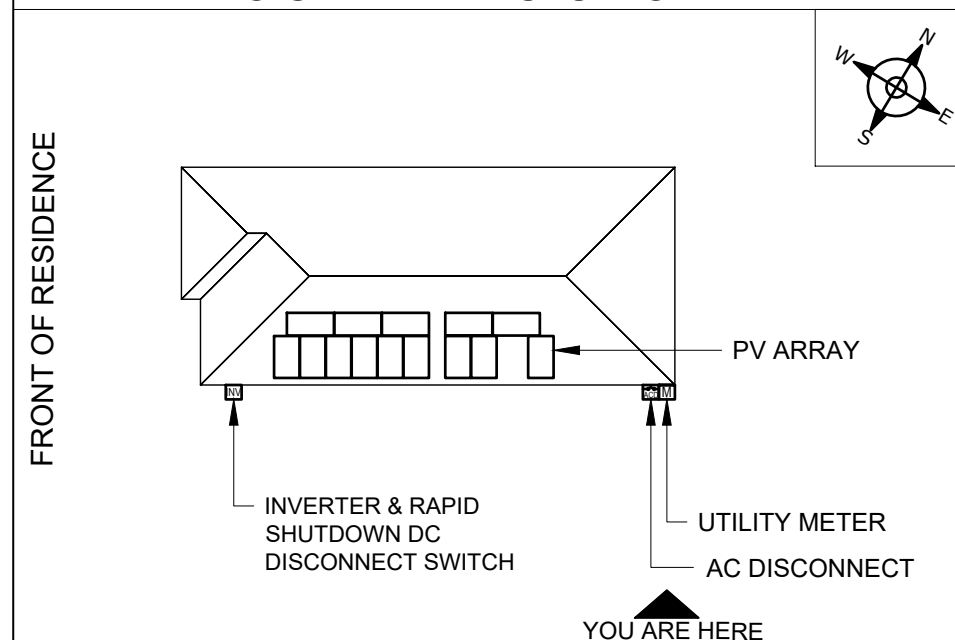


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|--|------------------------------|--|---|--------|-----------------------------------|
| <div>PosiGen</div> <div>Solar Energy and Energy Efficiency</div> | JOB NUMBER: P-004975 | OWNER: MATEAL LAWHORN, 3705 LOUISIANA AVE PKWY, NEW ORLEANS, LA 70125 | DESCRIPTION: MATEAL LAWHORN, RESIDENCE 5.81 kWDC ROOF SOLAR SYSTEM PRODUCTION: 6,910kWH | STAMP: | PV-5 |
| | UTILITY: ENTERGY | | | | PAGE NAME: SINGLE-LINE DIAGRAM |
| | RACKING: K2 CROSSRAIL SYSTEM | ACCOUNT NUMBER : 85296663 | DESIGNED BY: ENERQUAL | REV: | SCALE: NTS |
| | MODULES: (14)CS3N-415MS | | | | DATE: 9/15/2022 |
| OPTIMIZER: (14) SOLAREEDGE S440 OPTIMIZER | | | | | |
| INVERTER: (1)SOLAREEDGE SE6000H-US | | | | | |
| <div>POSIGEN DEVELOPER, LLC</div> <div>819 CENTRAL AVE STE 210</div> <div>JEFFERSON, LA 70121</div> <div>LA ELECTRICAL LICENSE :74446</div> | | | | | |

