

UHL RESIDENCE

PHOTOVOLTAIC SYSTEM
40343 COUNTY ROAD 68,
STEAMBOAT SPRINGS, CO 80487

SYSTEM SIZE: 3.30 KW-DC | 3.80 KW-AC

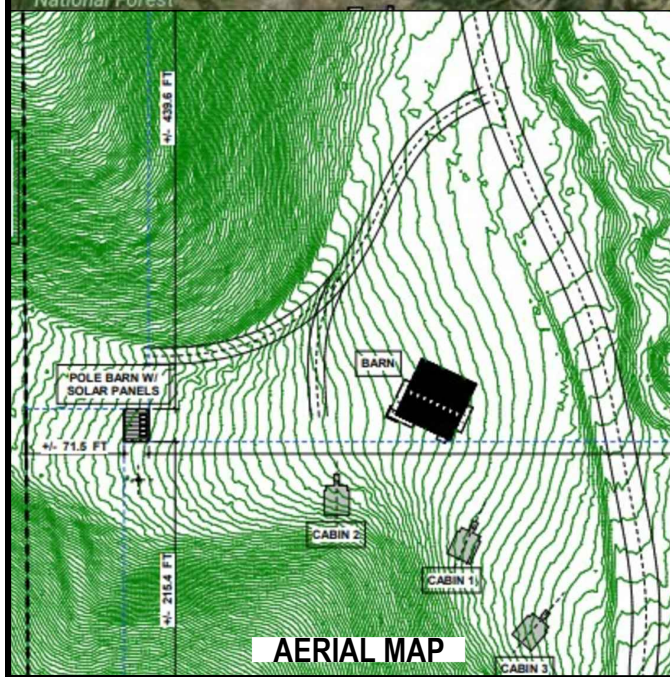
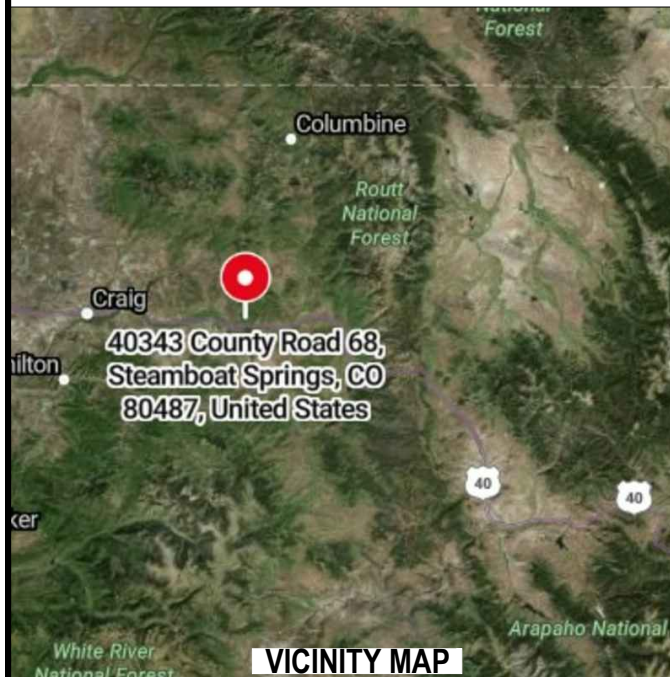
MODULE: (6) ZNSHINE SOLAR: ZXM7-SHDB144-550 [550W]

INVERTER: (1) SCHNEIDER SW CONEXT INVERTER 3800W [240V] INVERTER

BATTERY: (1) EVO 48V CONDOR ELITE 11.8KW 230AH BATTERY

GOVERNING CODES

- ALL MATERIALS, EQUIPMENT, INSTALLATION AND WORK SHALL COMPLY WITH THE FOLLOWING APPLICABLE CODES:
- 2020 COLORADO ELECTRIC CODE
 - 2021 COLORADO BUILDING CODE
 - 2021 COLORADO RESIDENTIAL CODE
 - 2021 COLORADO PLUMBING CODE
 - 2021 COLORADO FIRE CODE
 - 2021 COLORADO MECHANICAL CODE
 - 2023 INTERNATIONAL ELECTRIC CODE"
 - IEEE STANDARD 929
 - OSHA 29 CFR 1910.269
 - WHERE APPLICABLE, RULES OF THE PUBLIC UTILITIES COMMISSION REGARDING SAFETY AND RELIABILITY
 - THE AUTHORITY HAVING JURISDICTION
 - MANUFACTURERS' LISTINGS AND INSTALLATION INSTRUCTIONS
 - ANY OTHER LOCAL AMENDMENTS



GENERAL

1. UTILITY SHALL BE NOTIFIED BEFORE ACTIVATION OF PHOTOVOLTAIC SYSTEM.
2. 110.2 APPROVAL: ALL ELECTRICAL EQUIPMENT SHALL BE LABELED, LISTED, OR CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY ACCREDITED BY THE UNITED STATES OCCUPATIONAL SAFETY HEALTH ADMINISTRATION
3. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO INITIATING CONSTRUCTION.
4. CONTRACTOR SHALL REVIEW ALL MANUFACTURER INSTALLATION DOCUMENTS PRIOR TO INITIATING CONSTRUCTION.
5. ALL EQUIPMENT AND ASSOCIATED CONNECTIONS, ETC, AND ALL ASSOCIATED WIRING AND INTERCONNECTIONS SHALL BE INSTALLED ONLY BY QUALIFIED PERSONNEL.
6. THE CONTRACTOR OR OWNER MUST PROVIDE ROOF ACCESS (LADDER TO ROOF) FOR ALL THE REQUIRED INSPECTIONS. LADDERS MUST BE OSHA APPROVED, MINIMUM TYPE I WITH A 250LB. RATING, IN GOOD CONDITION AND DESIGNED FOR ITS INTENDED USE.
7. CONTRACTOR SHALL VERIFY THAT THE ROOF STRUCTURE WILL WITHSTAND THE ADDITIONAL LOADS.
8. LAG SCREWS SHALL PENETRATE A MINIMUM 2" INTO SOLID SAWN STRUCTURAL MEMBERS AND SHALL NOT EXCEED MANUFACTURER RECOMMENDATIONS FOR FASTENERS INTO ENGINEERED STRUCTURAL MEMBERS.
9. AN ACCESS POINT SHALL BE PROVIDED THAT DOES NOT PLACE THE GROUND LADDER OVER OPENINGS SUCH AS WINDOWS OR DOORS ARE LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION AND IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES, OR SIGNS.
10. WHERE DC CONDUCTORS ARE RUN INSIDE BUILDING, THEY SHALL BE CONTAINED IN A METAL RACEWAY; THEY SHALL NOT BE INSTALLED WITHIN 10" OF THE ROOF DECKING OR SHEATHING EXCEPT WHERE COVERED BY THE PV MODULES AND EQUIPMENT.

11. ALL FIELD -INSTALLED JUNCTION, PULL AND OUTLET BOXES LOCATED BEHIND MODULES SHALL BE ACCESSIBLE DIRECTLY OR BY DISPLACEMENT OF A MODULE SECURED BY REMOVABLE FASTENERS.

ELECTRICAL

1. WIRING MATERIALS SHALL COMPLY WITH MAXIMUM CONTINUOUS CURRENT OUTPUT AT 25°C AND MAXIMUM VOLTAGE AT 600V; WIRE SHALL BE WET RATED AT 90°C.
2. EXPOSED PHOTOVOLTAIC SYSTEM CONDUCTORS ON THE ROOF WILL BE USE 2 OR PV-TYPE WIRE.
3. PHOTOVOLTAIC SYSTEM CONDUCTORS SHALL BE IDENTIFIED AND GROUPED. THE MEANS OF IDENTIFICATION SHALL BE PERMITTED BY SEPARATE COLOR-CODING, MARKING TAPE, TAGGING OR OTHER APPROVED MEANS.
4. ALL EXTERIOR CONDUIT, FITTINGS, AND BOXES SHALL BE RAIN-TIGHT AND APPROVED FOR USE IN WET LOCATIONS.
5. ALL METALLIC RACEWAYS AND EQUIPMENT SHALL BE BONDED AND ELECTRICALLY CONTINUOUS.
6. WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, CONTRACTOR SHALL SIZE THEM ACCORDING TO APPLICABLE CODES.
7. REMOVAL OF A UTILITY-INTERACTIVE INVERTER OR OTHER EQUIPMENT SHALL NOT DISCONNECT THE BUILDING CONNECTION BETWEEN THE GROUNDING ELECTRODE CONDUCTOR AND THE PV SOURCE AND/OR OUTPUT CIRCUIT GROUNDED CONDUCTOR.
8. FOR GROUNDED SYSTEMS, THE PHOTOVOLTAIC SOURCE AND OUTPUT CIRCUITS SHALL BE PROVIDED WITH A GROUND-FAULT PROTECTION DEVICE OR SYSTEM THAT DETECTS A GROUND FAULT, INDICATES THAT FAULT HAS OCCURED AND AUTOMATICALLY DISCONNECTS ALL CONDUCTORS OR CAUSES THE INVERTER TO AUTOMATICALLY CEASE SUPPLYING POWER TO OUTPUT CIRCUITS.

