

PHOTOVOLTAIC ROOF MOUNT SYSTEM

21 MODULES-ROOF MOUNTED - 9.240 kWDC, 7.700 kWAC
 2619 SW FIREFLY LN, LEE'S SUMMIT, MO 64082, USA



Reviewed and approved
 Richard Pantel, P.E.
 MO Lic. No. PE-2023043867
 10/29/2025



DESIGNED BY
 RICKY KAMERON
 ricky@rscadgroup.com



Ricky Kameron

VERSION

| DESCRIPTION | DATE | REV |
|-----------------|------------|-----|
| INITIAL RELEASE | 10/22/2025 | UR |
| | | |
| | | |

PROJECT NAME

DON LENNARD
 2619 SW FIREFLY LN,
 LEE'S SUMMIT, MO 64082 USA
 APN# 6920011080000000
 UTILITY: N/A
 AHJ: LEE'S SUMMIT CITY

SYSTEM SUMMARY:

- (N) 21 - VSUN SOLAR VSUN 440N-108BMH-BB (440W) MODULES
- (N) 11 - HOYMILES HMS-700-2T [240V] MICRO-INVERTERS
- (N) JUNCTION BOX
- (E) 225A MAIN SERVICE PANEL WITH (E) 200A MAIN BREAKER
- (N) 125A SOLAR LOAD CENTER
- (N) 60A NON-FUSED AC DISCONNECT

INTERCONNECTION METHOD : BACKFEED BREAKER

DESIGN CRITERIA:

- ROOF TYPE: - COMP SHINGLE
- NUMBER OF LAYERS: - 02
- ROOF FRAME: - 2"X8" RAFTER @16" O.C.
- STORY: - ONE STORY
- SNOW LOAD : - 20 PSF
- WIND SPEED :- 109 MPH
- WIND EXPOSURE:- B
- RISK CATEGORY:- II
- COORDINATE:- 38.873720, -94.420840

NOTE: INSTALLER TO DETERMINE OPTIMAL CONDUIT RUN ON SITE. ATTIC RUN IS OPTIONAL UNLESS REQUIRED BELOW.
 ATTIC RUN: OPTIONAL

GOVERNING CODES:

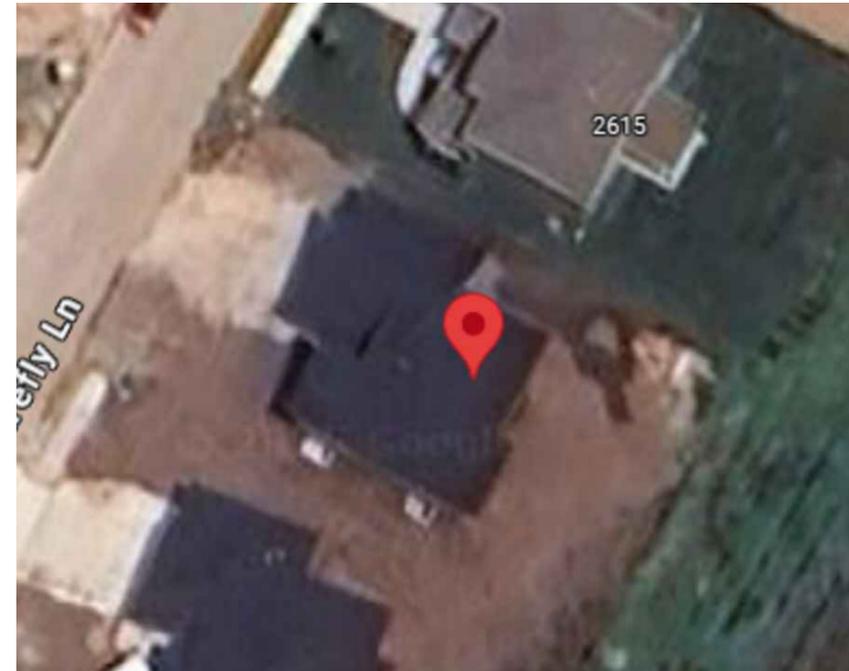
- 2018 INTERNATIONAL BUILDING CODE
- 2018 INTERNATIONAL PLUMBING CODE
- 2018 INTERNATIONAL MECHANICAL CODE
- 2018 INTERNATIONAL FUEL GAS CODE
- 2018 INTERNATIONAL RESIDENTIAL CODE
- 2018 INTERNATIONAL FIRE CODE
- 2017 NATIONAL ELECTRICAL CODE

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| PV-1 | SITE PLAN WITH ROOF PLAN |
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GENERAL NOTES:

- THE CONTRACTOR/INSTALLER OF THE SOLAR PV SYSTEM OVER EXISTING ROOF SHALL CONFORM TO OSHA REQUIREMENTS DURING THE CONSTRUCTION PHASE. JOB SAFETY AND CONSTRUCTION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR/INSTALLER. REFER TO ELECTRICAL DRAWING PV-4 FOR PANEL DETAILED INFORMATION.
- IN CASE OF CONFLICT BETWEEN STRUCTURAL DRAWINGS AND ELECTRICAL DRAWINGS, THE MOST RIGID REQUIREMENTS SHALL GOVERN. THE CONTRACTOR/INSTALLER SHALL VERIFY ALL EXISTING BUILDING INFORMATION SHOWN (DIMENSIONS, ROOF TOP PROJECTIONS, ETC.) AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO INSTALLATIONS OF PV SYSTEM.
- THE CONTRACTOR/INSTALLER SHALL VERIFY AND COORDINATE EXISTING OPENINGS, ROOF TOP UNITS, VENT PIPES, ETC. SHOWN ON DRAWINGS. IF THERE IS A DISCREPANCY BETWEEN DRAWINGS, IT IS THE CONTRACTORS/INSTALLER'S RESPONSIBILITY TO NOTIFY ENGINEER PRIOR TO PERFORMING THE WORK.
- ALL CONSTRUCTION IS TO BE PERFORMED IN STRICT CONFORMANCE WITH ALL APPLICABLE TOWN, COUNTY & STATE REGULATIONS AND/OR ANY OTHER GOVERNING BODIES. DO NOT SCALE THESE DRAWINGS, USE DIMENSIONS. CONTRACTOR MUST CONDUCT ROOF SURVEY TO VERIFY DIMENSIONS SHOWN ON PLAN PRIOR TO INSTALLATION. IF THERE IS A DISCREPANCY IT IS CONTRACTOR/INSTALLER'S RESPONSIBILITY TO NOTIFY THE ENGINEER IMMEDIATELY.
- LOCATED IN AREAS NOT REQUIRING PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS DOORS OR WINDOWS.
- LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES, OR SIGNS.
- DISCONNECT MEANS MUST HAVE DEDICATED CLEAR UNOBSTRUCTED WORKING SPACE NOT LESS THAN 3' DEEP BY 2.5' WIDE TO NOT LESS THAN 6.5' ABOVE WALKABLE SURFACES IN FRONT OF DISTRIBUTION PANEL. ALL SOLAR MODULES, EQUIPMENT, AND METALLIC COMPONENTS TO BE BONDED.
- PV ARRAY NOT TO EXCEED HIGHEST POINT OF THE ROOF. RAPID SHUTDOWN IS ACTIVATED AT THE INVERTER BY THE DC DISCONNECT