| | | | | | | |
|---|--|---|--|---|--------|---|
| GROUNDING NOTES | | 7 | EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC ARTICLE 690.45, AND BE A MINIMUM OF #10AWG WHEN NOT EXPOSED TO DAMAGE, AND #6AWG SHALL BE USED WHEN EXPOSED TO DAMAGE | NOTES : 1. MATING CONNECTORS SHALL COMPLY WITH NEC 690.33. 2. SOLAR EDGE SYSTEM MEETS REQUIREMENTS FOR PHOTOVOLTAIC RAPID SHUTDOWN SYSTEM (PVRSS), AS PER NEC 690.12(B). 3. THE SPECIFIED OPTIMIZER CAN BE SUBSTITUTED WITH A P400, P405, P505, P401, OR P485. THESE OPTIMIZERS HAVE AN INPUT VOLTAGE WINDOW WIDE ENOUGH TO ACCOMMODATE THE OUTPUT VOLTAGE RANGE OF THE MODULE AT THE DESIGN TEMPERATURES, HAVE A MAX INPUT CURRENT RATING THAT IS ABOVE THE MAX OUTPUT CURRENT OF THE MODULE, AND A MAX POWER INPUT THAT IS ABOVE THE RATED POWER OUTPUT OF THE MODULE. 4. DC PV CONDUCTORS ARE NOT SOLIDLY-GROUNDED. NO DC PV CONDUCTOR SHALL BE WHITE- OR GRAY-COLORED 5. ALL METAL ENCLOSURES, RACEWAYS, CABLES AND EXPOSED NONCURRENT-CARRYING METAL PARTS OF EQUIPMENT SHALL BE GROUNDED TO EARTH AS REQUIRED BY NEC 250.4(A) AND PART III OF ARTICLE 250 AND EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 690.45. THE GROUNDING ELECTRODE SYSTEM SHALL ADHERE TO NEC 690.47(A) AND NEC 250.169. THE DC GROUNDING ELECTRODE SHALL BE SIZED ACCORDING TO NEC 250.166 AND INSTALLED IN COMPLIANCE WITH NEC 250.64. 6. MAX DC VOLTAGE OF ARRAY FIXED BY THE INVERTER AT 380V REGARDLESS OF TEMPERATURE. THE MAX DC VOLTAGE OF THE MODULE AT -15°C IS 53.2V (-15°C - 25°C) X -0.138V/C + 47.7V = 53.2V). 7. POINT-OF-CONNECTION IS ON THE SUPPLY SIDE OF SERVICE DISCONNECT, INSIDE PANELBOARD ENCLOSURE USING UNUSED TERMINALS, TERMINALS THAT ARE SUITABLE FOR DOUBLE LUGGING, OR USING OTHER LOCALLY-APPROVED METHODS AND HARDWARE, IN COMPLIANCE WITH NEC 705.12(A). THE PANELBOARD SHALL HAVE SUFFICIENT SPACE TO ALLOW FOR ANY TAP HARDWARE AS REQUIRED BY NEC 110.3 AND NEC 312.8(A) 8. PV SYSTEM DISCONNECT SHALL BE A VISIBLE KNIFE-BLADE TYPE DISCONNECT THAT IS ACCESSIBLE AND LOCKABLE BY THE UTILITY. THE DISCONNECT SHALL BE LOCATED WITHIN 10 FT OF UTILITY METER. DISCONNECT SHALL BE GROUPED IN ACCORDANCE WITH NEC 230.72. | | |
| 1 | ALL EQUIPMENT SHALL BE PROPERLY GROUNDED PER THE REQUIREMENTS OF NEC ARTICLES 250 & 690 | | | | | |
| 2 | INSTALLER SHALL CONFIRM THAT MOUNTING SYSTEM HAS BEEN EVALUATED FOR COMPLIANCE WITH UL 2703 "GROUNDING AND BONDING" WHEN USED WITH PROPOSED PV MODULE. | | | | | |
| 3 | PV MODULES SHALL BE GROUNDED TO MOUNTING RAILS USING MODULE LUGS OR RACKING INTEGRATED GROUNDING CLAMPS AS ALLOWED BY LOCAL JURISDICTION. ALL OTHER EXPOSED METAL PARTS SHALL BE GROUNDED USING UL-LISTED LAY-IN LUGS. | | | | | |
| 4 | GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLOR CODED GREEN, OR MARKED GREEN IF #4AWG OR LARGER | | | | | |
| 5 | AC SYSTEM GROUNDING ELECTRODE CONDUCTOR (GEC) SHALL BE A MINIMUM SIZE #8AWG WHEN INSULATED, #6AWG IF BARE WIRE. | | | | | |
| 6 | IF THE EXISTING MAIN SERVICE PANEL DOES NOT HAVE A VERIFIABLE GROUNDING ELECTRODE, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE. | | | | | |
| <div><div>Solar Energy and Energy Efficiency</div><div>POSIGEN DEVELOPER, LLC 819 CENTRAL AVE STE 210 JEFFERSON, LA 70121 LA ELECTRICAL LICENSE :74446</div></div> | | JOB NUMBER: P-004975 | OWNER: MATEAL LAWHORN, 3705 LOUISIANA AVE PKWY, NEW ORLEANS, LA 70125 | DESCRIPTION: MATEAL LAWHORN, RESIDENCE 5.81 kWDC ROOF SOLAR SYSTEM PRODUCTION: 6,910kWH | STAMP: | <div>PV-5.1</div> <div>PAGE NAME: ELECTRICAL NOTES</div> <div>SCALE: NTS</div> <div>DATE: 9/15/2022</div> |
| | | UTILITY: ENTERGY | | | | |
| | | RACKING: K2 CROSSRAIL SYSTEM | | | | |
| | | MODULES: (14)CS3N-415MS | ACCOUNT NUMBER : 85296663 | DESIGNED BY: ENERQUAL | REV: | |
| | | OPTIMIZER: (14) SOLAREEDGE S440 OPTIMIZER | | | | |
| | | INVERTER: (1)SOLAREEDGE SE6000H-US | | | | |

CAUTION

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



PLACARD RIVETED TO THE MAIN SERVICE PANEL

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])



POSIGEN DEVELOPER, LLC
819 CENTRAL AVE STE 210
JEFFERSON, LA 70121
LA ELECTRICAL LICENSE :74446

JOB NUMBER: P-004975

UTILITY: ENTERGY

RACKING: K2 CROSSRAIL SYSTEM

MODULES: (14)CS3N-415MS

OPTIMIZER: (14) SOLAREEDGE S440 OPTIMIZER

INVERTER: (1)SOLAREEDGE SE6000H-US

OWNER:

MATEAL LAWHORN,
3705 LOUISIANA AVE PKWY,
NEW ORLEANS, LA 70125

ACCOUNT NUMBER : 85296663

DESCRIPTION:

MATEAL LAWHORN,
RESIDENCE

5.81 kWDC ROOF SOLAR SYSTEM
PRODUCTION: 6,910kWH

DESIGNED BY:

ENERQUAL

STAMP:

PV-6

PAGE NAME:
PLACARD

SCALE:
NTS

DATE:
9/15/2022

REV:

DC RACEWAYS

2

SW1 - DISCONNECT
(EATON DG222NRB)

3

5

6

I1 - INVERTER
(SOLAREEDGE SE6000H-US000BNC4)

3

4

MSP - MAIN SERVICE PANEL

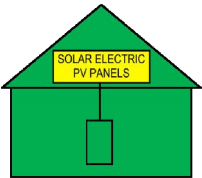
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7

1 SEE NOTE NO. 4 (MSP)

EMERGENCY RESPONDER
THIS SOLAR PV SYSTEM IS
EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN
SWITCH TO THE 'OFF'
POSITION TO SHUT DOWN
THE ENTIRE PV SYSTEM.