9. FOR UNGROUNDED SYSTEMS, THE INVERTER IS EQUIPPED WITH GROUND FAULT PROTECTION AND A GFI FUSE PORT FOR GROUND FAULT INDICATION.
10. PV MODULE FRAMES SHALL BE BONDED TO RACKING RAIL OR BARE COPPER GEC/GEC PER THE MODULE MANUFACTURER'S LISTED INSTRUCTION SHEET.
11. PV MODULE RACKING RAIL SHALL BE BONDED TO BARE COPPER GEC VIA WEEB LUG, ILSCO GBL-4DBT LAY-IN LUG, OR EQUIVALENT LISTED LUG.
12. THE PHOTOVOLTAIC INVERTER WILL BE LISTED AS UL 1741 COMPLIANT.
13. RACKING AND BONDING SYSTEM TO BE UL2703 RATED.
14. ANY REQUIRED GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AS BUS BARS WITHIN LISTED EQUIPMENT.
15. WHEN BACKFED BREAKER IS THE METHOD OF UTILITY INTERCONNECTION, THE BREAKERS SHALL NOT READ "LINE AND LOAD".
16. WHEN APPLYING THE 120% RULE, THE SOLAR BREAKER TO BE POSITIONED AT THE OPPOSITE END OF THE BUS BAR FROM THE MAIN BREAKER.
17. THE WORKING CLEARANCE AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED.

SHEET INDEX:

- PV-1 - COVER PAGE
- PV-2 - PROPERTY PLAN
- PV-3 - SITE PLAN
- PV-3.1 - ROOF MOUNT PLAN
- PV-4 - 1-LINE DIAGRAM
- PV-5 - MOUNTING DETAILS AND BOM
- PV-6 - LABELS
- PV-7 - STRING MAP
- PV-8 - DATASHEETS
- PV-9 - PLACARD

UHL, BILL

40343 COUNTY ROAD 68,
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AHJ: ROUTT COUNTY

OZARK MOUNTAIN OFFGRID LLC
3401 RENO HOLLOW ROAD,
REEDS SPRING, MO 65737
TEL. NO. 4178159005
LIC. NO. LC1806461

COVER PAGE

DATE: 4/10/2024
DRAWN BY: KK

REV #1:
REV #2:
REV #3:

PV-1



LEGEND:

PROPERTY LINE: — — — — —

DRIVEWAY: - - - - -

POLE BARN

SMALL BARN

BIG BARN

1319'-5"

439'-11"

673'-8"

89'-5"

1226'-7"

753'-2"

215'-4"

1317'

PROPERTY LINE

DRIVEWAY

CONSTRUCTION AREA

----COUNTY ROAD 68----

CABIN 2

CABIN 1

CABIN 3

NOTE: PROPERTY LINE ON SOUTH
BORDER IS >1000'

SCALE: 1/128" = 1'-0"

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PROPERTY PLAN

DATE: 4/10/2024
DRAWN BY: KK

PV-2

ROOF DETAIL

ROOF TYPE: STANDING SEAM METAL

ROOF SECTION 1: 6 MODULES

AZIMUTH: 270°

PITCH: 45°

1



COMBINED SYSTEM SIZE

PHOTOVOLTAIC SYSTEM:

DC SYSTEM SIZE: 3.30 kW

AC SYSTEM SIZE: 3.80 kW

MP MAIN SERVICE PANEL

I SCHNEIDER SW CONEXT INVERTER 3800W [240V] INVERTER

(6) ZNSHINE SOLAR: ZXM7-SHDB144-550 [550W] MODULES

JUNCTION BOX AND CONDUIT

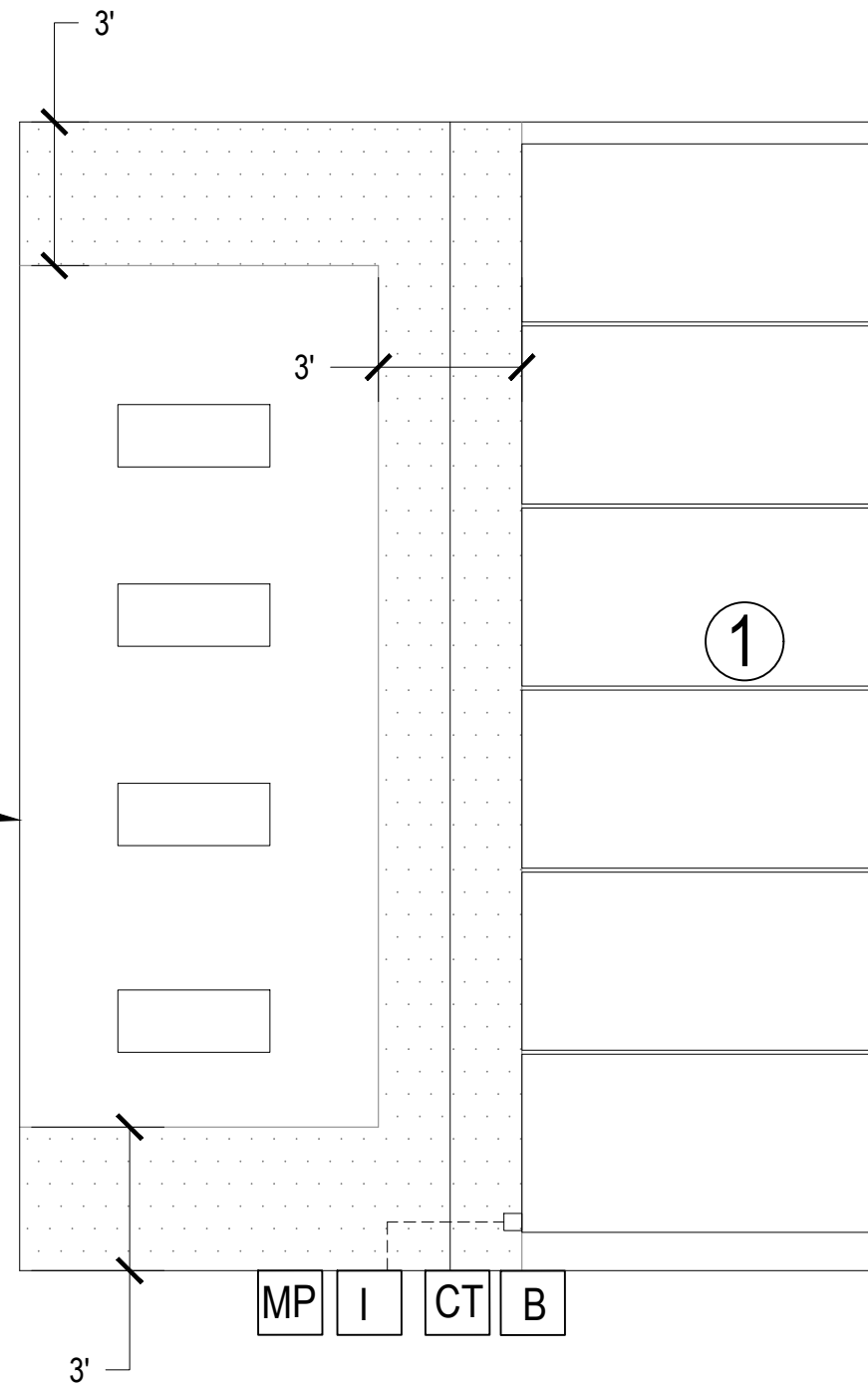
CONDUIT RUN

CONDUIT TO BE RUN IN ATTIC IF POSSIBLE, OTHERWISE CONDUIT BLOCKS MIN. 1"/MAX 6" ABOVE ROOF SURFACE, CLOSE TO RIDGE LINES, AND UNDER EAVES; TO BE PAINTED TO MATCH EXTERIOR/EXISTING BACKGROUND COLOR OF ITS LOCATION; TO BE LABELED AT MAX 10' INTERVALS. CONDUIT RUNS ARE APPROXIMATE AND ARE TO BE DETERMINED IN THE BY THE INSTALLERS

B EVO 48V CONDOR ELITE 11.8KW 230AH BATTERY

CT MPPT CHARGE CONTROLLER 60A/150V MAX

POLE BARN



SCALE: 1/4" = 1'-0"