1 | AERIAL PHOTO
 PV-0 | SCALE: NTS



2 | VICINITY MAP
 PV-0 | SCALE: NTS



RELEASE FOR CONSTRUCTION
 AS NOTED ON PLANS REVIEW
 DEVELOPMENT SERVICES
 LEE'S SUMMIT, MISSOURI
 12/29/2025 12:30:25

SHEET NAME

COVER SHEET

SHEET SIZE

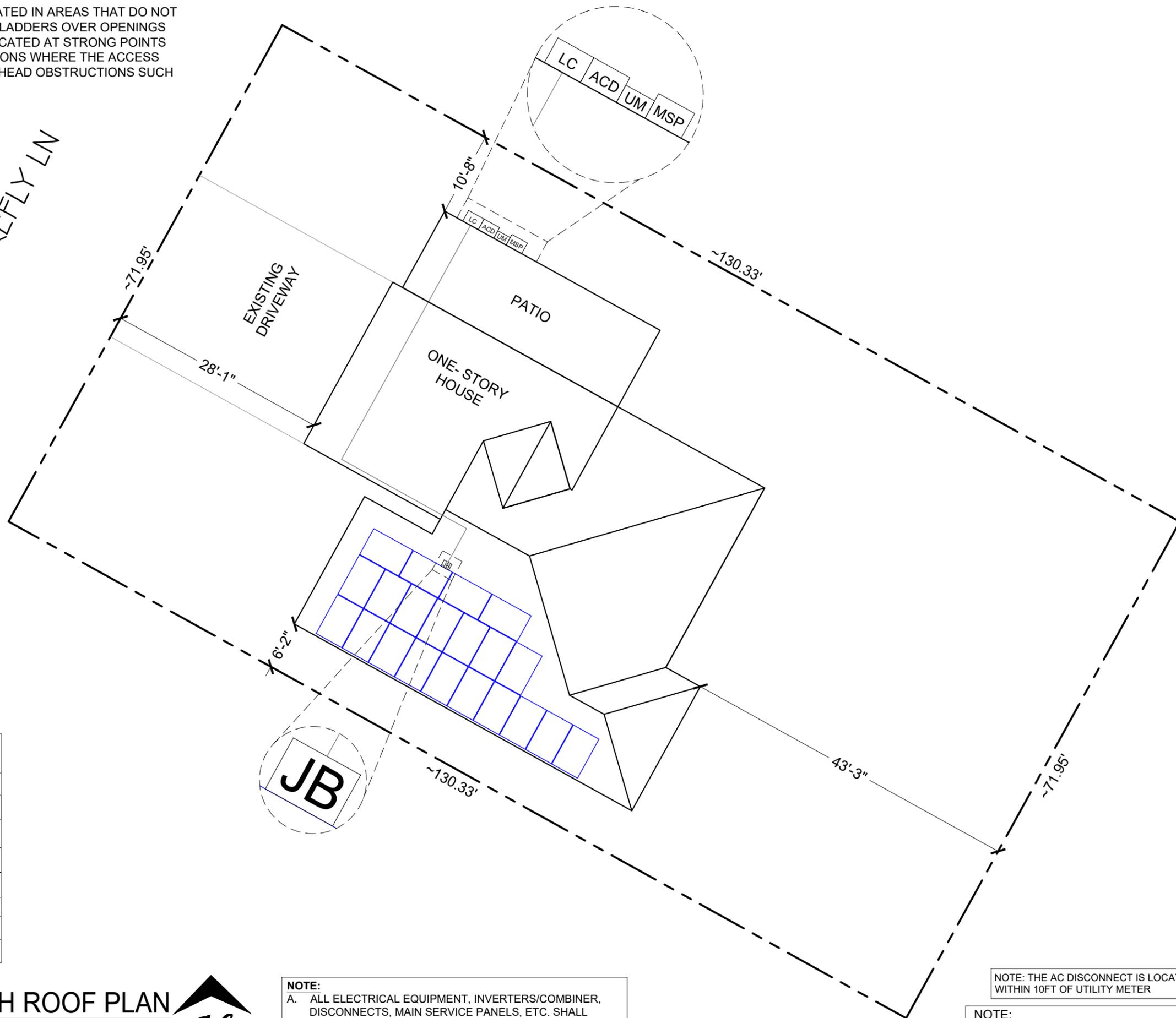
ANSI B
 11" X 17"

SHEET NUMBER

PV-0

● **ROOF ACCESS POINT** SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

SW FIREFLY LN



| LEGEND | |
|--------|--------------------|
| UM | UTILITY METER |
| MSP | MAIN SERVICE PANEL |
| ACD | AC DISCONNECT |
| SLC | SOLAR LOAD CENTER |
| JB | JUNCTION BOX |
| — | PROPERTY LINE |
| -x- | GATE |
| ---- | FENCE |

1 SITE PLAN WITH ROOF PLAN

SCALE: 5/64" = 1'-0"



NOTE:
 A. ALL ELECTRICAL EQUIPMENT, INVERTERS/COMBINER, DISCONNECTS, MAIN SERVICE PANELS, ETC. SHALL NOT BE INSTALLED WITHIN 3' OF THE GAS METERS' SUPPLY OR DEMAND PIPING.

NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER

NOTE: 3/4" OR GREATER EMT CONDUIT RUN (7/8" ABOVE ROOF)



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| DESCRIPTION | DATE | REV |
| INITIAL RELEASE | 10/22/2025 | UR |
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PROJECT NAME
DON LENNARD
2619 SW FIREFLY LN,
LEE'S SUMMIT, MO 64082 USA
APN# 6920011080000000
UTILITY: N/A
AHJ: LEE'S SUMMIT CITY

SHEET NAME
SITE PLAN WITH ROOF PLAN

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
5/1

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
12/29/2025 12:30:25

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 21 MODULES
 MODULE TYPE = VSUN SOLAR VSUN 440N-108BMH-BB (440W) MODULES
 MODULE WEIGHT = 47.18 LBS / 21.4 KG.
 MODULE DIMENSIONS = 67.80X 44.65 = 21.02 SF
 UNIT WEIGHT OF ARRAY = 2.24 PSF

NOTE:
 3/4" OR GREATER EMT CONDUIT
 RUN (7/8" ABOVE ROOF)

NOTE: THE AC DISCONNECT IS LOCATED
 WITHIN 10FT OF UTILITY METER

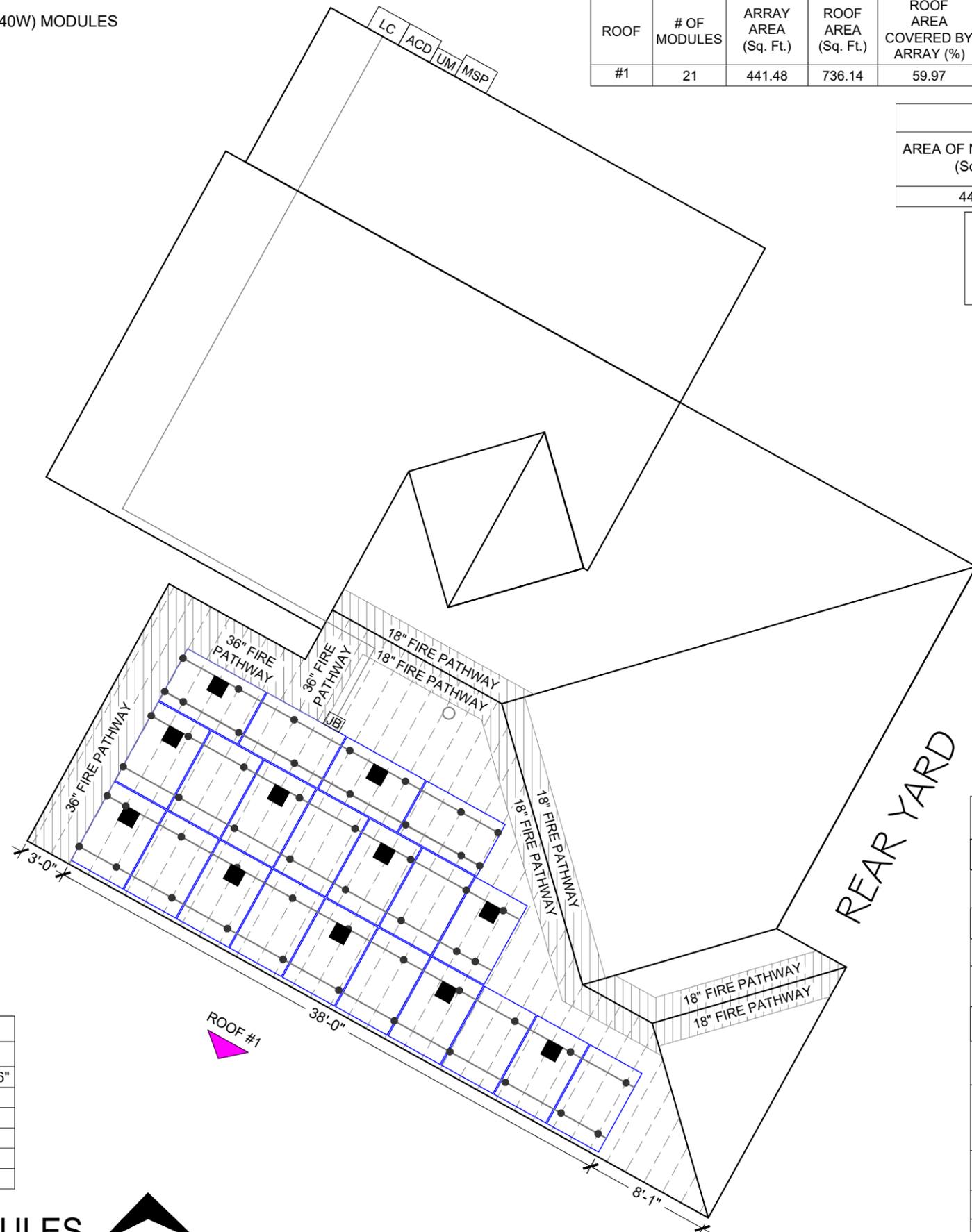
SW FIREFLY LN
 FRONT YARD

| ARRAY AREA & ROOF AREA CALC'S | | | | |
|-------------------------------|--------------|----------------------|---------------------|--------------------------------|
| ROOF | # OF MODULES | ARRAY AREA (Sq. Ft.) | ROOF AREA (Sq. Ft.) | ROOF AREA COVERED BY ARRAY (%) |
| #1 | 21 | 441.48 | 736.14 | 59.97 |

| ROOF DESCRIPTION | | | | |
|------------------|-----------|---------|-------------------|----------------|
| ROOF TYPE | | | COMP SHINGLE ROOF | |
| ROOF | ROOF TILT | AZIMUTH | RAFTER SIZE | RAFTER SPACING |
| #1 | 18° | 209° | 2"X8" | 16" O.C. |

| ARRAY AREA & ROOF AREA CALC'S | | |
|-------------------------------|------------------------------------|------------------------------------|
| AREA OF NEW ARRAY (Sq. Ft.) | AREA OF ROOF (PLAN VIEW) (Sq. Ft.) | TOTAL ROOF AREA COVERED BY ARRAY % |
| 441.48 | 2581.18 | 17.10% |