NEC690.56(C)(1) AND NFPA
111.12.2.1.1.1.1,11.12.2.1.4

6 AC DISCONNECT (SW1)

MAXIMUM AC OPERATING CURRENT: 25A
MAXIMUM AC OPERATING VOLTAGE: 240V

NEC690.54

2 SEE NOTE NO. 5 (DC RACEWAYS)

WARNING
PHOTOVOLTAIC POWER SOURCE

NEC690.31(G)(3) AND NFPA 111.12.2.1.3

4 DC DISCONNECT (I1)

DIRECT-CURRENT PV POWER SOURCE
MAXIMUM VOLTAGE: 380V
MAX CIRCUIT-CURRENT: 7.64A
DC-TO-DC CONVERTER RATED CURRENT: 15.0A

NEC690.53

7 ANY AC ELECTRICAL PANEL THAT IS FED BY
BOTH THE UTILITY AND THE PHOTOVOLTAIC
SYSTEM (MSP)

! WARNING !

DUAL POWER SOURCE. SECOND SOURCE IS
PHOTOVOLTAIC SYSTEM.

NEC705.12(B)(3)

3 EACH DISCONNECTING MEANS FOR
PHOTOVOLTAIC EQUIPMENT (SW1, I1)

! WARNING !

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

NEC690.13(B)

5 AC SOLAR DISCONNECT (SW1)

PV SYSTEM DISCONNECT

NEC690.13(B)

LABELING NOTES

1 ALL PLAQUES AND SIGNAGE REQUIRED BY 2017 NEC
AND 2018 NFPA 1 WILL BE INSTALLED AS REQUIRED.

2 LABELS, WARNING(S) AND MARKING SHALL COMPLY
WITH ANSI Z535.4, WHICH REQUIRES THAT DANGER,
WARNING, AND CAUTION SIGNS USED THE STANDARD
HEADER COLORS, HEADER TEXT, AND SAFETY ALERT
SYMBOL ON EACH LABEL. THE ANSI STANDARD
REQUIRES A HEADING THAT IS AT LEAST 50% TALLER
THAN THE BODY TEXT, IN ACCORDANCE WITH NEC
110.21(B).

3 A PERMANENT PLAQUE OR DIRECTORY SHALL BE
INSTALLED PROVIDING THE LOCATION OF THE
SERVICE DISCONNECTING MEANS AND THE
PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS IF
NOT IN THE SAME LOCATION IN ACCORDANCE WITH
NEC 690.56(B).

4 LABEL(S) WITH MARKING, "TURN RAPID SHUTDOWN
SWITCH TO THE 'OFF' POSITION TO SHUT DOWN THE
ENTIRE PV SYSTEM," SHALL BE LOCATED WITHIN 3 FT
OF SERVICE DISCONNECTING MEANS THE TITLE SHALL
UTILIZE CAPITALIZED LETTERS WITH A MINIMUM
HEIGHT OF 3/8" IN BLACK ON A RED BACKGROUND,
AND REMAINING TEXT SHALL BE CAPITALIZED WITH A
MINIMUM HEIGHT OF 3/16" IN BLACK ON WHITE
BACKGROUND

5 LABEL(S) WITH MARKING, "WARNING PHOTOVOLTAIC
POWER SOURCE," SHALL BE LOCATED AT EVERY 10
FEET OF EACH DC RACEWAY AND WITHIN ONE FOOT
OF EVERY TURN OR BEND AND WITHIN ONE FOOT
ABOVE AND BELOW ALL PENETRATIONS OF
ROOF/CEILING ASSEMBLIES, WALLS AND BARRIERS.
THE LABEL SHALL HAVE 3/8" TALL LETTERS AND BE
REFLECTIVE WITH WHITE TEXT ON A RED
BACKGROUND



POSIGEN DEVELOPER, LLC
819 CENTRAL AVE STE 210
JEFFERSON, LA 70121
LA ELECTRICAL LICENSE :74446

JOB NUMBER: P-004975

UTILITY: ENTERGY

RACKING: K2 CROSSRAIL SYSTEM

MODULES: (14)CS3N-415MS

OPTIMIZER: (14) SOLAREEDGE S440 OPTIMIZER

INVERTER: (1)SOLAREEDGE SE6000H-US

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ACCOUNT NUMBER : 85296663

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MATEAL LAWHORN,
RESIDENCE
5.81 kWDC ROOF SOLAR SYSTEM
PRODUCTION: 6,910kWH

DESIGNED BY:
ENERQUAL

STAMP:

PV-7

PAGE NAME:
SAFETY LABELS

SCALE:
NTS

DATE:
9/15/2022

Bill Of Materials

| MATEAL LAWHORN 3705 LOUISIANA AVE PKWY, NEW ORLEANS, LA 70125 | | |
|--|-------------------------|---|
| | Electrical Equipment | |
| QTY | Part # | Description |
| 14 | CS3N-415MS | CANADIAN SOLAR CS3N-415MS Solar Modules |
| 1 | SOLAREEDGE SE6000H-US | SOLAREEDGE SE6000H-US (240V) Inverter(s) |
| 14 | SolarEdge S440 | SolarEdge S440 Optimizers |
| 1 | SE-GSM-R05-US-S1 | SolarEdge GSM w/ 5 Year Plan |
| 1 | 60A FUSED AC Disconnect | AC Disconnect, NEMA 3R, 60A, 240VAC, 2-Pole |
| 1 | Junction Box | Junction Box |
| 2 | Tap Connector | Tap Connector |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| Breakers and Fuses | | |
| 1 | 35A Fuses | General 35A Fuses |
| | | |
| | | |
| | | |
| | | |
| | | |
| Racking | | |
| TBD | 4000021 (180" mill) | CrossRail 44-X (shown) all CR profiles applicable |
| TBD | 4000019 (168" mill) | CrossRail 44-X (shown) all CR profiles applicable |
| TBD | 4000051 (mill) | CrossRail 44-X Rail Connector |
| 18 | 4000601-H (mill) | CrossRail Mid Clamp |
| 20 | 4000429 (mill) | CrossRail (Standard) End Clamp |
| 52 | 4000630 (mill) | L-Foot Slotted Set |
| 5 | 4000006-H | Everest Ground Lug |
| | | |