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SITE PLAN

DATE: 4/10/2024
DRAWN BY: KK

PV-3

ARRAY DETAIL

ARRAY TYPE: STANDING SEAM METAL

ARRAY SECTION : 6 MODULES

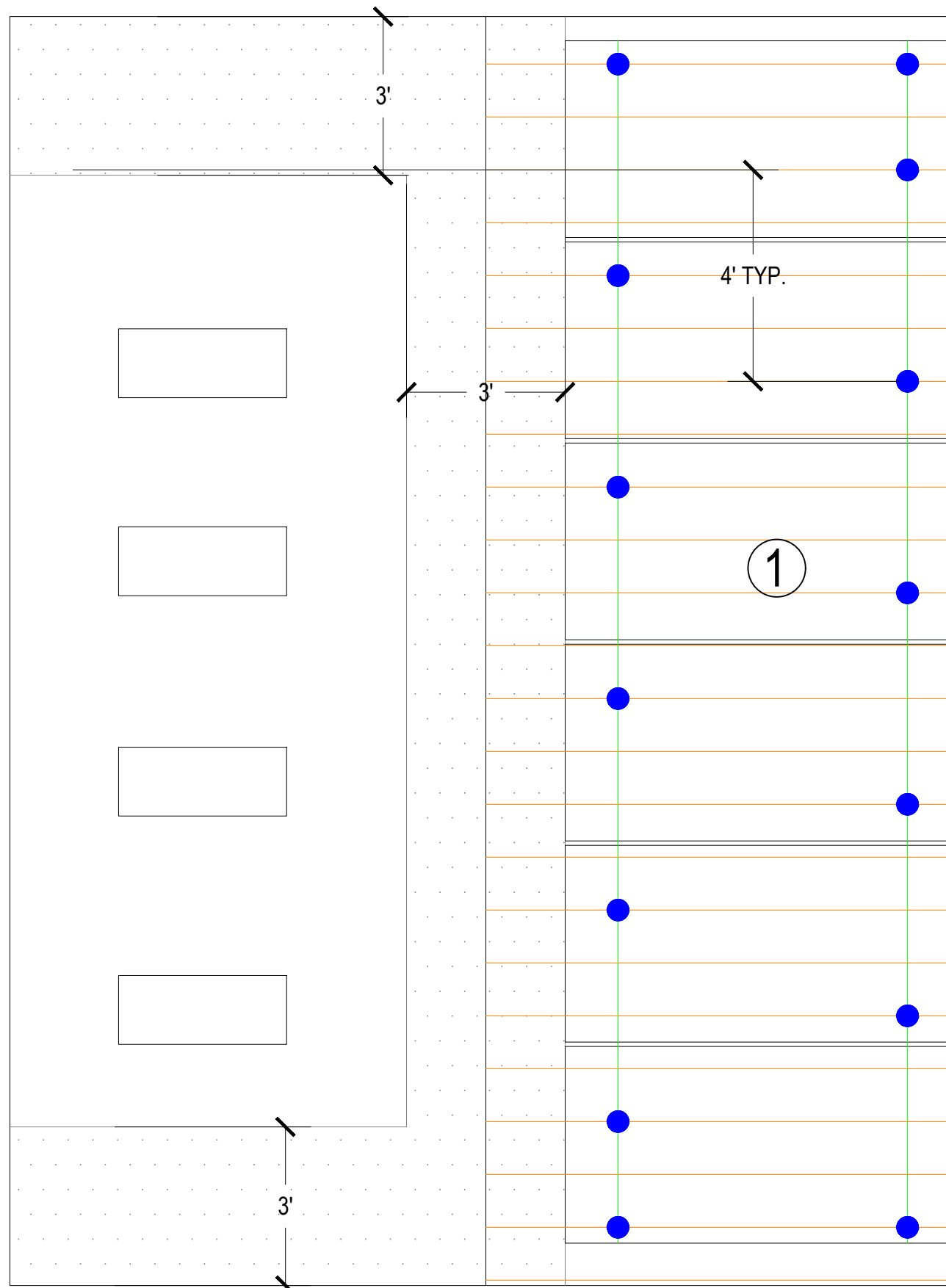
AZIMUTH: 270°

ARRAY TILT: 45°

1

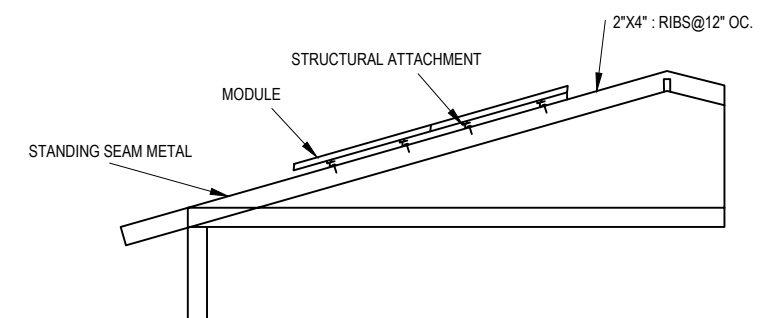


- ROOF ATTACHMENT POINT
- RIBS
- RACKING
- FIRE CODE SETBACK (18" MIN / 36" MAX)



MODULE MECHANICAL SPECIFICATIONS

DESIGN WIND SPEED	110 MPH
DESIGN SNOW LOAD	20 PSF
# OF STORIES	1
ROOF PITCH	45°
TOTAL ARRAY AREA (SQ. FT)	119.28
TOTAL ROOF AREA (SQ. FT)	1669
ARRAY SQ. FT / TOTAL ROOF SQ. FT	7.15%



NTS

ELEVATION DETAIL

SCALE: 3/8" = 1'-0"

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ROOF PLAN

DATE: 4/10/2024
DRAWN BY: KK

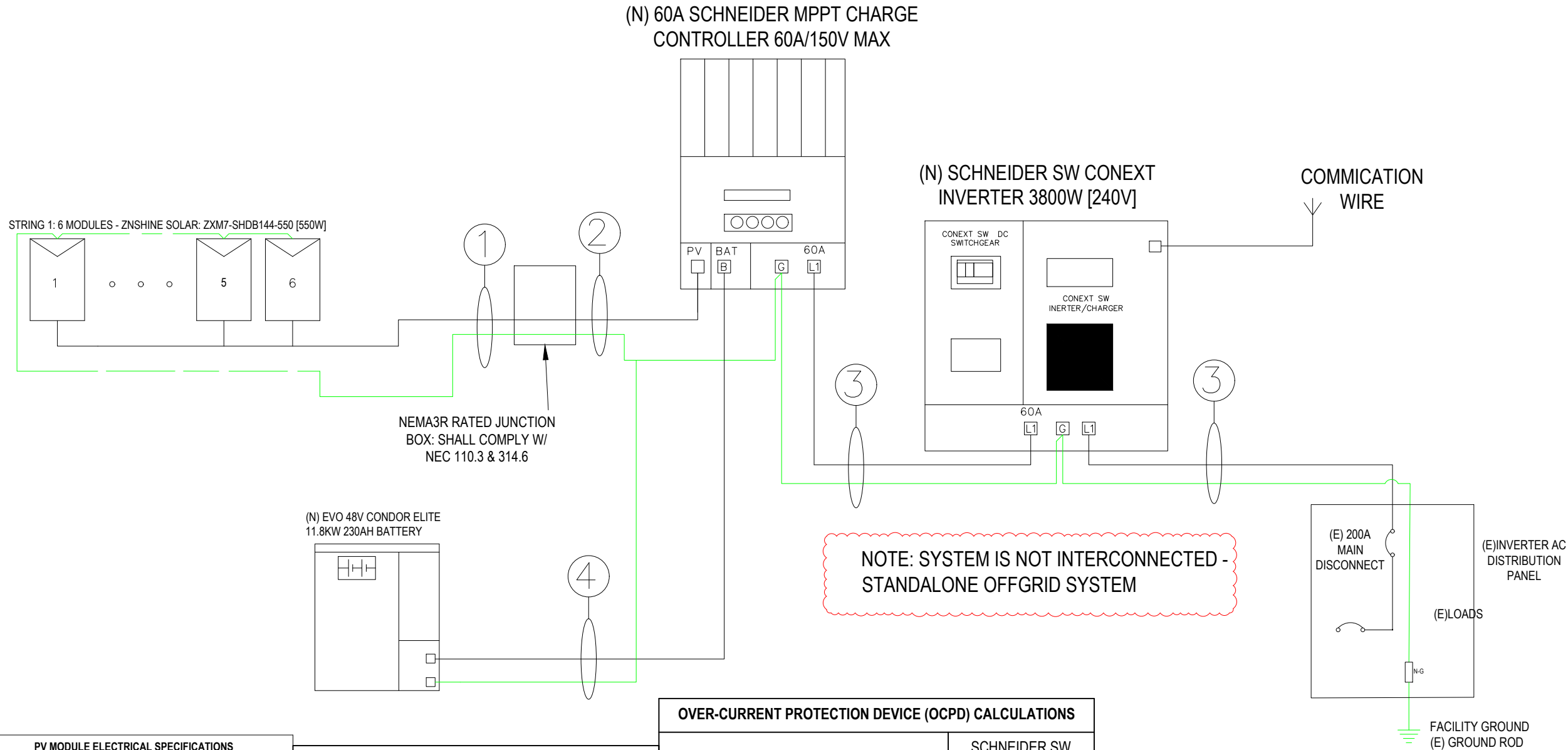
PV-3.1

NOTE:-ALL DC CONNECTORS TO MODULES OR INVERTERS MUST BE OF MATCHING MANUFACTURE BRAND AND STYLE. DO NOT USE 'COMPATIBLE' CONNECTORS WHICH HAVE NOT BEEN UL TESTED FOR COMPATIBILITY. PERFORMANCE AND FIRE DAMAGE MAY RESULT FROM MIS-MATCHED CONNECTOR USAGE.

CONDUCTOR AND CONDUIT SCHEDULE					
TAG	WIRE TYPE	WIRE SIZE	# OF CONDUCTORS	CONDUIT TYPE	MIN. CONDUIT SIZE
1	PV WIRE	#10	2 - L1 L2	FREE AIR	N/A
1	BARE COPPER	#6	1 - BARE	FREE AIR	N/A
2	ROMEX	#10	2 - L1 L2	EMT	3/4"
2	THWN-2 EGC	#8	1 - GND	EMT	3/4"
3	THNN	#6	3 - L1 L2 N	EMT	3/4"
3	THHN-2 EGC	#8	1 - GND	EMT	3/4"
4	THNN	#8	3 - L1 L2 N	EMT	3/4"
4	THHN-2 EGC	#8	1 - GND	EMT	3/4"

SYSTEM SIZE
PHOTOVOLTAIC SYSTEM:
 DC SYSTEM SIZE: 3.30 kW
 AC SYSTEM SIZE: 3.80 kW
 INVERTER: (1) SCHNEIDER SW CONEXT INVERTER 3800W [240V]
 MODULE: (6) ZNSHINE SOLAR: ZXM7-SHDB144-550 [550W]

- NOTES:
1. MODULES ARE BONDED TO RAIL USING UL 2703 RATED BONDING SYSTEM - INTEGRATED BONDING MID-CLAMPS + DIRECT-BURIAL LAY-IN-LUGS; SEE ATTACHED FOR SPECIFICATIONS IF APPLICABLE
 2. PV DC SYSTEM IS UNGROUNDED
 3. PV ARRAY WILL HAVE A GROUNDING ELECTRODE SYSTEM IN COMPLIANCE WITH CEC 250.58 AND 690.47(A)
 4. PV SOURCE, OUTPUT, AND INVERTER INPUT CIRCUIT WIRING METHODS SHALL COMPLY WITH CEC 690.1(G)
 5. BACKFED PV BREAKER WILL BE INSTALLED AT OPPOSITE END OF THE BUS BAR FROM THE MAIN BREAKER. A PERMANENT WARNING LABEL TO BE INSTALLED PER SYSTEM SIGNAGE, PAGE
 6. BARE COPPER IS TRANSITIONED TO THWN-2 VIA IRREVERSIBLE CRIMP; WHEN PRESENT, THE GEC TO BE CONTINUOUS
 7. INVERTER(S) TO BE COMPLIANT WITH UL 1741 SUPPLEMENT A
 8. CONDUIT AND CONDUCTOR SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS



OVER-CURRENT PROTECTION DEVICE (OCPD) CALCULATIONS	
INVERTER TYPE	SCHNEIDER SW CONEXT INVERTER 3800W [240V]
# OF INVERTERS	1
MAX CONTINUOUS OUTPUT CURRENT	60A
(# OF INVERTERS) X (MAX CONT. OUTPUT CURRENT) X 125% <= OCPD RATING	
(1 x 45A x 1.25) = 56.25A <= 60A, OK	

PV MODULE ELECTRICAL SPECIFICATIONS	
MODULE TYPE	ZNSHINE SOLAR: ZXM7-SHDB144-550 [550W]
POWER MAX (P _{MAX})	550W
OPEN CIRCUIT VOLTAGE (V _{OC})	50.20V
SHORT CIRCUIT CURRENT (I _{SC})	13.89A
MAX POWER-POINT VOLTAGE (V _{MP})	41.90V
MAX POWER-POINT CURRENT (I _{MP})	13.13A
SERIES FUSE RATING	30A

INVERTER ELECTRICAL SPECIFICATIONS	
INVERTER TYPE	SCHNEIDER SW CONEXT INVERTER 3800W [240V]
PEAK CURRENT	41 A
MAXIMUM OUTPUT POWER	3800W
NOMINAL AC OUTPUT VOLTAGE	240V
MAXIMUM CONT. OUTPUT CURRENT	45A
OPTIMAL EFFICIENCY	94%

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1-LINE DIAGRAM & CALCULATIONS

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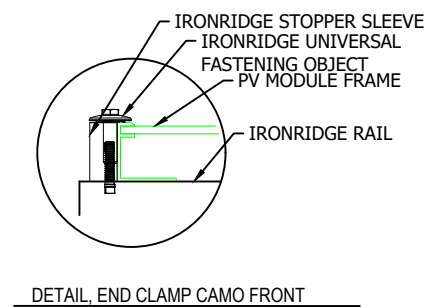
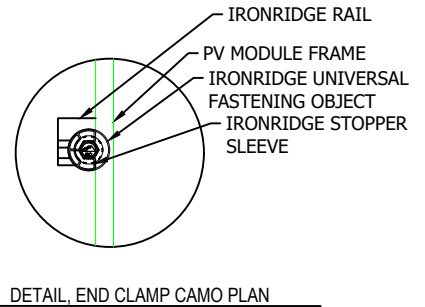
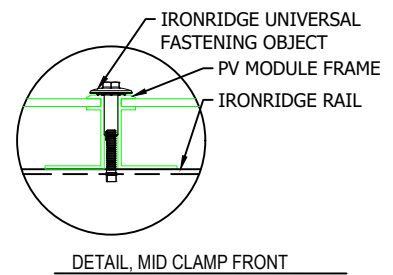
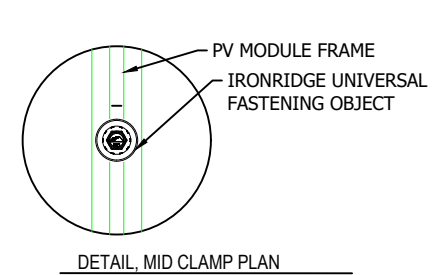
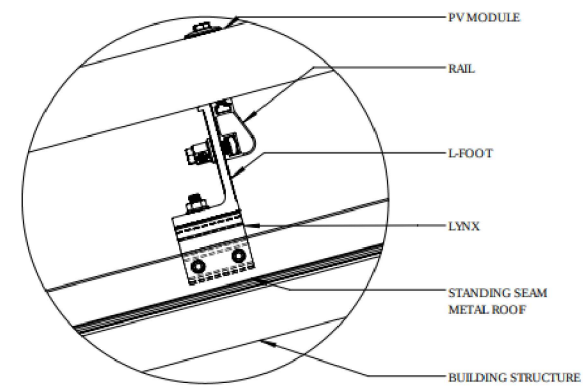
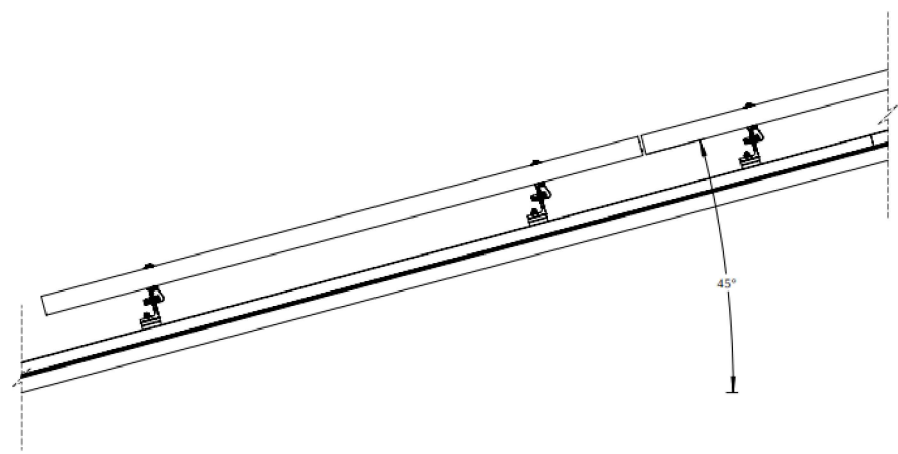
PV-4

1 ATTACHMENT DETAILS (N.T.S.)

ATTACHMENT TYPE: IRONRIDGE QUICKMOUNT LYNX TECH BRIEF
 WITH IRONRIDGE XR-10 RAILS
 ROOF TYPE: STANDING SEAM METAL, ROOF TILT: 45°

MODULE WEIGHT: 56.22 LBS
 MODULE DIMENSIONS: 7.47' X 3.72'
 MODULE WEIGHT/ SQ. FOOT: 2.02 LBS

TOTAL NO. OF MODULES: 6
 TOTAL MODULE WEIGHT: 337.32 LBS



BILL OF MATERIAL		
EQUIPMENT	MAKE	QUANTITY
MODULE	ZNSHINE SOLAR: ZXM7-SHDB144-550 [550W]	6
INVERTER	SCHNEIDER SW CONEXT INVERTER 3800W [240V]	1
BATTERY	EVO 48V CONDOR ELITE 11.8KW 230AH BATTERY	1
CONTROLLER	MPPT CHARGE CONTROLLER 60A/150V MAX	1
END CLAMPS	MODULE END CLAMP STANDARD	4
MID CLAMPS	MODULE MIDDLE CLAMP SET STANDARD(INTEGRATED GROUNDING)	14
MOUNTING POINT	IRONRIDGE QUICKMOUNT LYNX TECH BRIEF	14
MOUNTING RAILS	IRONRIDGE XR-10 RAILS	4

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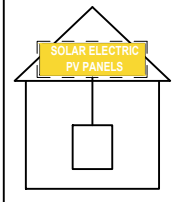
MOUNTING DETAILS AND BOM

DATE: 4/10/2024
 DRAWN BY: KK

PV-5

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 1
AT RAPID SHUTDOWN SYSTEM
[NEC 690.56(C)(1)(A)].

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL 6
AT RAPID SHUTDOWN DISCONNECT SWITCH
[NEC 690.56(C)(3)].

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

LABEL 11
AT RAPID SHUTDOWN SWITCH
[NEC 690.56(C)].
LETTERS AT LEAST 3/8 INCH; WHITE ON RED BACKGROUND; REFLECTIVE
[IFC 605.11.1.1]

! WARNING !
ELECTRIC SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.
DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPLOSED TO SUNLIGHT

LABEL 2
AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT
[NEC 690.15]

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

LABEL 3
AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT
[NEC 690.13 AND 690.15]

MAXIMUM VOLTAGE: -- V DC
MAXIMUM CIRCUIT CURRENT: -- A DC
MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-TO-DC CONVERTER (IF INSTALLED): -- A DC

LABEL 4
AT EACH DC DISCONNECTING MEANS
[NEC 690.53]

PHOTOVOLTAIC AC DISCONNECT
OPERATING CURRENT: 45 A AC
OPERATING VOLTAGE: 240 V AC

LABEL 5
AT POINT OF INTERCONNECTION, MARKED AT DISCONNECTING MEANS
[NEC 690.54]

! WARNING !
DUAL POWER SOURCES. SECOND SOURCE IS PV SYSTEM

LABEL 7
AT POINT OF INTERCONNECTION; LABEL, SUCH AS LABEL 7 OR LABEL 8 MUST IDENTIFY PHOTOVOLTAIC SYSTEM
[NEC 705.12(B)(4)]

! CAUTION !
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL 8

BI-DIRECTIONAL METER

LABEL 9
AT UTILITY METER
[NEC 690.56(B)]

PHOTOVOLTAIC DC DISCONNECT

LABEL 10
AT EACH DC DISCONNECTING MEANS
[NEC 690.13(B)]

#03-359 LOCAL CODES

! WARNING !
POWER SOURCE OUTPUT CONNECTION - DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL 14
AT POINT OF INTERCONNECTION OVERCURRENT DEVICE
[NEC 705.12(B)(2)(3)(B)]