NOTE: ACTUAL ROOF CONDITIONS AND RAFTER (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS



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| LEGEND | |
|--------|--|
| UM | UTILITY METER |
| MSP | MAIN SERVICE PANEL |
| ACD | AC DISCONNECT |
| JB | JUNCTION BOX |
| ■ | HOYMILES HMS-700-2T [240V] MICRO-INVERTER |
| SLC | SOLAR LOAD CENTER |
| — | K2 CROSS RAIL 44-X MAX DARK RAIL |
| ● | ROOF ATTACHMENT EVERFLASH XP L-FOOT @ 48" O.C. |
| ○ □ | VENT, ATTIC FAN (ROOF OBSTRUCTION) |
| ⊠ | CHIMNEY |
| --- | RAFTER |
| ▨ | FIRE SETBACK |

| BILL OF MATERIALS | | |
|-------------------|-----|---------------------------------|
| EQUIPMENT | QTY | DESCRIPTION |
| RAIL | 12 | K2 CROSS RAIL 44-X MAX DARK186" |
| SPLICE | 08 | EVEREST SPLICE KIT |
| MID CLAMP | 36 | EVEREST MID CLAMP |
| END CLAMP | 12 | EVEREST END CLAMP |
| ATTACHMENT | 53 | EVERFLASH XP L-FOOT |
| GROUNDING LUG | 03 | EVEREST GROUND LUG |

1 ROOF PLAN WITH MODULES
 SCALE: 1/8"=1'-0"



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 DEVELOPMENT SERVICES
 LEE'S SUMMIT, MISSOURI
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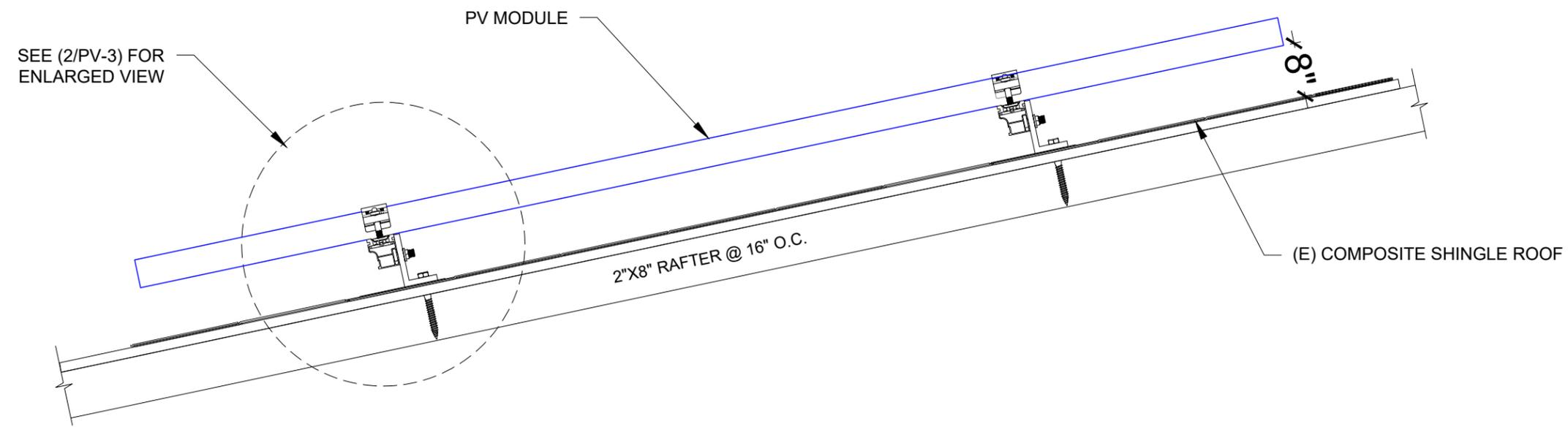
SHEET NAME

ATTACHMENT
DETAIL

SHEET SIZE

ANSI B
11" X 17"

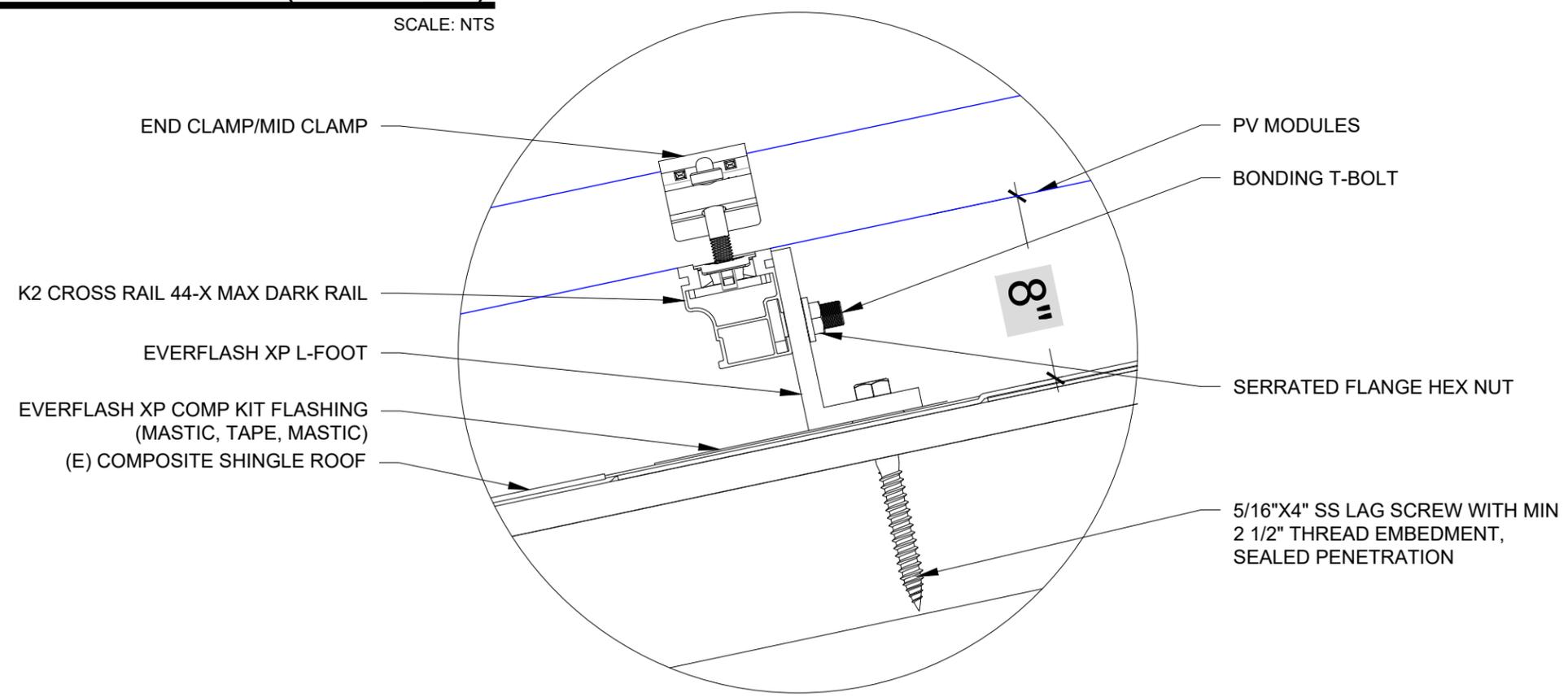
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1 ATTACHMENT DETAIL (SIDE VIEW)

PV-3

SCALE: NTS



2 ATTACHMENT DETAIL ENLARGED VIEW

PV-3

SCALE: NTS

SOLAR MODULE SPECIFICATIONS

| MANUFACTURER / MODEL # | VMP | IMP | VOC | ISC | TEMPERATURE COEFFICIENT OF Voc | # OF MODULES |
|---------------------------------------|------------------------------|-------|-------|-------|--------------------------------|--------------|
| VSUN SOLAR VSUN 440N-108BMH-BB (440W) | 33.37 | 13.18 | 39.38 | 13.85 | -0.26%/°C | 21 |
| MODULE DIMENSION | 67.80" L x 44.65" W x 1.18"D | | | | | |

SYSTEM SIZE:- 21 x 440W = 9.240 kWDC
11 x 700W = 7.700 kWAC

NOTE:
3/4" OR GREATER EMT CONDUIT RUN (7/8" ABOVE ROOF)

NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER

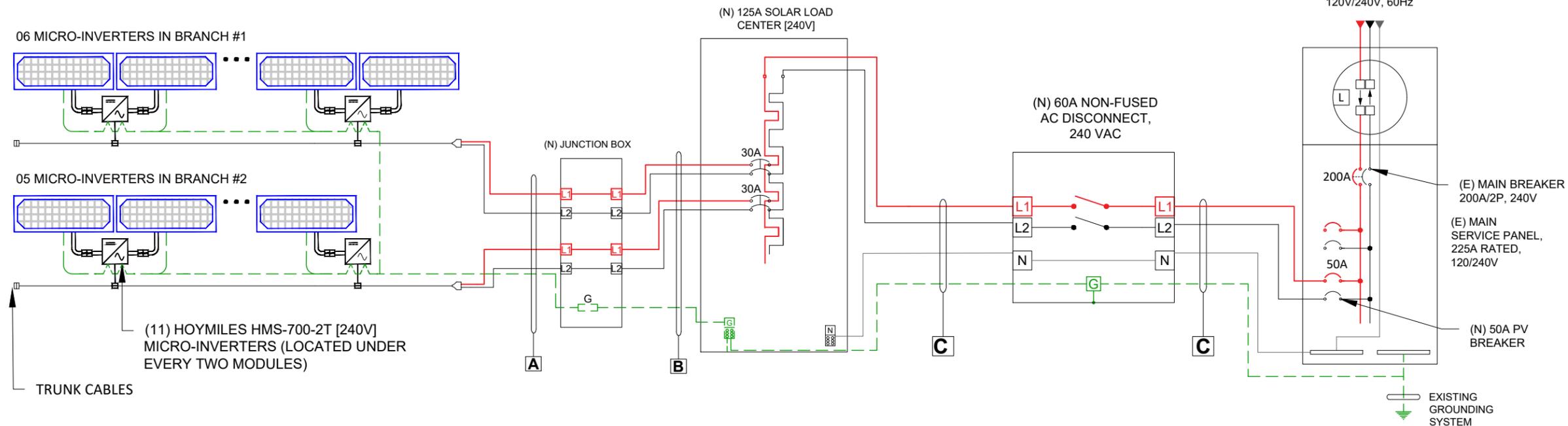
AMBIENT TEMPERATURE SPECIFICATIONS

| RECORD LOW TEMP | AMBIENT TEMP (HIGH TEMP 2%) | CONDUCTOR TEMPERATURE RATE (ON ROOF) | CONDUCTOR TEMPERATURE RATE (OFF ROOF) |
|-----------------|-----------------------------|--------------------------------------|---------------------------------------|
| -19° | 35° | 90° | 75° |

INVERTER SPECIFICATIONS

| MANUFACTURER / MODEL # | QUANTITY | NOMINAL OUTPUT VOLTAGE | NOMINAL OUTPUT CURRENT |
|----------------------------|----------|------------------------|------------------------|
| HOYMILES HMS-700-2T [240V] | 11 | 240 VAC | 3.04A |

INTERCONNECTION
120% RULE - NEC 705.12(B)(2)(3)(b)
UTILITY FEED + SOLAR BACKFEED
200A + 50A = 250A
BUSS RATING x 120%
225A x 120% = 270A



| WIRE TAG | CONDUIT | WIRE QTY | WIRE GAUGE | WIRE TYPE | TEMP. RATING | WIRE AMPACITY (A) | TEMP. DERATE | CONDUIT FILL DERATE | DERATED AMPACITY (A) | INVERTER QTY. | DESIGN CURRENT (A) | GROUND SIZE | GROUND WIRE TYPE |
|----------|----------|----------|---------------|--------------------------------------|--------------|-------------------|--------------|---------------------|----------------------|---------------|--------------------|-------------|------------------|
| A | OPEN AIR | 2 | 10 AWG | TRUNK CABLES | 90°C | 30 | 0.96 | N/A | 28.80 | 06 | 22.80 | 06 AWG | BARE CU GND |
| B | 3/4" EMT | 4 | 10 AWG 12 AWG | THWN-2 NM-B CABLES WHERE RUN INDOORS | 90°C | 40 30 | 0.96 | 0.8 | 30.72 23.04 | 06 | 22.80 | 10 AWG | THWN-2 |
| C | 3/4" EMT | 3 | 08 AWG | THWN-2 | 75°C | 50 | 0.94 | 1.0 | 47.00 | 11 | 41.80 | 10 AWG | THWN-2 |

1 ELECTRICAL LINE DIAGRAM WITH CALCULATION
SCALE: NTS



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SHEET NAME
ELECTRICAL LINE
DIAGRAM WITH
CALCULATION

SHEET SIZE
ANSI B
11" X 17"

RELEASE FOR CONSTRUCTION
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DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI

12/29/2025 12:30:25

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

LABEL LOCATION:
 AC & DC DISCONNECT AND SUB PANEL
 (PER CODE: NEC 690.13(B))

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
 MAIN SERVICE PANEL & NET METER
 (PER CODE: NEC 705.12(D)(3), NEC 705.12(B)(3-4) & NEC 690.59)

PHOTOVOLTAIC
AC DISCONNECT

LABEL LOCATION:
 AC DISCONNECT
 NEC 690.13(B)

⚠ CAUTION
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION:
 MSP
 (PER CODE: NEC 690.13 (F), NEC 705.12(B)(3-4) & NEC 690.59)

RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM

LABEL LOCATION:
 RAPID SHUTDOWN
 (PER CODE: NEC 690.56(C)(3))

PHOTOVOLTAIC SYSTEM AC DISCONNECT
 RATED AC OPERATING CURRENT 33.44 AMPS
 AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
 AC DISCONNECT & INVERTER
 (PER CODE: NEC690.54)

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

LABEL LOCATION:
 SERVICE PANEL IF SUM OF BREAKERS EXCEEDS PANEL RATING
 (PER CODE: NEC 705.12 (B)(2)(3)(B))

WARNING:PHOTOVOLTAIC POWER SOURCE

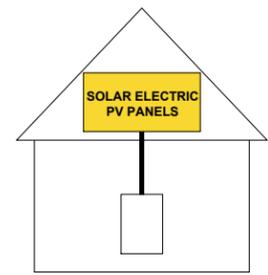
LABEL LOCATION:
 CONDUIT, COMBINER BOX
 (PER CODE: NEC 690.31(G)(3))

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

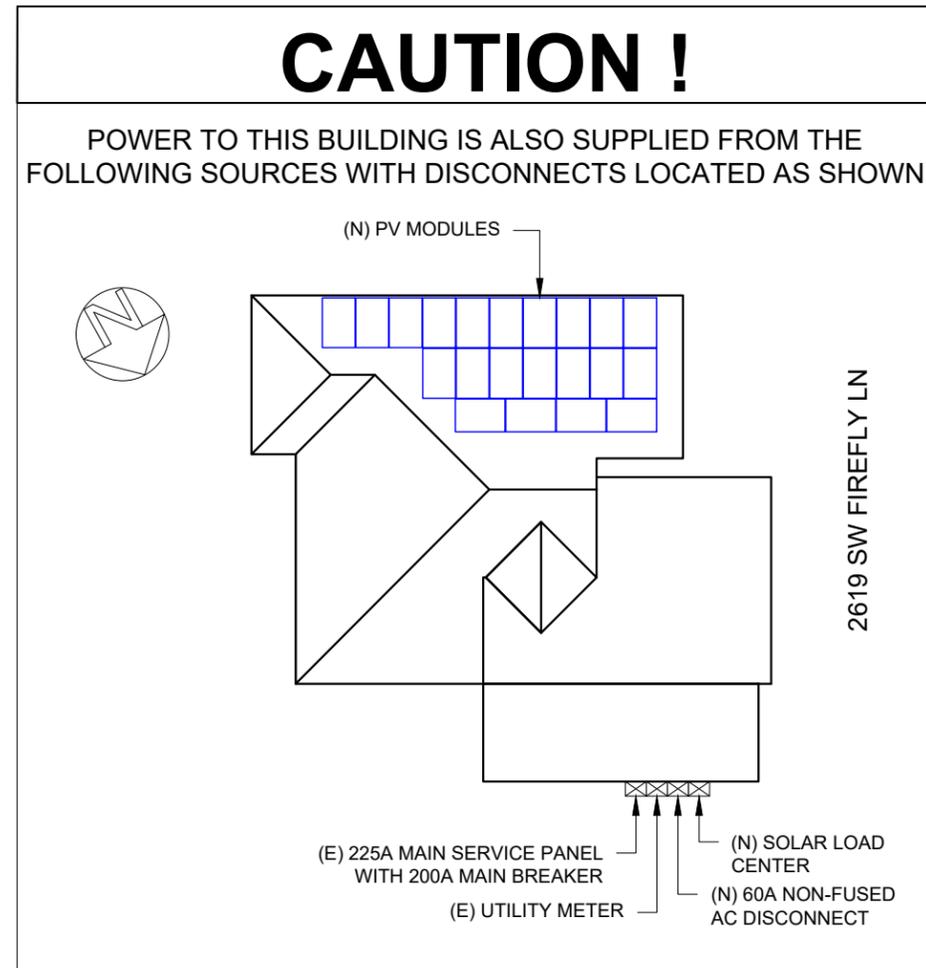
LABEL LOCATION:
 MAIN SERVICE DISCONNECT / UTILITY METER
 (PER CODE: NEC 690.13(B))

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY



LABEL LOCATION:
 AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
 (PER CODE: 605.11.3.1(1) & 690.56(C)(1)(a))



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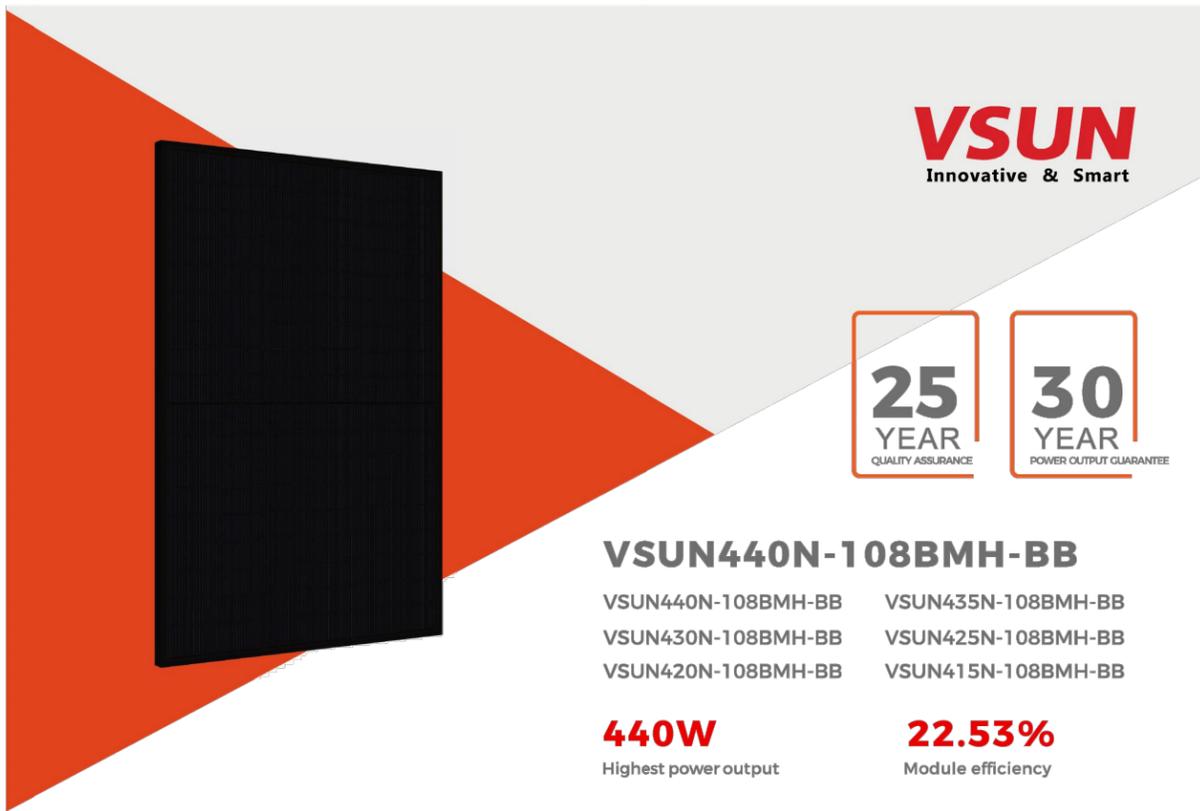
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SHEET NAME
 WARNING LABELS & PLACARD

SHEET SIZE
 ANSI B
 11" X 17"

SHEET NUMBER
 01/5

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25
YEAR
QUALITY ASSURANCE

30
YEAR
POWER OUTPUT GUARANTEE

VSUN440N-108BMH-BB

VSUN440N-108BMH-BB VSUN435N-108BMH-BB
 VSUN430N-108BMH-BB VSUN425N-108BMH-BB
 VSUN420N-108BMH-BB VSUN415N-108BMH-BB

440W

Highest power output

22.53%

Module efficiency

1.0%

First-year degradation warranty

0.40%

Annual degradation over 30 years

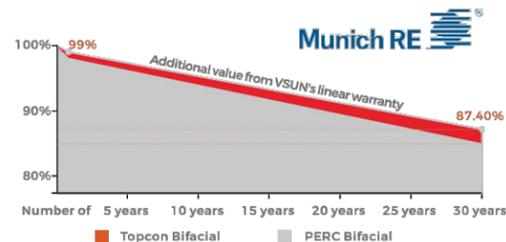
ABOUT VSUN

Invested by Fuji Solar, VSUN SOLAR is a solar solution provider with headquartered in Tokyo, Japan that offers reliability, high efficiency solar products and technology globally. VSUN is rated as BNEF Tier 1 PV module manufacturer, PVEL Lab "Best performer" and EcoVadis "Bronze Award".

PRODUCT CERTIFICATION



WARRANTY



Update Time:2024.05.14

Electrical Characteristics at Standard Test Conditions(STC)

| Module Type | VSUN440N-108BMH-BB | VSUN435N-108BMH-BB | VSUN430N-108BMH-BB | VSUN425N-108BMH-BB | VSUN420N-108BMH-BB | VSUN415N-108BMH-BB |
|----------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Maximum Power - Pmax (W) | 440 | 435 | 430 | 425 | 420 | 415 |
| Open Circuit Voltage - Voc (V) | 39.38 | 39.12 | 38.84 | 38.56 | 38.27 | 38 |
| Short Circuit Current - Isc (A) | 13.85 | 13.8 | 13.75 | 13.7 | 13.65 | 13.6 |
| Maximum Power Voltage - Vmpp (V) | 33.37 | 33.13 | 32.88 | 32.64 | 32.38 | 32.13 |
| Maximum Power Current - Impp (A) | 13.18 | 13.13 | 13.08 | 13.02 | 12.97 | 12.92 |
| Module Efficiency | 22.53% | 22.28% | 22.02% | 21.76% | 21.51% | 21.25% |

Standard Test Conditions (STC): irradiance 1,000 W/m²; AM 1.5; module temperature 25°C. Pmax Sorting: 0~5W. Measuring Tolerance: ±3%.
 Remark: Electrical data do not refer to a single module and they are not part of the offer. They only serve for comparison among different module types.

Electrical Characteristics with different rear side power gain(reference to 435 front)

| Pmax (W) | Voc (V) | Isc (A) | Vmpp (V) | Impp (A) | Pmax gain |
|----------|---------|---------|----------|----------|-----------|
| 457 | 39.12 | 14.49 | 33.13 | 13.79 | 5% |
| 478 | 39.12 | 15.18 | 33.13 | 14.44 | 10% |
| 521 | 39.20 | 16.56 | 33.05 | 15.76 | 20% |
| 542 | 39.20 | 17.25 | 33.05 | 16.41 | 25% |

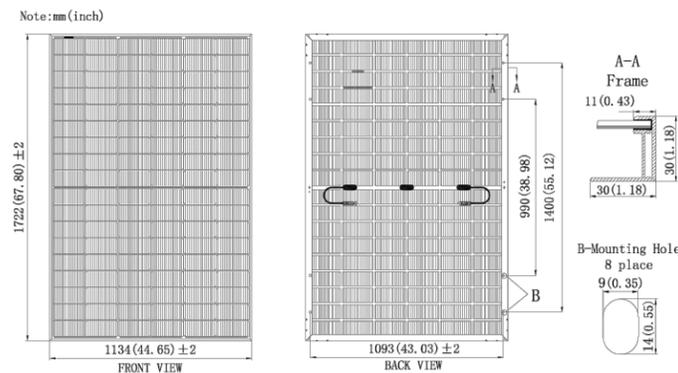
Material Characteristics

| | |
|--------------|---|
| Dimensions | 1722×1134×30mm (L×W×H) 67.80*44.65*1.18 inches (L×W×H) |
| Weight | 21.4kg / 47.18lbs |
| Frame | Black anodized aluminum profile |
| Front Glass | AR-Coating toughened glass, 3.2 mm |
| Back sheet | Transparent black-mesh backsheet |
| Cells | 12×9 pcs mono solar cells series strings |
| Junction Box | IP68, 3 diodes |
| Cable | Potrait: 1300 mm Staubli MC4 connector, 1×4 mm ² or 12AWG |

Packaging

| | |
|---------------------|--|
| Dimensions(L×W×H) | 1760×1125×1253mm / 69.29*44.29*49.33inches |
| Quantity per pallet | 36 pcs |
| Container 20' | 216 |
| Container 40' | 468 |
| Container 40'HC | 936 or 828 for US |