Preliminary Technical
Information Sheet



HiKu Mono

400 W ~ 425 W

CS3N-400 | 405 | 410 | 415 | 420 | 420 | 425MS

MORE POWER

- 425 W Module power up to 425 W
Module efficiency up to 20.9 %
- \$ Lower LCOE & BOS cost
- Comprehensive LID / LeTID mitigation technology, up to 50% lower degradation
- Better shading tolerance

MORE RELIABLE

- Minimizes micro-crack impacts
- Heavy snow load up to 5400 Pa, enhanced wind load up to 2400 Pa*

12 Years

Enhanced Product Warranty on Materials and Workmanship*

25 Years

Linear Power Performance Warranty*

1st year power degradation no more than 2%

Subsequent annual power degradation no more than 0.55%

*According to the applicable Canadian Solar Limited Warranty Statement.

MANAGEMENT SYSTEM CERTIFICATES*

ISO 9001:2015 / Quality management system
ISO 14001:2015 / Standards for environmental management system
OHSAS 18001:2007 / International standards for occupational health & safety

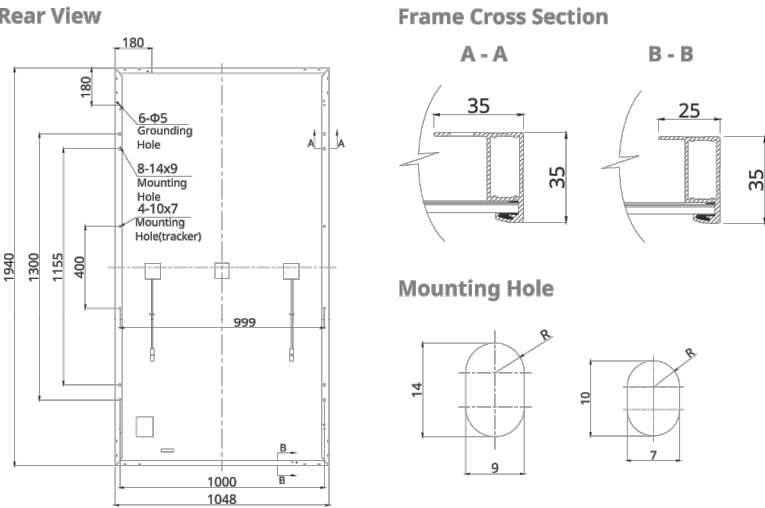
PRODUCT CERTIFICATES*

* As there are different certification requirements in different markets, please contact your local Canadian Solar sales representative for the specific certificates applicable to the products in the region in which the products are to be used.

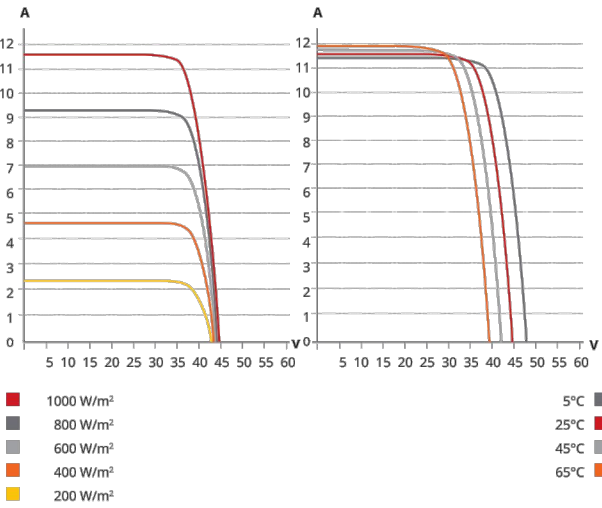
CANADIAN SOLAR (USA), INC. is committed to providing high quality solar products, solar system solutions and services to customers around the world. No. 1 module supplier for quality and performance/price ratio in IHS Module Customer Insight Survey. As a leading PV project developer and manufacturer of solar modules with over 46 GW deployed around the world since 2001.

* For detailed information, please refer to the Installation Manual.

ENGINEERING DRAWING (mm)



CS3N-410MS / I-V CURVES



ELECTRICAL DATA | STC*

| CS3N | 400MS | 405MS | 410MS | 415MS | 420MS | 425MS |
|------------------------------|---|---------|---------|---------|---------|---------|
| Nominal Max. Power (Pmax) | 400 W | 405 W | 410 W | 415 W | 420 W | 425 W |
| Opt. Operating Voltage (Vmp) | 37.2 V | 37.4 V | 37.6 V | 37.8 V | 38.0 V | 38.2 V |
| Opt. Operating Current (Imp) | 10.76 A | 10.83 A | 10.92 A | 10.98 A | 11.06 A | 11.13 A |
| Open Circuit Voltage (Voc) | 44.5 V | 44.7 V | 44.9 V | 45.1 V | 45.3 V | 45.5 V |
| Short Circuit Current (Isc) | 11.50 A | 11.56 A | 11.62 A | 11.68 A | 11.74 A | 11.80 A |
| Module Efficiency | 19.7% | 19.9% | 20.2% | 20.4% | 20.7% | 20.9% |
| Operating Temperature | -40°C ~ +85°C | | | | | |
| Max. System Voltage | 1500V (IEC/UL) or 1000V (IEC/UL) | | | | | |
| Module Fire Performance | TYPE 1 (UL 61730 1500V) or TYPE 2 (UL 61730 1000V) or CLASS C (IEC 61730) | | | | | |
| Max. Series Fuse Rating | 20 A | | | | | |
| Application Classification | Class A | | | | | |
| Power Tolerance | 0 ~ + 10 W | | | | | |

* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.