WARNING
THIS SERVICE METER IS ALSO SERVED BY A PHOTOVOLTAIC SYSTEM

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL 12
AT EXPOSED RACEWAYS, CABLE TRAYS, AND OTHER WIRING METHODS; SPACED AT MAXIMUM 10 FT SECTION OR WHERE SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS.
[NEC 690.31(G)]
LETTERS AT LEAST 3/8 INCH; WHITE ON RED BACKGROUND; REFLECTIVE
[IFC 605.11.1.1]

ALL SIGNAGE MUST BE PERMANENTLY ATTACHED AND BE WEATHER RESISTANT/SUNLIGHT RESISTANT AND CANNOT BE HAND-WRITTEN PER CEC 110.21(B)

PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS IF NOT IN THE SAME LOCATION
[CEC 690.56(B)]

WHERE THE PV SYSTEMS ARE REMOTELY LOCATED FROM EACH OTHER, A DIRECTORY IN ACCORDANCE WITH 705.10 SHALL BE PROVIDED AT EACH PV SYSTEM DISCONNECTING MEANS.
PV SYSTEM EQUIPMENT AND DISCONNECTING MEANS SHALL NOT BE INSTALLED IN BATHROOMS
[CEC 690.4(D),(E)]

LABELING NOTES
1.1 LABELING REQUIREMENTS BASED ON THE 2020 COLORADO ELECTRICAL CODE, INTERNATIONAL FIRE CODE 605.11, OSHA STANDARD 1910.145, ANSI Z535
1.2 MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
1.3 LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
1.4 LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8" AND PERMANENTLY AFFIXED.
1.5 ALERTING WORDS TO BE COLOR CODED. "DANGER" WILL HAVE RED BACKGROUND; "WARNING" WILL HAVE ORANGE BACKGROUND; "CAUTION" WILL HAVE YELLOW BACKGROUND. [ANSI Z535]

LABELS ARE NOT DRAWN TO SCALE

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ELECTRICAL LABELS

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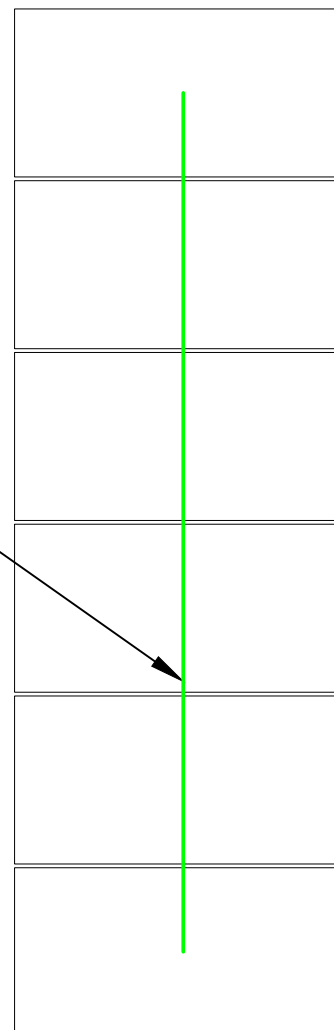
PV-6

STRING DETAIL

SCHNEIDER SW CONEXT STRING

STRING # 1: 6 MODULES

STRING-1



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STRING MAP

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FOR INSTALLER USE ONLY

PV-7



ZXM7-SHDB144 Series

10BB HALF-CELL Bifacial Monocrystalline PERC PV Module

530-555W **21.48%** **0.55%**
POWER RANGE **MAXIMUM EFFICIENCY** **YEARLY DEGRADATION**

12 YEARS PRODUCT WARRANTY **25 YEARS OUTPUT GUARANTEE**



IEC 61215/IEC 61730/IEC 61701/IEC 62716/UL6 1730

ISO 14001: Environmental Management System

ISO 9001: Quality Management System

ISO45001: Occupational Health and Safety Management System

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



*Please check the valid version of Limited Product Warranty which is officially released by ZNSHINE PV-TECH Co., Ltd.

Key Features



Excellent Cells Efficiency

MBB technology reduce the distance between busbars and finger grid line which is benefit to power increase.



Better Weak Illumination Response

More power output in weak light condition, such as haze, cloudy, and early morning.



Anti PID

Ensured PID resistance through the quality control of cell manufacturing process and raw materials.



Adapt To Harsh Outdoor Environment

Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity environment.



TIER 1

Global, Tier 1 bankable brand, with independently certified advanced automated manufacturing.



Excellent Quality Management System

Warranted reliability and stringent quality assurances well beyond certified requirements.



Bifacial Technology

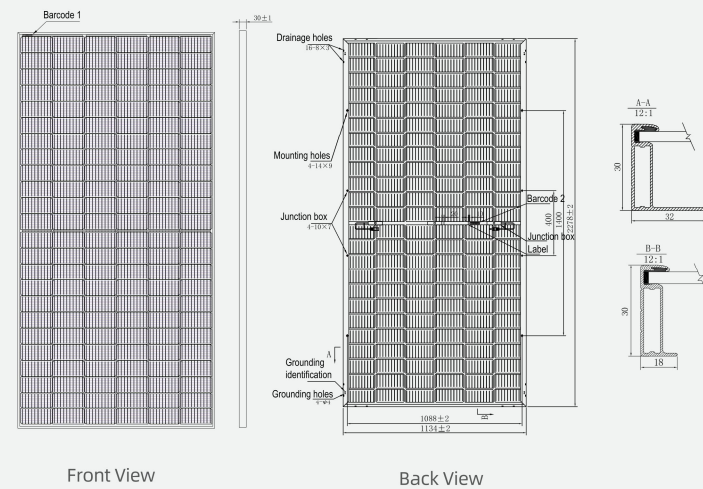
Up to 25% additional power gain from back side depending on albedo.

Founded in 1988, ZnShine solar is a world's leading high-tech PV module manufacturer. With the advanced production lines, the company boasts module capacity of 6GW. Bloomberg has listed ZnShine as a global Tier 1 PV module maker. Today Znshine has distributed its sales to more than 60 countries around the globe.

ZXM7-SHDB144 Series | Znshinesolar 10BB HALF-CELL Bifacial Monocrystalline PERC PV Module

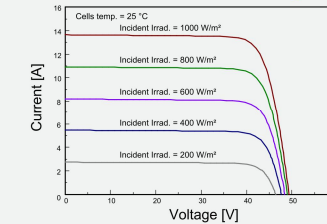


DIMENSIONS OF PV MODULE(mm)

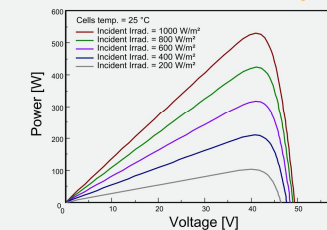


*Remark: customized frame color and cable length available upon request

I-V CURVES OF PV MODULE(530W)



P-V CURVES OF PV MODULE(530W)



ELECTRICAL CHARACTERISTICS | STC*

Nominal Power Watt Pmax(W)*	530	535	540	545	550	555
Maximum Power Voltage Vmp(V)	41.10	41.30	41.50	41.70	41.90	42.10
Maximum Power Current Imp(A)	12.91	12.96	13.02	13.07	13.13	13.19
Open Circuit Voltage Voc(V)	49.40	49.60	49.80	50.00	50.20	50.40
Short Circuit Current Isc(A)	13.65	13.71	13.77	13.83	13.89	13.95
Module Efficiency (%)	20.52	20.71	20.90	21.10	21.29	21.48

*The data above is for reference only and the actual data is in accordance with the practical testing
 *STC (Standard Test Condition): Irradiance 1000W/m², Module Temperature 25±2°C, AM 1.5
 *Measuring uncertainty: ±3%, all the electrical characteristics such as Power, Im, Vm and FF are within ±3% tolerance.

MECHANICAL DATA

Solar cells	Mono PERC
Cells orientation	144 (6x24)
Module dimension	2278x1134x30mm (With Frame)
Weight	25.5±1 kg
Glass	3.2mm, High Transmission, AR Coated Tempered Glass
Junction box	IP 68, 3 diodes
Cables	4 mm², 350 mm (With Connectors)
Connectors*	MC4-compatible

*Please refer to regional datasheet for specified connector

ELECTRICAL CHARACTERISTICS | NMOT*

Maximum Power Pmax(Wp)	396.40	399.90	403.60	406.80	410.80	414.60
Maximum Power Voltage Vmpp(V)	38.20	38.40	38.50	38.80	38.90	39.10
Maximum Power Current Imp(A)	10.38	10.42	10.47	10.49	10.56	10.61
Open Circuit Voltage Voc(V)	46.20	46.30	46.50	46.70	46.90	47.10
Short Circuit Current Isc(A)	11.02	11.07	11.12	11.17	11.22	11.27

*NMOT: irradiance 800W/m², Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s

TEMPERATURE RATINGS

NMOT	44°C ±2°C	Maximum system voltage	1500 V DC
Temperature coefficient of Pmax	-0.35%/°C	Operating temperature	-40°C~+85°C
Temperature coefficient of Voc	-0.29%/°C	Maximum series fuse	30 A
Temperature coefficient of Isc	0.05%/°C	Front Side Maximum Static Loading	Up to 5400Pa
Refer. Bifacial Factor	70±5%	Rear Side Maximum Static Loading	Up to 2400Pa

*Remark: Do not connect Fuse in Combiner Box with two or more strings in parallel connection

ELECTRICAL CHARACTERISTICS WITH 25% REAR SIDE POWER GAIN*

Front power Pmax/W	530	535	540	545	550	550
Total power Pmax/W	663	669	675	681	688	694
Vmp/V(Total)	41.20	41.40	41.60	41.80	42.00	42.20
Imp/A(Total)	16.08	16.15	16.23	16.30	16.37	16.44
Voc/V(Total)	49.50	49.70	49.90	50.10	50.30	50.50
Isc/A(Total)	17.02	17.10	17.17	17.25	17.32	17.39

*Bifacial Gain: The additional gain from the back side compared to the power of the front side at the standard test condition. It depends on mounting (structure, height, tilt angle etc.) and albedo of the ground.

PACKAGING CONFIGURATION*

Piece/Box	36
Piece/Container(40'HQ)	720

*Customized packaging is available upon request.
 *Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer.
 *They only serve for comparison among different module types.
 *Caution: 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.

Note: Specifications included in this datasheet are subject to change without notice. ZNSHINE reserves the right of final interpretation © ZNSHINE SOLAR 2022 | Version: ZXM7-SHDB144 2203.E
 No special undertaking or warranty for the suitability of special purpose or being installed in extraordinary surroundings is granted unless as otherwise specifically committed by manufacturer in contract document

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MODULE DATASHEET

DATE: 4/10/2024
 DRAWN BY: KK

PV-8.1

Conext SW Inverter/charger

Technical Specifications - North America

Proven value for off-grid, backup power and self-consumption

Conext™ SW inverter/charger

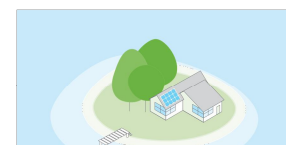
The Conext SW is a pure sine wave inverter that provides reliable power after a simple installation. The unique features of the Conext SW adds value for both installers and system owners globally.



Solution at a glance

Delivering proven value at a competitive price, the Conext SW inverter/charger provides the best value for off-grid solar, self-consumption and long-term backup for homes, small business and small remote communities.

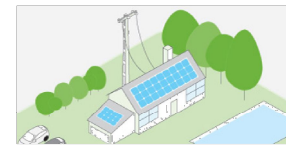
- **High reliability** design proven through extreme testing under the harshest conditions.
- Leading performance in **surge capability** and charging efficiency.
- Most advanced **energy optimization** configurable features with the ability to cover a wide variety of applications.
- Complete balance of system and comprehensive commissioning tools for **easy-installation**.
- **Plug and play** monitoring and control based on Xanbus network.
- **Simple** to install, maintain and operate.



Off-grid solar



Backup power



Self-consumption

Device short name	SW 2524 120/240 (Discontinued)	SW 4024 120/240	SW 4048 120/240
Electrical specifications - inverter			
Output power (continuous) at 25°C	3000 W	3400 W	3800 W
Output power (30 min) at 25°C	3300 W	4000 W	4400 W
Output power (5 sec) at 25°C	5000 W	7000 W	7000 W
Peak current	24.3 A	41 A	41 A
Output frequency	50 / 60 Hz selectable	50 / 60 Hz selectable	50 / 60 Hz selectable
Output voltage	120 / 240 Vac	120 / 240 Vac	120 / 240 Vac
Output wave form	True sine wave	True sine wave	True sine wave
Optimal efficiency	91.5%	92%	94%
Idle consumption search mode	<11 W	<11 W	<11 W
Input DC voltage range	20 - 34 Vdc	20 - 34 Vdc	40 - 68 Vdc
AC connections	Single / Split phase	Single / Split phase	Single / Split phase
Electrical specifications - charger			
Output current	65 A	90 A	45 A
Nominal output voltage	24 Vdc	24 Vdc	48 Vdc
Output voltage range	12 - 32 Vdc	12 - 32 Vdc	24 - 64 Vdc
Charge control	2 or 3 stage	2 or 3 stage	2 or 3 stage
Charge temperature compensation	Yes - BTS included	Yes - BTS included	Yes - BTS included
Optimal efficiency	90%	90%	92%
AC input power factor	> 0.98	> 0.98	> 0.98
Input current	9 A	13 A	12 A
Input AC voltage	120 / 240 Vac split phase	120 / 240 Vac split phase	120 / 240 Vac split phase
Input AC voltage range line to neutral	95 - 135 Vac single phase 170 - 270 Vac	95 - 135 Vac single phase 170 - 270 Vac	95 - 135 Vac single phase 170 - 270 Vac
Dead battery charge	Yes	Yes	Yes
General specifications			
Tare loss	24 W	29 W	27 W
Compatible battery types	FLA, Gel, AGM, Custom	FLA, Gel, AGM, Custom	FLA, Gel, AGM, Custom
Transfer relay rating	30 A	30 A	30 A
Transfer time (AC to inverter and inverter to AC)	<1 cycle (16.7 ms)	<1 cycle (16.7ms)	<1 cycle (16.7 ms)
Optimal operating temperature range	-20°C to 60°C (-4°F to 140°F)	-20°C to 60°C (-4°F to 140°F)	-20°C to 60°C (-4°F to 140°F)
Storage ambient temperature range	-40°C to 85°C (-40°F to 185°F)	-40°C to 85°C (-40°F to 185°F)	-40°C to 85°C (-40°F to 185°F)
Humidity Operation / storage	≤ 95% RH, non condensing	≤ 95% RH, non condensing	≤ 95% RH, non condensing
Ingress protection rating	Indoor only, IP20	Indoor only, IP20	Indoor only, IP20
Altitude (operating)	2000 m (6562 ft)	2000 m (6562 ft)	2000 m (6562 ft)
Product weight	22.3 kg (49.0 lb)	28.1 kg (62.0 lb)	28.1 kg (62.0 lb)
Shipping weight	27.2 kg (60.0 lb)	35.0 kg (77.1 lb)	35.0 kg (77.1 lb)
Product dimensions (H x W x D)	41.8 x 34.1 x 19.7 cm (16.5 x 13.4 x 7.6 in)	41.8 x 34.1 x 19.7 cm (16.5 x 13.4 x 7.6 in)	41.8 x 34.1 x 19.7 cm (16.5 x 13.4 x 7.6 in)
Shipping dimensions (H x W x D)	56.0 x 44.0 x 32.0 cm (22.0 x 17.3 x 12.6 in)	56.0 x 44.0 x 32.0 cm (22.0 x 17.3 x 12.6 in)	56.0 x 44.0 x 32.0 cm (22.0 x 17.3 x 12.6 in)
System network and remote monitoring	Available	Available	Available
Warranty	Please refer to our website, SEsolar.com for the latest version of the warranty statement.		
Part number	865-2524 (Discontinued)	865-4024	865-4048
Regulatory approvals			
Safety	c(CSA) us mark CSA C22.2, No. 107.1-01 UL1741 Ed.2		
EMC	FCC Part 15 Class B		
Compatible products part numbers			
Universal DC distribution panel	865-1016		
AC distribution panel (120/240 V)	865-1017		
Conext MPPT 80 600 or 60 150	865-1032 or 865-1030-1		
Conext Gateway	865-0329		
Conext System Control Panel	865-1050-01		
Conext Automatic Generator Start	865-1060-01		
Conext Battery Monitor	865-1080-01		
Conext Configuration Tool	865-1155-01		

Specifications are subject to change without notice.

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PV-8.2



BATTERY EVO

48V KONG ELITE MAX

EVO-KONG-48190-G1

BATTERY SPECS

Chemistry: LFP
Voltage: 48V
Capacity: 19 kWh
Amp Hours: 368 Ah
Operating Voltage Range: 44.8V - 58.4V
Charging Voltage: 58.4V
Max Charging Voltage: 58.8V



WARNING: Do NOT exceed max charging voltage.

Cell Configuration: 16S2P

Charge Temperature Range:
0°C (32°F) / 55°C (131°F)

Discharge Temperature Range:
-20°C (-4°F) / 55°C (131°F)

Optimal Discharge Temp. Range:
15°C (59°F) / 35°C (95°F)

Storage Temperature Range:
-5°C (23°F) / 35°C (95°F) (Max 6 months)

BMS SPECS

Max Peak Discharge: 300A (10 Seconds)

Max Continuous Power: 8960W

Max Continuous Discharge: 175A

Max Charge Current: 150A

BATTERY SIZE

Weight: 600 lbs. (272 kg)

Width: 25.5 in (647.7 mm)

Depth: 15 in (381 mm)

Height: 46.5 in (1181.1 mm)



PARAMETERS

Note: Bulk, Absorption, Float, and Equalize are not applicable to lithium batteries but are included here with the correct numbers to input into your charge controller as they are our most commonly requested parameters.

Charge Voltage: 57.8V

Bulk Voltage: 58.2V (Not Applicable to Lithium Batteries)

Absorption Voltage: 57.8V (Not Applicable to Lithium Batteries)

Absorption Time: 0 Minutes (Not Applicable to Lithium Batteries)

Float Voltage: 57.8V (Not Applicable to Lithium Batteries)

Equalize: On (Not Applicable to Lithium Batteries)

Low Voltage Cutoff: 43V

High Voltage Cutoff: 58.6V

Suggested Inverter Low Voltage Setting: 45.6V

FAQ'S

How do I connect this battery into my existing system?

Our product uses a standard 175A Anderson connector. A single battery order will include a 175A connector to Ring Terminal cable for ease of installation.

How many times can I put this battery in parallel / series?

This battery is not series capable but can be connected in parallel up to eight times. Make sure that the total amount of these batteries in your configuration never exceeds eight total batteries. When connecting batteries in parallel, make sure all batteries are within 1 volt of one another.

How long will my battery last, and what do I do at the end of its life?

Lithium-ion batteries can be cycled from 3000 to 5000 times. If you cycle the battery daily then you can get more than 10 years of use from your battery. When your battery is at the end of its lifespan, contact us and we'll recycle it for you, free of charge!

Can I connect into this battery's BMS to get extra info?

Our BMS is just there to keep your battery safe and healthy, it does not have the ability to network with any charge controllers or inverters for extra read-outs.

What is the warranty on this battery?