Dimensions



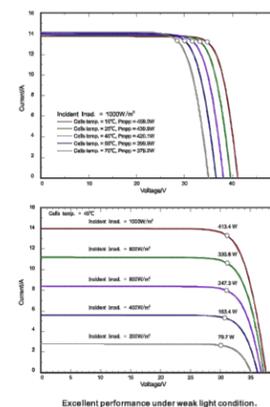
System Design

| | |
|----------------------------|--|
| Maximum System Voltage [V] | 1500 |
| Series Fuse Rating [A] | 30 |
| Bifaciality | 80%±10% |
| Fire Rating | Class C for IEC and TYPE 1 for US |
| Protection Class | Class II |
| Temperature Range | -40 °C to + 85 °C |
| Maximum Surface Load | +5400/-2400 Pa +113/-50 psf |
| Application class | class A |
| Withstanding Hail | Maximum diameter of 25 mm with impact speed of 23 m/s |

Temperature Characteristics

| | |
|---------------------------------|------------|
| NOCT | 45°C(±2°C) |
| Voltage Temperature Coefficient | -0.26%/°C |
| Current Temperature Coefficient | +0.046%/°C |
| Power Temperature Coefficient | -0.30%/°C |

IV-Curves



Update Time:2024.05.14



DESIGNED BY
RICKY KAMERON
ricky@rscadgroup.com



Ricky Kameron

VERSION

| DESCRIPTION | DATE | REV |
|-----------------|------------|-----|
| INITIAL RELEASE | 10/22/2025 | UR |
| | | |
| | | |

PROJECT NAME

DON LENNARD
 2619 SW FIREFLY LN,
 LEE'S SUMMIT, MO 64082 USA
 APN# 69200110800000000
 UTILITY: N/A
 AHJ: LEE'S SUMMIT CITY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
 11" X 17"

RELEASE FOR CONSTRUCTION
 AS NOTED ON PLANS REVIEW
 DEVELOPMENT SERVICES
 LEE'S SUMMIT, MISSOURI
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Microinverter Datasheet

- HMS-600-2T
- HMS-700-2T
- HMS-800-2T
- HMS-900-2T
- HMS-1000-2T

Description

With the output power up to 1000 VA, Hoymiles new microinverter HMS-1000-2T series rank among the highest for 2-in-1 microinverters.

Each microinverter can connect up to 2 panels, with independent MPPT and monitoring maximizing the power production of your installation.

The new Sub-1G wireless solution enables more stable communication with Hoymiles gateway DTU.

Features

- 01 High-powered microinverter for 2-in-1 with output power up to 1000 VA
- 02 With Reactive Power Control, compliant with EN 50549-1:2019, VDE-AR-N 4105:2018, VFR2019, etc.
- 03 Safer for rooftop solar stations with rapid shutdown compliance and isolated transformer
- 04 Independent MPPT and monitoring ensure greater energy harvest and easier maintenance
- 05 2-in-1 design enables faster installation
- 06 Sub-1G wireless solution allows stable communication in commercial and industrial settings

Technical Specifications

| Model | HMS-600-2T | HMS-700-2T | HMS-800-2T | HMS-900-2T | HMS-1000-2T |
|--|---|-------------|-------------|-------------|-------------|
| Input Data (DC) | | | | | |
| Commonly used module power (W) | 240 to 405+ | 280 to 470+ | 320 to 540+ | 360 to 600+ | 400 to 670+ |
| Maximum input voltage (V) | 60 | 60 | 65 | 65 | 65 |
| MPPT voltage range (V) | 16-60 | | | | |
| Start-up voltage (V) | 22 | | | | |
| Maximum input current (A) | 2 × 11.5 | 2 × 11.5 | 2 × 12.5 | 2 × 13.3 | 2 × 14 |
| Maximum input short circuit current (A) | 2 × 16 | 2 × 16 | 2 × 20 | 2 × 20 | 2 × 20 |
| Number of MPPTs | 2 | | | | |
| Number of inputs per MPPT | 1 | | | | |
| Output Data (AC) | | | | | |
| Rated output power (VA) | 600 | 700 | 800 | 900 | 1000 |
| Rated output current (A) | 2.61 | 3.04 | 3.48 | 3.91 | 4.35 |
| Nominal output voltage/range (V)* | 230/180-275 | | | | |
| Nominal frequency/range (Hz)* | 50/45-55 | | | | |
| Adjustable power factor (@nominal power) | > 0.99 default 0.8 leading ... 0.8 lagging | | | | |
| Total harmonic distortion (@nominal power) | < 3% | | | | |
| Maximum units per 10AWG branch** | 12 | 10 | 9 | 8 | 7 |
| Maximum units per 12AWG branch** | 7 | 6 | 5 | 5 | 4 |
| Efficiency | | | | | |
| CEC peak efficiency | 96.7% | 96.7% | 96.7% | 96.5% | 96.5% |
| Nominal MPPT efficiency | 99.8% | | | | |
| Night power consumption (mW) | < 50 | | | | |
| Mechanical Data | | | | | |
| Ambient temperature range (°C) | -40 to +65 | | | | |
| Dimensions (W × H × D [mm]) | 261 × 180 × 35.1 | | | | |
| Weight (kg) | 3.2 | | | | |
| Enclosure rating | Outdoor-IP67 | | | | |
| Cooling | Natural convection-No fans | | | | |
| Features | | | | | |
| Communication | Sub-1G | | | | |
| Type of isolation | Galvanically Isolated HF Transformer | | | | |
| Monitoring | S-Miles Cloud (Hoymiles Monitoring Platform) | | | | |
| Compliance | EN 50549-1: 2019, VDE-AR-N 4105: 2018, VFR2019, IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4, IEC/EN 61000-3-2/-3 | | | | |

* : Nominal voltage/frequency range can vary depending on local requirements.
 ** : Refer to local requirements for exact number of microinverters per branch.



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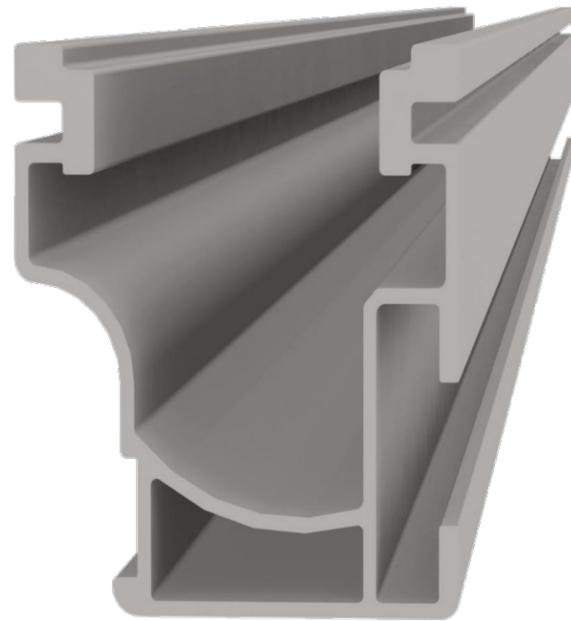
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CrossRail 44-X Max



DATA SHEET



| Part Number | Description |
|-------------|-----------------------------------|
| 4000819 | CrossRail 44-X Max 172", Mill |
| 4000819-US | CrossRail 44-X Max 172", Mill, DC |
| 4000820 | CrossRail 44-X Max 172", Dark |
| 4000820-US | CrossRail 44-X Max 172", Dark, DC |
| 4000919 | CrossRail 44-X Max 185", Mill |
| 4000920 | CrossRail 44-X Max 185", Dark |

TECHNICAL DATA



| | |
|----------------|---|
| | CrossRail 44-X Max |
| Material | Series 6000 Aluminum |
| Flexibility | Modular construction, suitable for any system size, height adjustable |
| Weight | 0.50lbs/ft (0.746kg/m) |
| Finish | Mill or Dark |
| Certifications | UL 2703, ASCE 7-16, Class A Fire Rating |
| Warranty | 25 years |

CROSS-SECTIONAL PROPERTIES

| | |
|---------------|--|
| | CrossRail 44-X Max |
| Sx | 0.175 in ³ (2.861 cm ³) |
| Sy | 0.147 in ³ (2.410 cm ³) |
| A (Section X) | 0.428 in ² (2.763 cm ²) |

| LOAD | | RAIL SPAN | | | | | | | | | |
|------------|------------|-----------|----|-----|----|-----|----|------|-----|-----|--|
| SNOW (psf) | WIND (mph) | 32" | 4' | 64" | 6' | 80" | 8' | 112" | 10' | 12' | |
| 0 | 120 | | | | | | | | | | |
| 0 | 140 | | | | | | | | | | |
| 0 | 160 | | | | | | | | | | |
| 10 | 120 | | | | | | | | | | |
| 10 | 140 | | | | | | | | | | |
| 10 | 160 | | | | | | | | | | |
| 20 | 140 | | | | | | | | | | |
| 20 | 160 | | | | | | | | | | |
| 30 | 160 | | | | | | | | | | |
| 40 | 160 | | | | | | | | | | |
| 80 | 160 | | | | | | | | | | |
| 100 | 160 | | | | | | | | | | |

44X/MAX 48X 48XL CR80



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EverFlash XP Comp



Components



EverFlash XP Comp Flashing

- ▶ Material: galvalume
- ▶ Finish: mill or dark

| Part Number | Description |
|-------------|---------------------------------------|
| 4000037 | EverFlash XP Flashing 24ga Galv, Dark |
| 4000056 | EverFlash XP Flashing 24ga Galv, Mill |



EverFlash XP L-Foot and Butyl Gasket

- ▶ Material: aluminum
- ▶ Finish: mill or dark
- ▶ T-Bolt for CrossRail included

| Part Number | Description |
|-------------|--------------------------|
| 4000036 | EverFlash XP L-Foot Mill |
| 4000038 | EverFlash XP L-Foot Dark |
| 4000063 | XP Butyl Gasket, Lfoot |



Lag Bolt and Washer

- ▶ Material: stainless steel
- ▶ EPDM backed washer
- ▶ Preassembled



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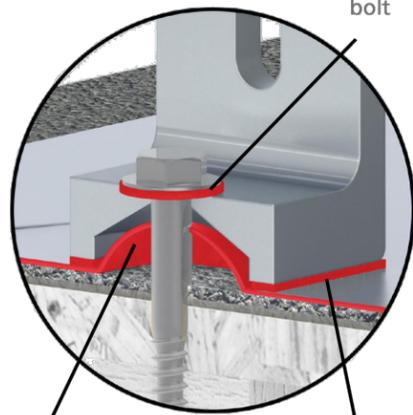
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| Part Number | Description |
|-------------|---------------------------------------|
| 4000057 | EverFlash XP Kit, Mill LF, Dark Flash |
| 4000060 | EverFlash XP Comp Kit, Dark |
| 4000061 | EverFlash XP Comp Kit, Mill |

- ▶ Everest's very own comp shingle flashing and mount!
- ▶ Best in class - 3 stages of waterproofing
- ▶ All CrossRail hardware included and preassembled
- ▶ UL 441 Section 27 Rain test
- ▶ TAS 100-95 Wind driven rain test



Dome provides fully encapsulated raised seal

Butyl gasket seals L-Foot - Flashing connection

EPDM sealing washer on lag bolt

www.everest-solarsystems.com

EverFlash XP Comp Product Sheet U503 | 0120 · Subject to change · Product illustrations are exemplary and may differ from the original.

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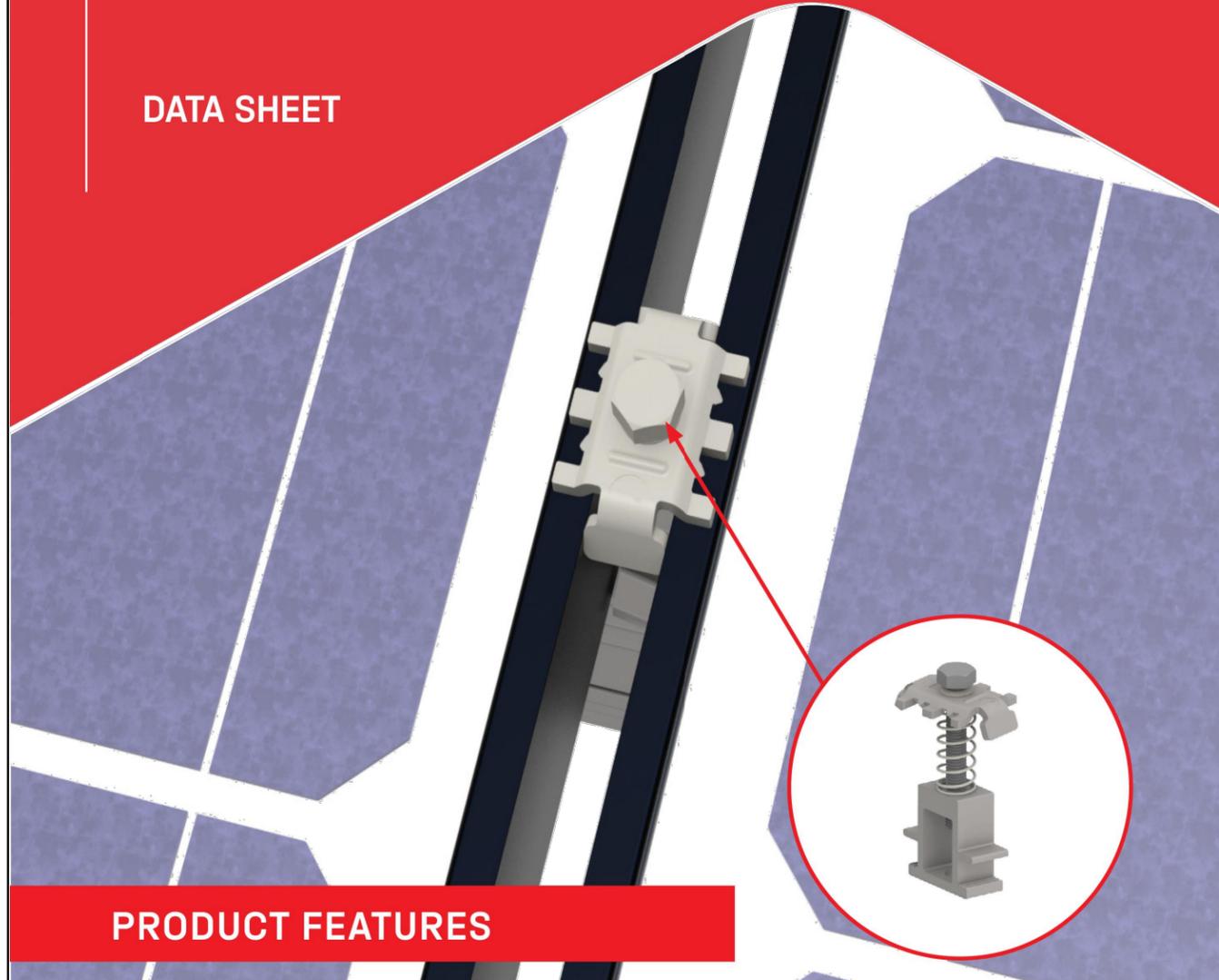
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K2 Mid Clamp



DATA SHEET



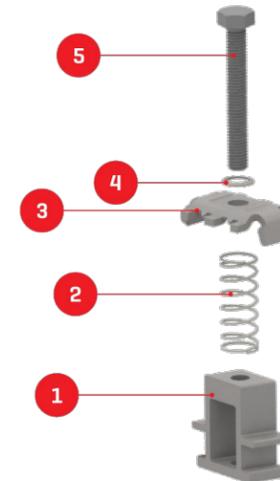
PRODUCT FEATURES

- / New and improved design
- / One handed and one tool installation
- / Clamp naturally provides module gaps
- / UL 2703 listed for mounting and bonding
- / Self aligns in rail

TECHNICAL DATA



| | |
|------------------------------|---|
| | K2 Mid Clamp |
| Compatible module frame size | 27-40mm |
| Material | Stainless steel and aluminum |
| Finish | Mill or dark |
| Compatibility | CrossRail 44-X, 48-X, 48-XL, 80, MiniRail |
| Box quantity | 20 |



| Item Number | Description | Part Number |
|-------------|--------------------------------|--|
| 1 | South Face Clamp Bottom, Mill | 4000229 K2 Mid Clamp Set, M8×40, Dark 4000230 K2 Mid Clamp Set, M8×40, Mill |
| 2 | Clamp Spring, 38mm length | 4000251 K2 Mid Clamp Set, M8×60, Mill 4000252 K2 Mid Clamp Set, M8×60, Dark |
| 3 | Mid Clamp Top | |
| 4 | Lock Washer | |
| 5 | Steel Hex Head Cap Screw, Mill | |