ELECTRICAL DATA | NMOT*

| CS3N | 400MS | 405MS | 410MS | 415MS | 420MS | 425MS |
|------------------------------|--------|--------|--------|--------|--------|--------|
| Nominal Max. Power (Pmax) | 298 W | 302 W | 306 W | 310 W | 313 W | 317 W |
| Opt. Operating Voltage (Vmp) | 34.7 V | 34.9 V | 35.1 V | 35.2 V | 35.4 V | 35.6 V |
| Opt. Operating Current (Imp) | 8.60 A | 8.66 A | 8.72 A | 8.81 A | 8.85 A | 8.91 A |
| Open Circuit Voltage (Voc) | 41.9 V | 42.1 V | 42.2 V | 42.4 V | 42.6 V | 42.8 V |
| Short Circuit Current (Isc) | 9.28 A | 9.33 A | 9.38 A | 9.42 A | 9.47 A | 9.52 A |

* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m² spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

* The specifications and key features contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement. Canadian Solar Inc. reserves the right to make necessary adjustment to the information described herein at any time without further notice. Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

MECHANICAL DATA

| Specification | Data |
|------------------------------------|--|
| Cell Type | Mono-crystalline |
| Cell Arrangement | 132 [2 X (11 X 6)] |
| Dimensions | 1940 X 1048 X 35 mm (76.4 X 41.3 X 1.38 in) |
| Weight | 22.5 kg (49.6 lbs) |
| Front Cover | 3.2 mm tempered glass |
| Frame | Anodized aluminium alloy |
| J-Box | IP68, 3 bypass diodes |
| Cable | 4 mm² (IEC), 12 AWG (UL) |
| Cable Length (Including Connector) | Portrait: 400 mm (15.7 in) (+) / 280 mm (11.0 in) (-); landscape: 1250 mm (49.2 in)* |
| Connector | T4 series or MC4 |
| Per Pallet | 30 pieces |
| Per Container (40' HQ) | 720 pieces |

* For detailed information, please contact your local Canadian Solar sales and technical representatives.

TEMPERATURE CHARACTERISTICS

| Specification | Data |
|--------------------------------------|--------------|
| Temperature Coefficient (Pmax) | -0.35 % / °C |
| Temperature Coefficient (Voc) | -0.27 % / °C |
| Temperature Coefficient (Isc) | 0.05 % / °C |
| Nominal Module Operating Temperature | 42 ± 3°C |

PARTNER SECTION



Single Phase Inverter with HD-Wave Technology

for North America

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



INVERTERS

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking 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 and 2017, 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)

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/ 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.-Norm.-Max. (211 - 240 - 264) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Va |
| AC Output Voltage Min.-Norm.-Max. (183 - 208 - 229) | - | ✓ | - | ✓ | - | - | ✓ | Va |
| AC Frequency (Nominal) | 59.3 - 60 - 60.5 ¹⁾ | | | | | | | Hz |
| Maximum Continuous Output Current @240V | 12.5 | 16 | 21 | 25 | 32 | 42 | 47.5 | 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 | | | | | | | 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

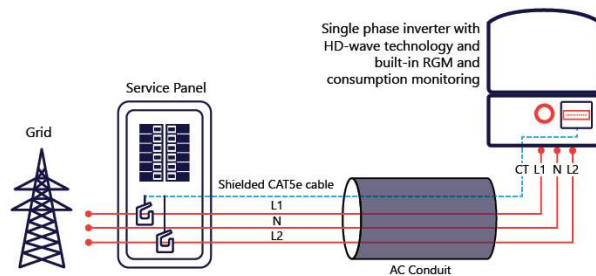
| MODEL NUMBER | SE3000H-US | SE3800H-US | SE5000H-US | SE6000H-US | SE7600H-US | SE10000H-US | SE11400H-US |
|--|---|-------------|-------------|-------------|-------------------------------------|-------------|-------------|
| ADDITIONAL FEATURES | | | | | | | |
| Supported Communication Interfaces | RS485, Ethernet, ZigBee (optional), Cellular (optional) | | | | | | |
| Revenue Grade Metering, ANSI C12.20 | Optional ^(*) | | | | | | |
| Consumption metering | | | | | | | |
| Inverter Commissioning | With the SetApp mobile application using Built-in Wi-Fi Access Point for Local Connection | | | | | | |
| Rapid Shutdown - NEC 2014 and 2017 690.12 | Automatic Rapid Shutdown upon AC Grid Disconnect | | | | | | |
| STANDARD COMPLIANCE | | | | | | | |
| 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 (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 | | in / mm |
| Weight with Safety Switch | 22 / 10 | 25.1 / 11.4 | 26.2 / 11.9 | 38.8 / 17.6 | | | lb / kg |
| Noise | < 25 | | | <50 | | dBA | |
| Cooling | Natural Convection | | | | | | |
| Operating Temperature Range | -40 to +140 / -40 to +60 ^(*) | | | | | | °F / °C |
| Protection Rating | NEMA 4X (Inverter with Safety Switch) | | | | | | |

^(*) Inverter with Revenue Grade Meter P/N: SExxxH-US000BNC4; Inverter with Revenue Grade Production and Consumption Meter P/N: SExxxH-US000BNH4. For consumption metering, current transformers should be ordered separately: SEACT0750-200NA=20 or SEACT0750-400NA=20, 20 units per box

^(*) Full power up to at least 50°C / 122°F; for power derating 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 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