We offer a comprehensive 10 year warranty on all of our batteries. You can read more about our warranty at batteryevo.com/10-years-warranty/

Contact Us

Phone: (818) 337-0929

Hours: Monday - Friday 9:00 AM to 5:00 PM PST

Email: Sales@batteryevo.com

Address: 8966 Mason Ave, Chatsworth, CA 91311

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BATTERY DATASHEET

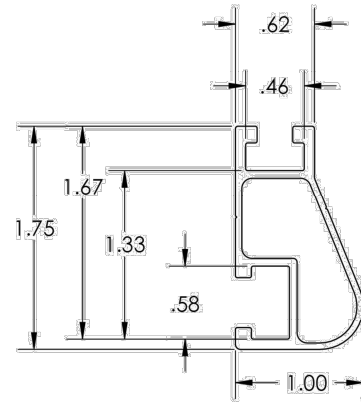
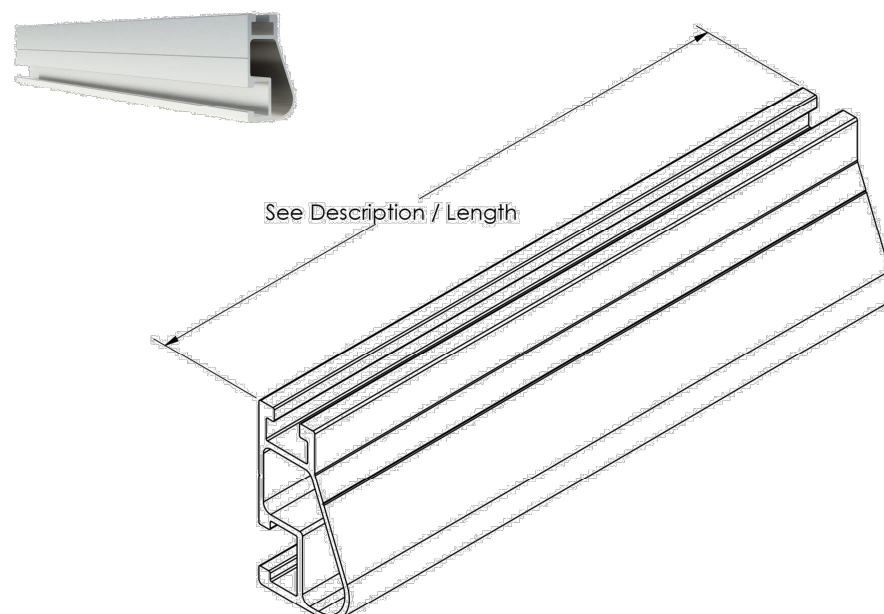
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PV-8.3



XR10 Rail

Cut Sheet



Rail Section Properties	
Property	Value
Total Cross-Sectional Area	0.363 in ²
Section Modulus (X-axis)	0.136 in ³
Moment of Inertia (X-axis)	0.124 in ⁴
Moment of Inertia (Y-axis)	0.032 in ⁴
Torsional Constant	0.076 in ³
Polar Moment of Inertia	0.033 in ⁴

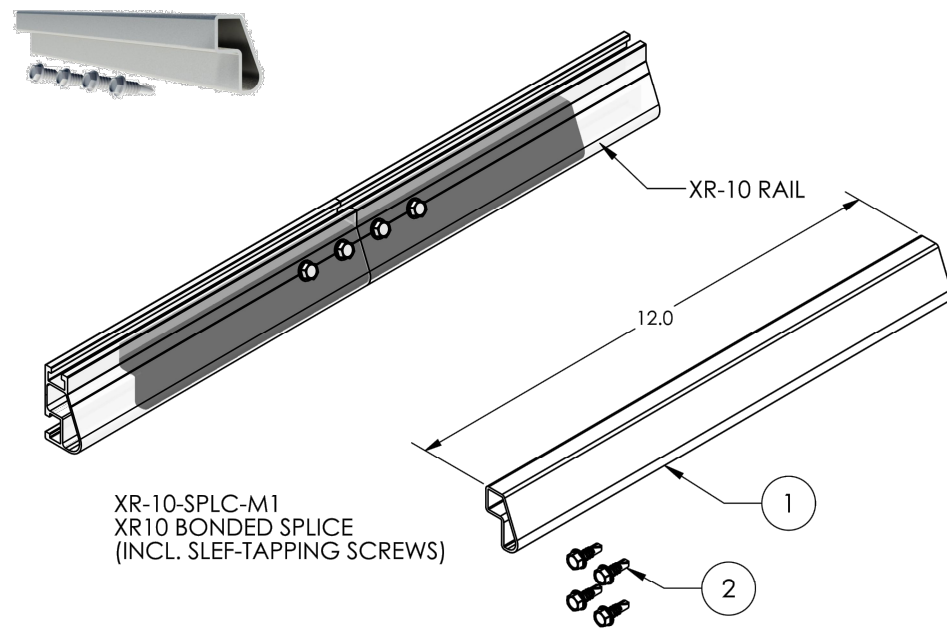
Clear Part Number	Black Part Number	Description / Length	Material	Weight
XR-10-168A	XR-10-168B	XR10, Rail 168" (14 Feet)	6000-Series Aluminum	5.95 lbs.
XR-10-204A	XR-10-204B	XR10, Rail 204" (17 Feet)	Aluminum	7.22 lbs.

v1.10



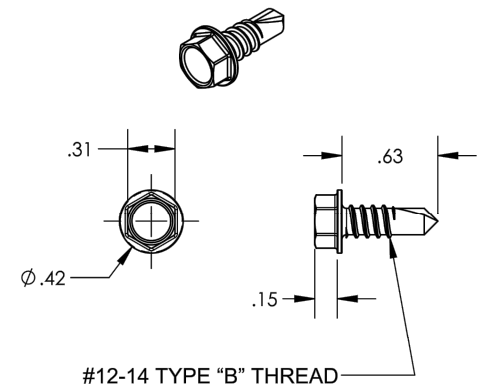
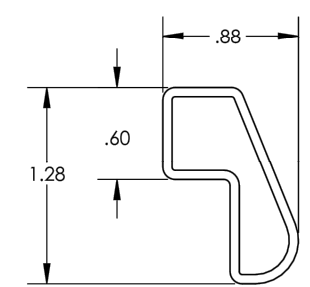
XR10 Bonded Splice

Cut Sheet



1) Splice, XR10, Mill 12" long

2) Screw, Self Drilling



Property	Value
Material	6000 Series Aluminum
Finish	Mill

Property	Value
Material	300 Series Stainless Steel
Finish	Clear

v1.10

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RACKING DATASHEET

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PV-8.4

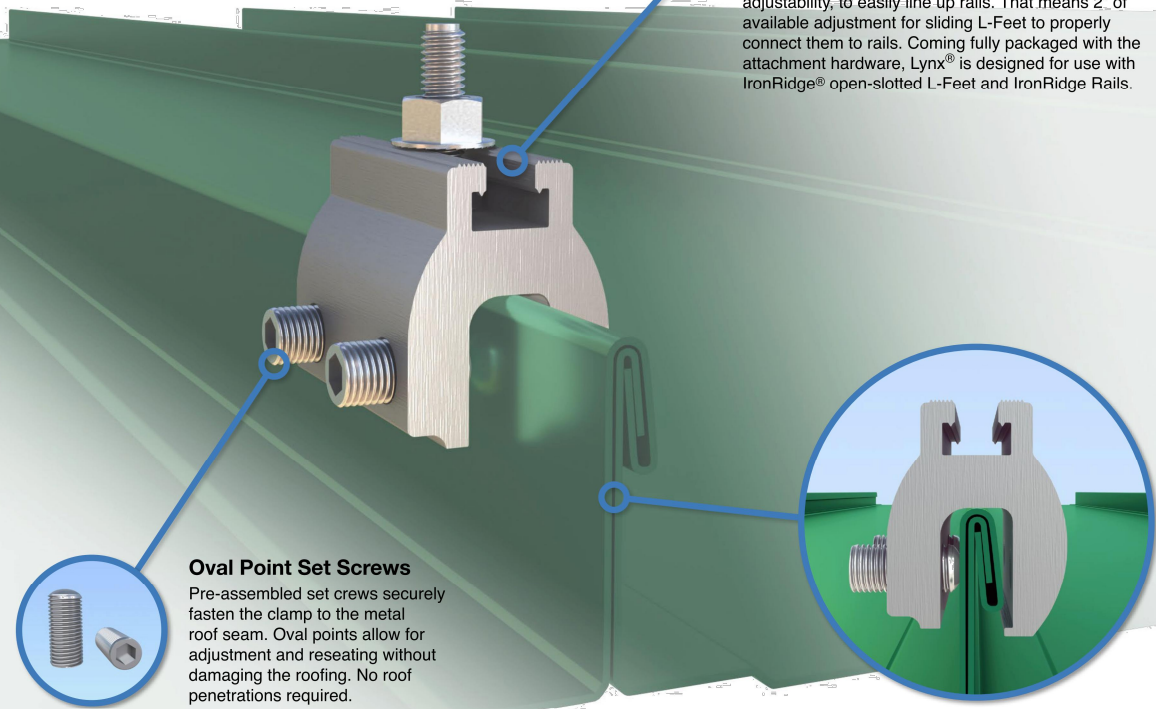


Connect with Confidence

QuickMount® has always been known for high-quality solar attachments and Lynx® now expands that portfolio into standing seam metal roofs. This roof type can be a great option for many buildings—durable, low-maintenance, and water-tight—with seams to securely attach equipment.

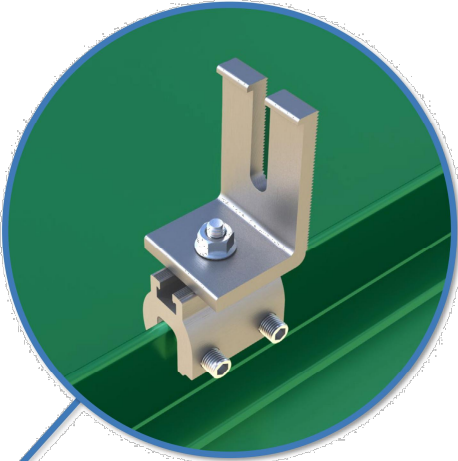
Lynx® is a robust, non-penetrating clamp for attaching solar. Designed for use with the IronRidge® L-Foot and IronRidge® Rails, it offers a complete system on many standing seam roof profiles. Lynx® can also support other racking platforms, with additional engineering.

Lynx® is part of a UL 2703 listed system and is integrated with our Pitched Roof Design Assistant software, so you can connect your next system with the utmost confidence. The technology in this product is licensed by S-5!®.



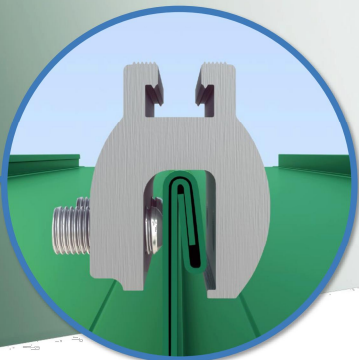
QuickMount® Lynx® Metal Roof Attachment

Tech Brief



N-S Adjustability for IronRidge® L-Feet

Lynx® features an open-ended T-slot for north-south adjustability, to easily line up rails. That means 2" of available adjustment for sliding L-Feet to properly connect them to rails. Coming fully packaged with the attachment hardware, Lynx® is designed for use with IronRidge® open-slotted L-Feet and IronRidge Rails.



Oval Point Set Screws

Pre-assembled set crews securely fasten the clamp to the metal roof seam. Oval points allow for adjustment and reseating without damaging the roofing. No roof penetrations required.



25-Year Warranty
Product guaranteed free of impairing defects.

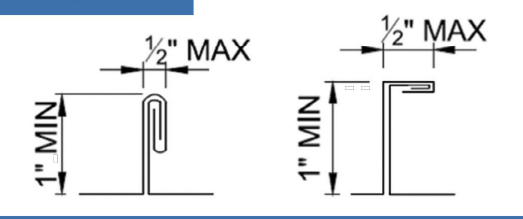
Vast Standing Seam Compatibility

Lynx® can be used on a majority of standing seam profiles used for metal roofs, including many snapping and folding standing seams. See backside for a comprehensive guide on the specific standing profiles that fit best.

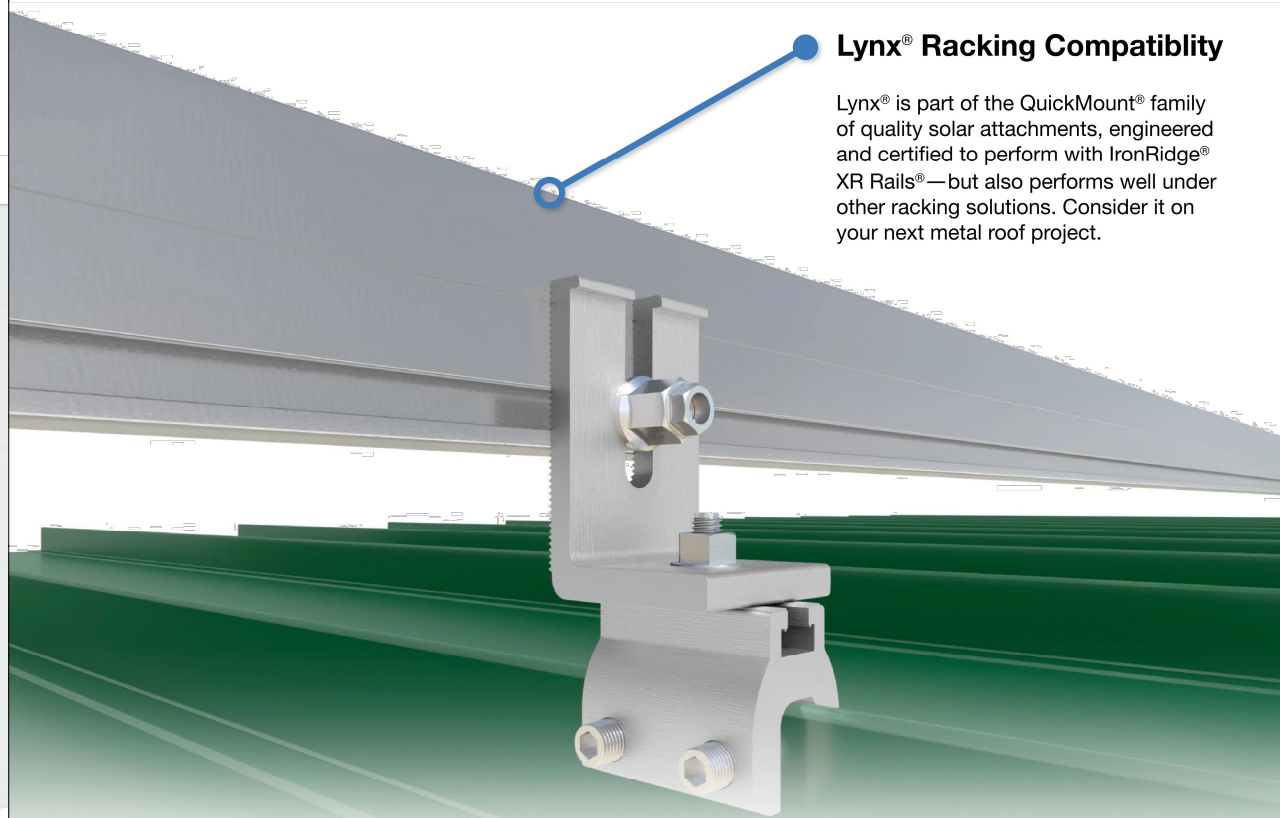
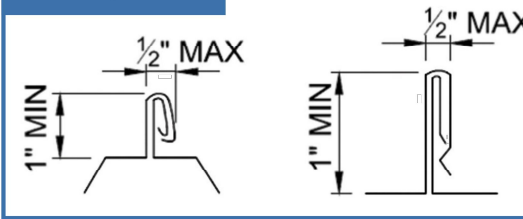
Lynx® Metal Roof Compatibility

QuickMount® Lynx® can be used on standing seam roofs (folding and snapping styles) with a vertical seam height of at least 1.0" and a horizontal seam width maximum of 0.5". See the Flush Mount Installation Manual for installation details.

Folding Profiles



Snapping Profiles



Lynx® Racking Compatibility

Lynx® is part of the QuickMount® family of quality solar attachments, engineered and certified to perform with IronRidge® XR Rails®—but also performs well under other racking solutions. Consider it on your next metal roof project.



Included in Design Assistant

Lynx® is available in our Pitched Roof Design Assistant, along with a stamped certification letter.



Certification & Testing

Lynx® is a certified component that has been tested and evaluated to conform with UL 2703.

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ATTACHMENT DATASHEET

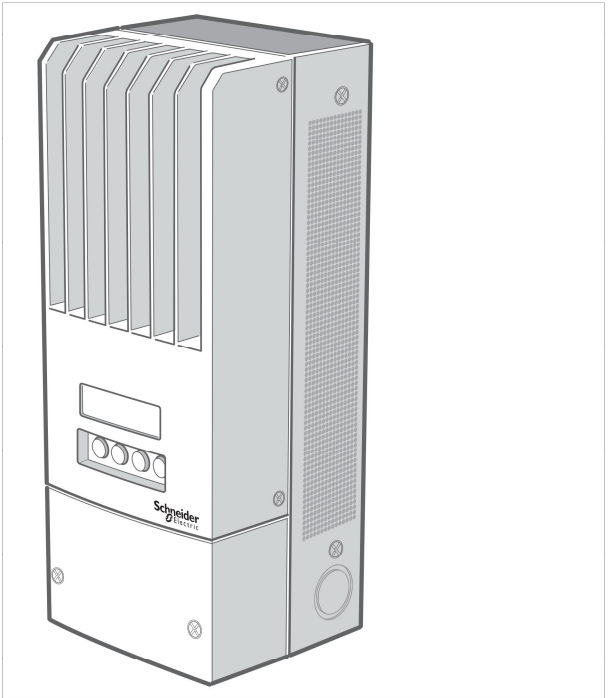
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PV-8.5

Conext™ MPPT 60 150 Solar Charge Controller (865-1030-1)

Installation and Owner's Guide

975-0400-01-01 Revision J
December 2019



Owner's Manual

<http://solar.schneider-electric.com>



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CONTROLLER DATASHEET

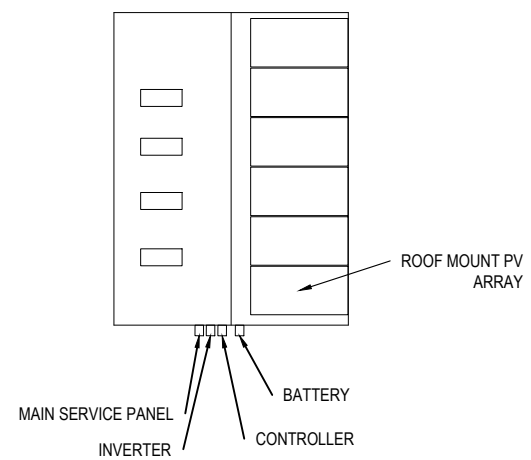
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PV-8.6

CAUTION

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

SERVICE 1 OF 1



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PLACARD

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PV-9