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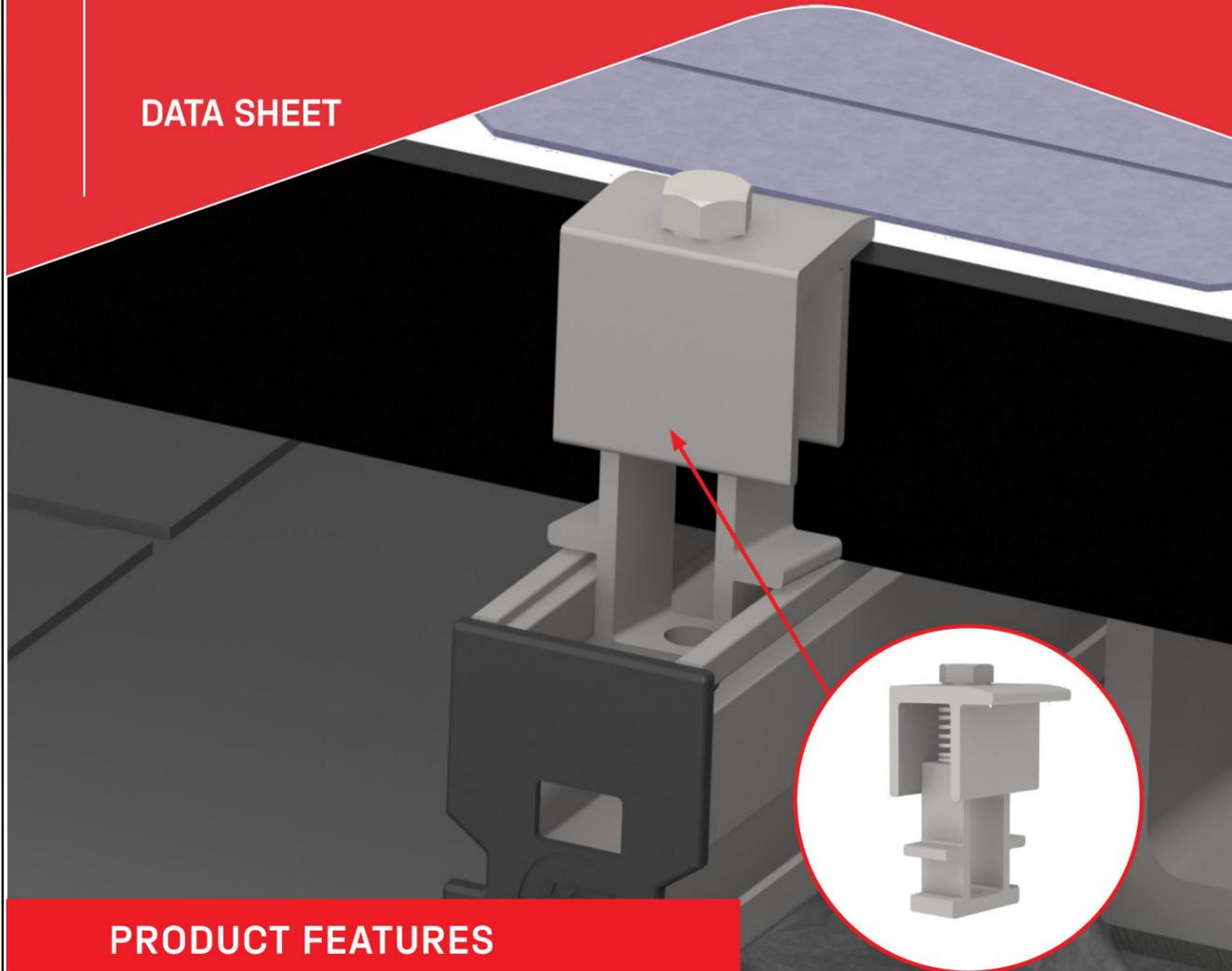
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K2 End Clamp



DATA SHEET



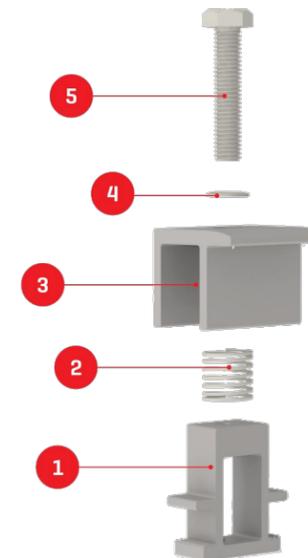
PRODUCT FEATURES

- / New and improved design
- / One handed and one tool installation
- / UL 2703 listed for mounting and bonding
- / Self aligns in rail

TECHNICAL DATA



| | |
|------------------------------|---|
| | K2 End Clamp |
| Compatible module frame size | 27-40mm |
| Material | Stainless steel and aluminum |
| Finish | Mill or dark |
| Compatibility | CrossRail 44-X, 48-X, 48-XL, 80, MiniRail |
| Box quantity | 20 |



| Item Number | Description | Part Number |
|-------------|-------------------------------|--|
| 1 | K2 End Clamp Bottom, Mill | 4000197 K2 End Clamp Set, Mill 4000233 K2 End Clamp Set, Dark |
| 2 | Clamp Springs, 26.0 mm Length | |
| 3 | K2 End Clamp Top, Mill | |
| 4 | Lock Washer S8 13×8.4×8 mm SS | |
| 5 | Hex Head Bolt, M8×40 | |



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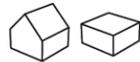
K2 Ground Lug



DATA SHEET



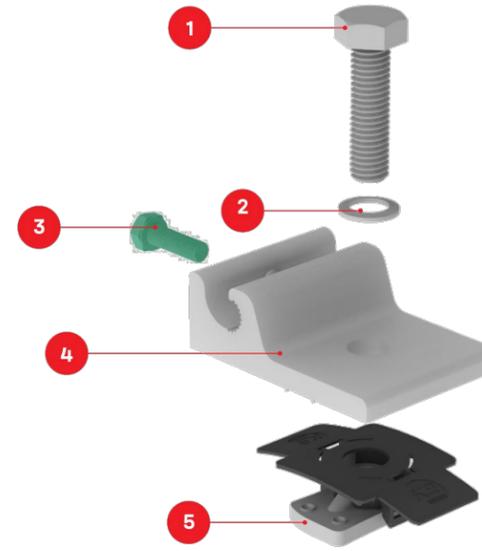
PRODUCT FEATURES



| Part Number | Description |
|-------------|-----------------------------|
| 4000006-H | K2 Ground Lug, 13mm Hex Set |

- / Top mount configuration
- / No copper wire bending makes for simple installation
- / MK3 technology provides highest rail engagement
- / UL 2703 Listed
- / Compatible with 8AWG and 6AWG solid copper wire
- / Works with all CrossRail profiles

TECHNICAL DATA



| Item Number | Description | Part Number |
|-------------|----------------|---|
| 1 | 13mm Hex Bolt | 4000006-H K2 Ground Lug, 13mm Hex Set |
| 2 | Lock Washer | |
| 3 | Grounding Bolt | |
| 4 | Ground Lug | |
| 5 | MK3 Slot Nut | |

| | |
|-----------------|--|
| | K2 Ground Lug |
| Material | Aluminum with stainless steel hardware |
| Finish | Tin-plated |
| Roof connection | Rail channel insert |
| Code compliance | UL 2703 |
| Compatibility | All CrossRail Systems and MiniRail |



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Supplement to Certificate of Compliance

Certificate: 80035475

Master Contract: 261002

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

| Project | Date | Description |
|----------|------------|---|
| 80037987 | 2021-01-29 | Update report 80035475 to add new models and include UL1741CRD SA17-18 requirements. |
| 80035475 | 2020-04-03 | Grid Support Utility Interactive Inverter, HM-500, HM-500T, HM-600, HM-600T, HM-700, HM-700T, HM-800, HM-800T, HM-500N, HM-500NT, HM-600N, HM-600NT, HM-700N, HM-700NT, HM-800N and HM-800NT.(C/US) |



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CERTIFICATE OF COMPLIANCE

Certificate Number E467724
 Report Reference E467724-20140829
 Date 2021-June-24

Issued to: K2 Systems LLC
 2835 La Mirada Dr, Suite A
 Vista CA, 92081 US

This is to certify that representative samples of

MOUNTING SYSTEMS, MOUNTING DEVICES, CLAMPING DEVICES AND GROUND LUGS FOR USE WITH PHOTOVOLTAIC MODULES AND PANELS - COMPONENT

See Addendum Page for Product Designation(s).

Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.

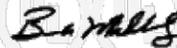
Standard(s) for Safety: UL 2703 Standard for Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for use with Flat-Plate Photovoltaic Modules and Panels.

Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information

This Certificate of Compliance does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.


 Bruce Mahrenholz, Director North American Certification Program



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CERTIFICATE OF COMPLIANCE

Certificate Number E467724
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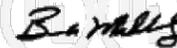
This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

USR – Component pieces:

- CrossRail 48
- CrossRail 80
- Rail Connector CrossRail 48
- Rail Connector CrossRail 80
- L-foot
- Bonding T-bolt
- Standard T-bolt
- CrossRail Tuk Bracket
- Climber
- 44-X Climber
- Rail Connector CR48
- Slide Bracket
- Stand Off
- Shared Rail Slide Hook
- CrossRail 48-S, 48, 80 Tilt Connector
- Single Hook
- Everest Ground Lug
- Simple Tilt Knee Connector assembly
- Splice Foot X
- Splice Foot XL
- Alternate MK2 Alu Slot Nut
- MLPE Module Frame Mount

Evaluated for Bonding Only

For use only in (or with) complete equipment where the acceptability of the combination is determined by UL LLC.


 Bruce Mahrenholz, Director North American Certification Program



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