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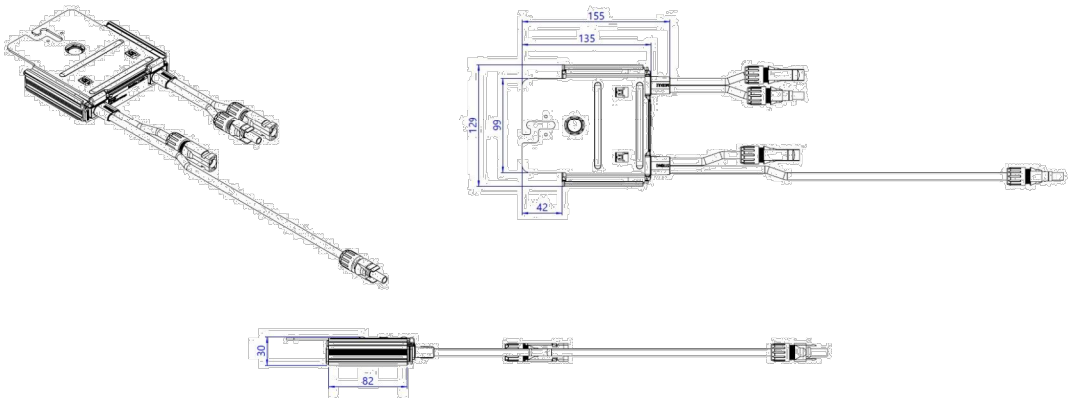
Power Optimizer For Residential Installations S440, S500

| | S440 | S500 | UNIT |
|--|--|------|---------|
| | | | |
| 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 | | % |
| Overvoltage 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 | | Vdc |
| STANDARD COMPLIANCE | | | |
| 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 | | |
| INSTALLATION SPECIFICATIONS | | | |
| 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 ⁽²⁾ | | |
| Input Wire Length | 0.1 | | m |
| Output Connector | MC4 | | |
| Output Wire Length | (+) 2.3, (-) 0.10 | | m |
| Operating Temperature Range ⁽³⁾ | -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 ⁽⁴⁾ | | 5700 | 11250 ⁽⁵⁾ | 12750 ⁽⁶⁾ | 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

Power Optimizer

For North America

P370 / P400 / P401 / P485 / P505



POWER OPTIMIZER

PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

Power Optimizer

For North America

P370 / P400 / P401 / P485 / P505

| Optimizer model (typical module compatibility) | P370 (for higher-power 60 and 72-cell modules) | P400 (for 72 & 96- cell modules) | P401 (for high power 60 and 72 cell modules) | P485 (for high-voltage modules) | P505 (for higher current modules) | |
|--|--|--|--|---------------------------------------|---|------------|
| INPUT | | | | | | |
| Rated Input DC Power ⁽¹⁾ | 370 | 400 | 430 | 485 | 505 | W |
| Absolute Maximum Input Voltage (Voc at lowest temperature) | 60 | 80 | 60 | 125 ⁽²⁾ | 83 ⁽²⁾ | Vdc |
| MPPT Operating Range | 8 - 60 | 8 - 80 | 8-60 | 12.5 - 105 | 12.5 - 83 | Vdc |
| Maximum Short Circuit Current (Isc) | 11 | 10.1 | 12.5 | 11 | 14 | Adc |
| Maximum DC Input Current | 13.75 | 12.5 | 14.65 | 12.5 | 17.5 | |
| Maximum Efficiency | 99.5 | | | | | % |
| Weighted Efficiency | 98.8 | | | | | % |
| Overvoltage Category | II | | | | | |
| OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER) | | | | | | |
| Maximum Output Current | 15 | | | | | Adc |
| Maximum Output Voltage | 60 | | | 80 | | Vdc |
| OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF) | | | | | | |
| Safety Output Voltage per Power Optimizer | 1 ± 0.1 | | | | | Vdc |
| STANDARD COMPLIANCE | | | | | | |
| EMC | FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3 | | | | | |
| Safety | IEC62109-1 (class II safety), UL1741, NEC/PVRSS | | | | | |
| Material | UL94 V-0 , UV Resistant | | | | | |
| RoHS | Yes | | | | | |
| INSTALLATION SPECIFICATIONS | | | | | | |
| Maximum Allowed System Voltage | 1000 | | | | | Vdc |
| Compatible inverters | All SolarEdge Single Phase and Three Phase inverters | | | | | |
| Dimensions (W x L x H) | 129 x 153 x 27.5 / 5.1 x 6 x 1.1 | 129 x 153 x 33.5 / 5.1 x 6 x 1.3 | 129 x 153 x 29.5 / 5.1 x 6 x 1.16 | 129 x 159 x 49.5 / 5.1 x 6.3 x 1.9 | 129 x 162 x 59 / 5.1 x 6.4 x 2.3 | mm / in |
| Weight (including cables) | 630 / 1.4 | 750 / 1.7 | 655 / 1.5 | 845 / 1.9 | 1064 / 2.3 | gr / lb |
| Input Connector | MC4 ⁽³⁾ | | | MC4 ⁽³⁾ | MC4 ⁽³⁾ | |
| Input Wire Length | 0.16 / 0.5 | | | | | m / ft |
| Output Wire Type / Connector | Double Insulated / MC4 | | | | | |
| Output Wire Length | 1.2 / 3.9 | | | | | m / ft |
| Operating Temperature Range ⁽⁴⁾ | -40 to +85 / -40 to +185 | | | | | °C / °F |
| Protection Rating | IP68 / Type6B | | | | | |
| Relative Humidity | 0 - 100 | | | | | % |

(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) NEC 2017 requires max input voltage be not more than 80V
(3) For other connector types please contact SolarEdge
(4) Longer inputs wire lengths are available for use. For 0.9m input wire length order P401-xxxLxxx
(5) For ambient temperature above +85°C / +185°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf>

| PV System Design Using a SolarEdge Inverter ⁽⁶⁾⁽⁷⁾ | | Single Phase HD-Wave | Single phase | Three Phase for 208V grid | Three Phase for 277/480V grid | |
|---|--------------------------------|---|---------------------|------------------------------|----------------------------------|---|
| Minimum String Length (Power Optimizers) | P370, P400, P401 P485, P505 | 8 6 | | 10 8 | 18 14 | |
| Maximum String Length (Power Optimizers) | | 25 | | 25 | 50 | |
| Maximum Power per String | | 5700 ⁽⁸⁾ (6000 with SE7600-US - SE11400-US) | 5250 ⁽⁸⁾ | 6000 ⁽⁹⁾ | 12750 ⁽¹⁰⁾ | W |
| Parallel Strings of Different Lengths or Orientations | | Yes | | | | |

(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 P485/P505 with P370/P400/P401 in one string
(8) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement
(9) For 208V grid: it is allowed to install up to 6,500W per string when the maximum power difference between each string is 1,000W
(10) For 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

KUP-L-Tap® Insulation Piercing Connectors Dual Rated

TYPE IPC



Features

- Body is molded from tough, resilient glass-filled nylon
- Compact design
- Tin plated copper contact teeth
- Insulation piercing
- Perforated end tabs
- Pre-filled with silicone lubricant
- Versatile
- Increased safety
- Horizontal line grid
- Temperature rating 90° C

Benefits

- Provides high degree of breakage resistance and long dependable use
- Saves space
- Easily penetrates most types of insulation
- No need to strip the conductor which saves installation time
- Break out easily by hand
- Prevents oxidation and moisture from entering the contact area
- Can be used as a splice or tap connector
- Contains no external energized parts. Can be installed "hot" on energized conductors providing tap conductor is not under load.
- Provides a visual guide for proper installation of conductors

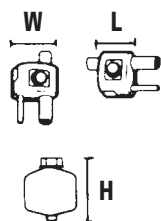


Fig. 1



Fig. 2



Fig. 3



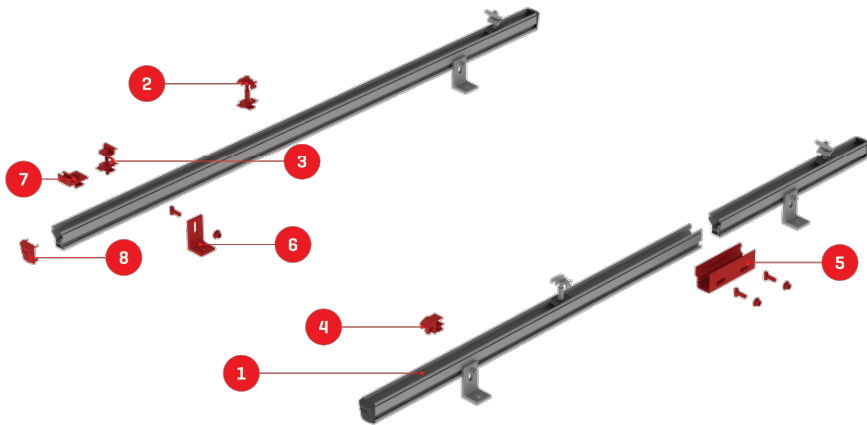
Fig. 4

| Catalog Number | Figure Number | Wire Range | | Volts | Current Rating | | Dimensions | | | Torque Ft. Lbs. | Bolt Head Size |
|----------------|---------------|-------------------|-------------------|-----------------------------|----------------|-----|------------|---------|---------|-----------------|----------------|
| | | Main | Tap | | CU | AL | L | W | H | | |
| IPC-1/0-2 | 3 | 1/0-8 | 2-8 | 300 (480 Grounded Y System) | 130 | 100 | 1-7/32 | 1-15/32 | 2-5/16 | 16 | 1/2 |
| IPC-4/0-6 | 2 | 4/0-4 | 6-14 | 600 | 75 | 60 | 1-27/64 | 1 | 1-7/8 | 13 | 1/2 |
| IPC-4/0-2/0 | 3 | 4/0-2 | 2/0-6 | 600 | 195 | 150 | 1-21/32 | 1-7/8 | 2-7/8 | 25 | 1/2 |
| IPC-250-4/0 | 2 | 250kcmil-1 | 4/0-6 | 600 | 260 | 205 | 1-7/8 | 2-11/32 | 3-11/32 | 30 | 5/8 |
| IPC-350-4/0 | 3 | 350kcmil-4/0 | 4/0-10 | 300 (480 Grounded Y System) | 260 | 205 | 1-43/64 | 2-7/16 | 3-1/8 | 25 | 5/8 |
| IPC-350-350 | 4 | 350kcmil-4/0 | 350kcmil-4/0 | 300 (480 Grounded Y System) | 350 | 280 | 2-43/64 | 2-23/32 | 3-1/4 | 25 | 5/8 |
| IPC-500-12 | 1 | 500kcmil-250kcmil | 10-12 | 300 (480 Grounded Y System) | 40 | 35 | 1-43/64 | 2-7/16 | 3-1/4 | 25 | 5/8 |
| IPC-500-250 | 1 | 500kcmil-250kcmil | 250kcmil-4 | 600 | 290 | 230 | 2-27/64 | 2-29/32 | 3-3/4 | 55 | 5/8-11/16 |
| IPC-500-500 | 1 | 500kcmil-300kcmil | 500kcmil-250kcmil | 600 | 430 | 350 | 3-3/16 | 3-5/8 | 5 | 75 | 7/8-7/8 |
| IPC-750-500 | 1 | 750kcmil-500kcmil | 500kcmil-350kcmil | 600 | 430 | 350 | 3-3/16 | 3-5/8 | 5 | 75 | 7/8-7/8 |

All wire sizes, unless noted otherwise, are American Wire Gauge (AWG)

Tested to UL 486A/B, UL File E6207

We support PV systems
Formerly Everest Solar Systems



CrossRail System

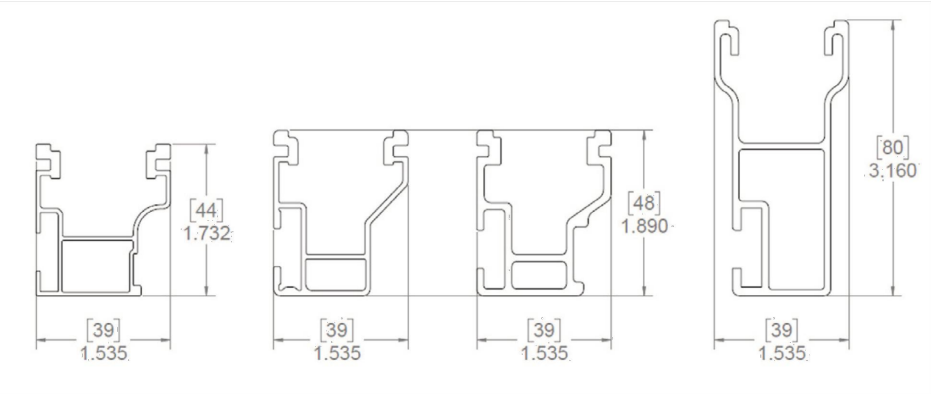
TECHNICAL SHEET

| Item Number | Description | Part Number |
|-------------|--|---|
| 1 | CrossRail 44-X [shown] all CR profiles applicable | 4000019 [166" mill], 4000020 [166" dark] , 4000021 [180" mill], 4000022 [180" dark] |
| 2 | CrossRail Mid Clamp | 4000601-H (mill), 4000602-H (dark) |
| 3 | CrossRail (Standard) End Clamp | 4000429 (mill), 4000430 (dark) |
| 4 | Yeti Hidden End Clamp for CR | 4000050-H |
| 5 | CrossRail 44-X Rail Connector [shown] CR 48-X, 48-XL Rail Connector available | 4000051 (mill), 4000052 (dark) |
| 6 | L-Foot Slotted Set | 4000630 (mill), 4000631 (dark) |
| 7 | Everest Ground Lug | 4000006-H |
| 8 | CrossRail 44-X End Cap [shown] CrossRail 48-X, 48-XL and 80 available | 4000067 |

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Units: [mm] in



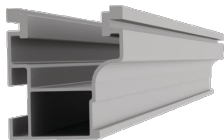
Technical Data

| | CrossRail System |
|---------------------|---|
| Roof Type | Composition shingle, tile, standing seam |
| Material | High corrosion resistance stainless steel and high grade aluminum |
| Flexibility | Modular construction, suitable for any system size, height adjustable |
| PV Modules | For all common module types |
| Module Orientation | Portrait and landscape |
| Roof Connection | Drill connection into rafter |
| Structural Validity | IBC compliant, stamped engineering letters available for all solar states |
| Warranty | 25 years |

We support PV systems
Formerly Everest Solar Systems



CROSSRAIL 44-X



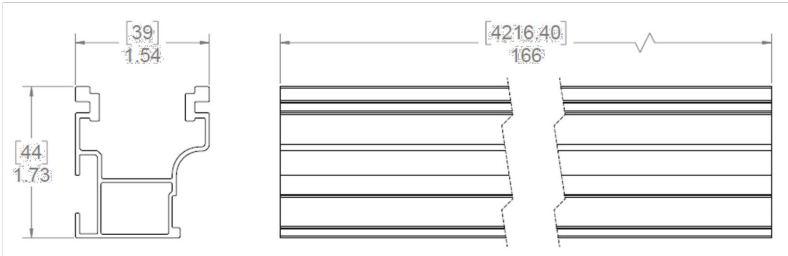
Mechanical Properties

| | CrossRail 44-X |
|---------------------------|--------------------------|
| Material | 6000 Series Aluminum |
| Ultimate Tensile Strength | 37.7 ksi [260 MPa] |
| Yield Strength | 34.8 ksi [240 MPa] |
| Weight | 0.47 lbs/ft [0.699 kg/m] |
| Finish | Mill or Dark Anodized |

Sectional Properties

| | CrossRail 44-X |
|---------------|-------------------------|
| Sx | 0.1490 in3 [0.3785 cm3] |
| Sy | 0.1450 in3 [0.3683 cm3] |
| A [X-Section] | 0.4050 in2 [1.0287 cm2] |

Units: [mm] in



Notes:

- Structural values and span charts determined in accordance with Aluminum Design Manual and ASCE 7-16
- UL2703 Listed System for Fire and Bonding

Certificate

Standard **ISO 9001:2015**

Certificate Registr. No. **01 100 101608**

Certificate Holder:



K2 Systems GmbH

Industriestr. 18
71272 Renningen
Germany

Scope:

Development, production and distribution of innovative and customer-specific mounting systems for solar technology, including customer-oriented design calculations and services

Proof has been furnished by means of an audit that the requirements of ISO 9001:2015 are met.

Validity:

The certificate is valid from 2020-03-09 until 2023-02-27.
First certification 2017
Date of recertification audit: 2020-02-28
Expiry date of last certification cycle: 2020-02-27

2020-03-09

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln