

- 2025 CALIFORNIA ELECTRIC CODE
 - 2025 CALIFORNIA BUILDING CODE
 - 2025 CALIFORNIA RESIDENTIAL CODE
 - 2025 CALIFORNIA FIRE CODE
 - 2025 CALIFORNIA EXISTING BUILDING CODE
 - 2025 CALIFORNIA ENERGY CODE
 - 2025 CALIFORNIA MECHANICAL CODE
 - 2025 CALIFORNIA PLUMBING CODE

AS ADOPTED BY CONTRA COSTA COUNTY INCLUDING ANY AMENDMENTS OR ADDITIONAL LISTED REQUIREMENTS. DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF SOUTHERN CALIFORNIA EDISON UTILITY.

EQUIPMENT IS COMPATIBLE WITH UL2703, UL1741, UL1703 / UL61730, AND UL9540 AS APPLICABLE.

1. ALL WORK TO COMPLY WITH CEC ARTICLE 690

2. UTILITY SHALL BE NOTIFIED BEFORE ACTIVATION OF PV SYSTEM

3. 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

4. ALL PV SYSTEM COMPONENTS SHALL BE LISTED BY A RECOGNIZED TESTING AGENCY

5. WIRING MATERIALS SHALL COMPLY WITH MAXIMUM CONTINUOUS CURRENT OUTPUT AT 25° C; WIRE SHALL BE WET RATED AT 90°C

6. EXPOSED PHOTOVOLTAIC SYSTEM CONDUCTORS ON THE ROOF WILL BE USE-2 OR PV TYPE WIRE.

7. ALL EXTERIOR CONDUIT, FITTINGS, AND BOXES SHALL BE RAIN-TIGHT AND APPROVED FOR USE IN WET LOCATIONS (CEC 314.15)

8. ALL METALLIC RACEWAYS AND EQUIPMENT SHALL BE BONDED AND ELECTRICALLY CONTINUOUS (CEC 250.90, 250.96)

9. FOR UNGROUNDED SYSTEMS, THE PHOTOVOLTAIC SOURCE AND OUTPUT CIRCUITS SHALL BE PROVIDED WITH A GROUND-FAULT PROTECTION

10. ANY REQUIRED GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT (CEC 250.64C)

11. ALL PV MODULES AND ASSOCIATED EQUIPMENT SHALL BE PROTECTED FROM ANY PHYSICAL DAMAGE

12. ALL FIELD-INSTALLED JUNCTION, PULL, AND OUTLET BOXES SHALL BE LOCATED IN A READILY ACCESSIBLE LOCATION DIRECTLY OR BY DISPLACEMENT OF A MODULE SECURED BY REMOVABLE FASTENERS

13. FOR GROUNDED SYSTEMS, THE INVERTER IS EQUIPPED WITH GROUND FAULT PROTECTION AND A GFI FUSE PORT FOR GROUND FAULT INDICATION

14. WHEN BACKFED BREAKER IS THE METHOD OF UTILITY INTERCONNECTION, THE BREAKERS SHALL NOT READ "LINE AND LOAD"

15. THE INSTALLED SOLAR SYSTEM HAS A DISTRIBUTED WEIGHT OF LESS THAN 4 PSF

16. THE CONCENTRATED LOAD FOR EACH VERTICAL SUPPORT IS LESS THAN 45 LBS

17. AC DISCONNECT IS A "KNIFE BLADE" TYPE DISCONNECT

18. THE WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH CEC 110.26

19. THE PHOTOVOLTAIC INVERTER WILL BE LISTED AS UL 1741 COMPLIANT

20. SMOKE ALARMS AND CARBON MONOXIDE ALARMS ARE REQUIRED TO BE RETROFITTED ONTO THE EXISTING DWELLING AS PER THE 2025 CRC. THESE SMOKE ALARMS ARE REQUIRED TO BE IN ALL BEDROOMS, OUTSIDE EACH BEDROOM, AND AT LEAST ONE ON EACH FLOOR OF THE HOUSE.

CARBON MONOXIDE ALARMS ARE REQUIRED TO BE RETROFITTED OUTSIDE EACH BEDROOM AND AT LEAST ONE ON EACH FLOOR OF THE HOUSE. THESE ALARMS MAY BE SOLELY BATTERY OPERATED IF THE PHOTOVOLTAIC PROJECT DOES NOT INVOLVE THE REMOVAL OF INTERIOR WALL AND CEILING FINISHES INSIDE THE HOME; OTHERWISE, THE ALARMS MUST BE HARD WIRED AND INTERCONNECTED. (CRC R314, R315)

21. SMOKE AND CARBON MONOXIDE ALARMS ARE REQUIRED PER CRC SECTIONS R314 AND R315 TO BE VERIFIED AND INSPECTED BY THE INSPECTOR IN THE FIELD.

22. WHEN APPLYING THE 120% RULE OF CEC 705.12(B) , THE SOLAR BREAKER TO BE POSITIONED AT THE OPPOSITE END OF THE BUS FROM THE MAIN BREAKER PER 705.12(B)

23. PLUMBING AND MECHANICAL VENTS THROUGH THE ROOF SHALL NOT BE COVERED BY SOLAR MODULES - NO BUILDING, PLUMBING, OR MECHANICAL VENTS TO BE COVERED OR OBSTRUCTED
- | SCOPE OF WORK | | | | | SHEET INDEX | | |
|---|------------------------|-----|-------|-----------------------------|-------------|-------------|------------------|
| NEW INSTALLATION OF GRID-TIED ROOFTOP MOUNTED SOLAR PHOTOVOLTAIC SYSTEM | | | | | | | |
| 20 | AUXIN SOLAR | 435 | W | AXN10M435B SOLAR MODULES | 1 | COVER SHEET | |
| 10 | APSYSTEMS | 768 | W | DS3-L (240V) MICROINVERTERS | 1.1 | | |
| | SYSTEM NAMEPLATE POWER | | 8.700 | KW DC | | 2 | SIGNAGE |
| | SYSTEM GROSS AC POWER | | 7.680 | KW AC | | 3 | SITE PLAN |
| | SYSTEM CEC-AC POWER | | 7.828 | KW CEC-AC | | 4 | ROOF PLAN |
| | CONSTRUCTION TYPE | | | V-B | | 5 | ELECTRICAL |
| | OCCUPANCY TYPE | | | R-3 | | 6 | ELECTRICAL CALCS |

CONTRACTOR:

CLIENT:

COVER SHEET

REV: ---- 07/02/2026PV-1
- VICINITY MAP
-
- AERIAL MAP
-

NOTES:

1. CONDUCTORS NORMALLY USED TO CARRY CURRENT SHALL BE OF COPPER. FOR ALUMINUM AND COPPER-CLAD ALUMINUM #6 AWG AND LARGER, SEE SEC. 310.15 CEC. EXCEPTION: ALUMINUM CONDUCTORS SMALLER THAN #6 AWG MAY BE USED PROVIDED THE METHOD OF CONNECTION IS APPROVED IN ADVANCE BY THE BUILDING OFFICIAL AND THE INSTALLATION IS MADE UNDER CONTINUOUS SPECIAL INSPECTION.

2. 250.53(A)(2). SUPPLEMENTAL ELECTRODE REQUIRED. A SINGLE ROD, PIPE, OR PLATE ELECTRODE SHALL BE SUPPLEMENTED BY AN ADDITIONAL ELECTRODE OF A TYPE SPECIFIED IN 250.52(A)(2) THROUGH (A)(8). THE SUPPLEMENTAL ELECTRODE SHALL BE PERMITTED TO BE BONDED LO ONE OF THE FOLLOWING:

A. ROD, PIPE, OR PLATE ELECTRODE

B. GROUNDING ELECTRODE CONDUCTOR

C. GROUNDED SERVICE-ENTRANCE CONDUCTOR

D. NONFLEXIBLE GROUNDED SERVICE RACEWAY

E. ANY GROUNDED SERVICE ENCLOSURE

EXCEPTION: IF A SINGLE ROD, PIPE, OR PLATE GROUNDING ELECTRODE HAS A RESISTANCE TO EARTH OF 25 OHM OR LESS THE SUPPLEMENTAL ELECTRODE SHALL NOT BE REQUIRED.

F. SUPPLEMENTAL ELECTRODE, IF MULTIPLE ROD, PIPE, OR PLATE ELECTRODES ARE INSTALLED TO MEET THE REQUIREMENTS OF THIS SECTION THEY SHALL NOT BE LESS THAN 1.8 M (6 FT) APART.

3.

A SMOKE DETECTOR, APPROVED AND LISTED BY THE STATE FIRE MARSHAL, SHALL BE INSTALLED IN EACH DWELLING WHEN A PERMIT FOR ALTERATIONS, REPAIRS OR ADDITIONS EXCEEDS \$1,000.00. A BATTERY POWERED SMOKE DETECTOR SATISFIES THE REQUIREMENTS FOR A SMOKE DETECTOR. (R314.6.2 CRC)

4. PROVIDE SMOKE ALARMS AT THE FOLLOWING LOCATIONS AND NOTE ON THE PLANS; (R314.3 CRC)

A. OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF BEDROOMS.

B. IN EACH ROOM USED FOR SLEEPING PURPOSES.

C. IN EACH STORY, INCLUDING BASEMENTS. IN SPLIT LEVEL UNITS WITHOUT AN INTERVENING DOOR BETWEEN ADJACENT

D. ALARMS SHALL BE INTERCONNECTED SUCH THAT THE ACTUATION OF ONE ALARM SHALL ACTIVATE ALL ALARMS.

E. ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WITH BATTERY BACKUP.

F. APPROVED COMBINED SMOKE ALARMS AND CARBON DIOXIDE ALARMS SHALL BE ACCEPTABLE. LEVELS, A SMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL.

5. A CARBON MONOXIDE DETECTOR SHALL BE INSTALLED IN THE SPECIFIC EXISTING DWELLING UNIT THAT HAVE ATTACHED GARAGES OR FUEL-BURNING APPLIANCES FOR WHICH A PERMIT IS ISSUED FOR ALTERATIONS, REPAIRS OR ADDITIONS EXCEEDING \$1,000.00. LISTED SINGLE- OR MULTI-STATION CARBON MONOXIDE ALARMS SHALL BE INSTALLED OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS AND ON EVERY LEVEL OF A DWELLING UNIT INCLUDING BASEMENTS. COMBINED SMOKE/CARBON MONOXIDE ALARMS MAY BE USED. THE ALARM SHALL RECEIVE ITS PRIMARY POWER FROM THE BUILDING WIRING EXCEPT IT IS PERMITTED TO BE SOLELY BATTERY OPERATED WHERE REPAIRS OR ALTERATIONS DO NOT RESULT IN THE REMOVAL OF WALL AND CEILING FINISHES OR THERE IS NO ACCESS BY MEANS OF AN ATTIC. SHOW ON THE PLANS. (R315 CRC)

6. APPLICATIONS FOR WHICH NO PERMIT IS ISSUED WITHIN 180 DAYS FOLLOWING THE DATE OF APPLICATION SHALL AUTOMATICALLY EXPIRE.

7. EVERY PERMIT ISSUED SHALL BECOME INVALID UNLESS WORK AUTHORIZED IS COMMENCED WITHIN 180 DAYS, A SUCCESSFUL INSPECTION IS NOT OBTAINED WITHIN 180 DAYS, OR IF WORK IS SUSPENDED OR ABANDONED FOR A PERIOD OF 180 DAYS. PERMITS WHICH HAVE BECOME INVALID SHALL PAY A RENEWAL FEE OF 50% OF THE ORIGINAL PERMIT FEE AMOUNT WHEN THE PERMIT HAS BEEN EXPIRED FOR UP TO ONE (1) YEAR. WHEN A PERMIT HAS BEEN EXPIRED FOR A PERIOD IN EXCESS OF ONE (1) YEAR, THE RENEWAL FEE SHALL BE 100% OF THE ORIGINAL PERMIT FEE.

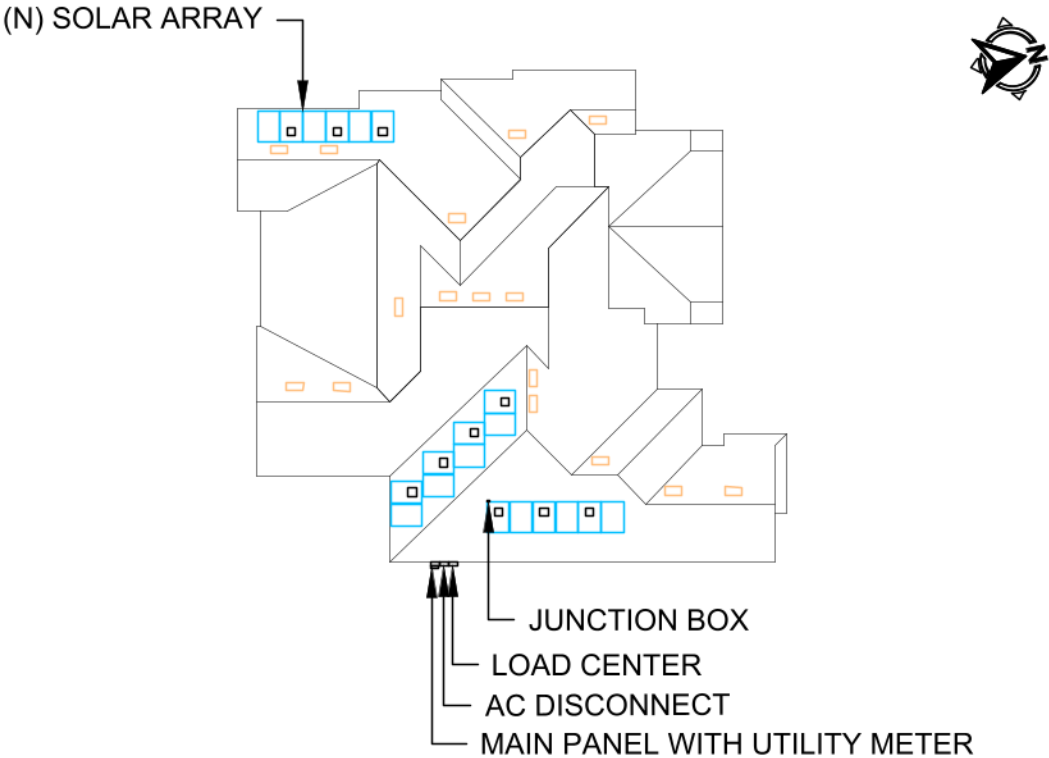
8. THE CONTRACTOR SHALL PROVIDE A WRITTEN LETTER TO THE BUILDING INSPECTOR STATING THAT ALL INACCESSIBLE STRUCTURAL CONNECTIONS HAVE BEEN

INSTALLED IN CONFORMANCE WITH THE REQUIREMENTS OF THE APPROVED PLANS

	CONTRACTOR:	CLIENT:	
		COVER SHEET	
		REV: ---- 07/02/2026	PV-1.1

- NOTES AND SPECIFICATIONS:
- SIGNS AND LABELS SHALL MEET THE REQUIREMENTS OF THE 2008 ARTICLE 110.21(B), UNLESS SPECIFIC INSTRUCTIONS ARE REQUIRED BY SECTION 690, OR IF REQUESTED BY THE LOCAL AHJ.
 - SIGNS AND LABELS SHALL ADEQUATELY WARN OF HAZARDS USING EFFECTIVE WORDS, COLORS AND SYMBOLS.
 - LABELS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HAND WRITTEN.
 - LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
 - SIGNS AND LABELS SHALL COMPLY WITH ANSI Z535.4-2011, PRODUCT SAFETY SIGNS AND LABELS, UNLESS OTHERWISE SPECIFIED.
 - DO NOT COVER EXISTING MANUFACTURER LABELS.

CAUTION:
MULTIPLE SOURCES OF POWER



WEATHER RESISTANT PLASTIC PLACARD
PLACEMENT: MAIN PANEL (COVER)
PER CODE: 110.21(B) [2025 CEC 705.10]

⚠ WARNING

ELECTRICAL SHOCK HAZARD

TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION: COMBINER PANEL, AC DISCONNECT, POINT OF INTERCONNECTION
PER CODE: CEC 706.15(C)(4), CEC 690.13(B)

⚠ WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

LABEL LOCATION: COMBINER PANEL(S), MAIN SERVICE DISCONNECT
PER CODE: CEC 110.27(C), OSHA 1910.145(f)(7)

PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION: DC CONDUIT/RACEWAYS
PER CODE: CEC 690.31(D)(2)

SOLAR PV DC CIRCUIT

LABEL LOCATION: DC CONDUIT/RACEWAYS
PER CODE: CEC 690.31(D)(2)

PHOTOVOLTAIC SYSTEM AC DISCONNECT

RATED AC OUTPUT CURRENT: 32.00 A

NOMINAL OPERATING AC VOLTAGE: 240 V

LABEL LOCATION: AC DISCONNECT/POINT OF INTERCONNECTION
PER CODE: CEC 690.54

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION: MAIN SERVICE DISCONNECT, PRODUCTION/NET METER
PER CODE: CEC 690.59, 705.12(C)

PV SYSTEM

DISCONNECT

LABEL LOCATION: AC DISCONNECT
PER CODE: CEC 690.13(B)

⚠ WARNING

THIS EQUIPMENT FED BY MULTIPLE SOURCES:
TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN POWER SUPPLY SHALL NOT EXCEED AMPACITY OF BUSBAR

LABEL LOCATION: AC DISCONNECT
PER CODE: CEC 705.12(B)(3)(3)

⚠ WARNING

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

LABEL LOCATION: POINT OF INTERCONNECTION
PER CODE: CEC 705.12(B)(3)(2)

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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

SOLAR ELECTRIC PV PANELS

LABEL LOCATION: MAIN SERVICE DISCONNECT
PER CODE: CEC 690.56(C)

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

LABEL LOCATION: MAIN SERVICE DISCONNECT, UTILITY METER
PER CODE: CEC 690.13(B)

RAPID SHUTDOWN FOR SOLAR PV SYSTEM

LABEL LOCATION: RSD INITIATION DEVICE, AC DISCONNECT
PER CODE: CEC 690.56(C)(2)

DO NOT DISCONNECT UNDER LOAD

MAXIMUM DC VOLTAGE OF PV SYSTEM

LABEL LOCATION: MAIN SERVICE DISCONNECT
PER CODE: CEC 690.15(B) & CEC 690.33(D)(2)

LABEL LOCATION: DC DISCONNECT/INVERTER/PV DIST. EQUIPMENT
PER CODE: CEC 690.53

⚠ WARNING

ELECTRICAL SHOCK HAZARD

TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

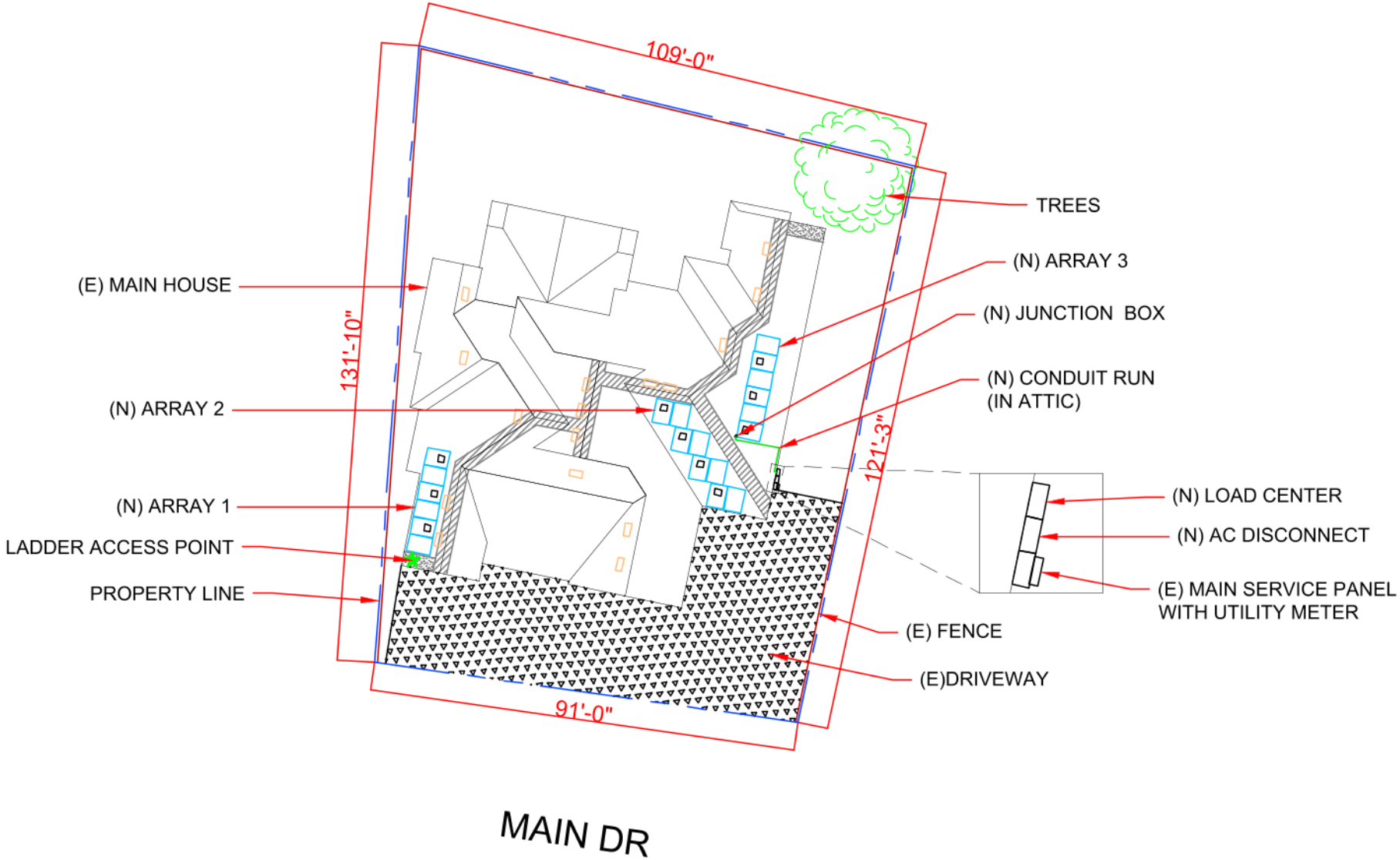
LABEL LOCATION: DC DISCONNECT
PER CODE: CEC 690.13(B)

⚠ CAUTION
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION: MAIN SERVICE DISCONNECT
PER CODE: CEC 705.12(D), CEC 690.59

	CONTRACTOR:	CLIENT:
	SIGNAGE	
	REV: ---- 07/02/2026	PV-2

SITE PLAN
SCALE: 1/32" = 1'-0"



	ROOF PITCH (DEG)	AZIMUTH (DEG)	PV AREA (SQ. FT)	NO. OF MODS
#1	27°	282°	115.67	6
#2	27°	192°	153.70	8
#3	27°	102°	115.67	6

MODULE	AUXIN SOLAR AXN10M435B
MODULE DIMENSIONS	68.50" X 44.65" X 1.18"
MODULE WEIGHT	51.66 LBS (23.43 KG)
TOTAL ARRAY AREA SQ.FT.	385.04
TOTAL ROOF AREA SQ.FT	5827.43
ROOF TYPE	COMP. SHINGLE
NO. OF STORIES	1
%ROOF COVERAGE	12.43 %

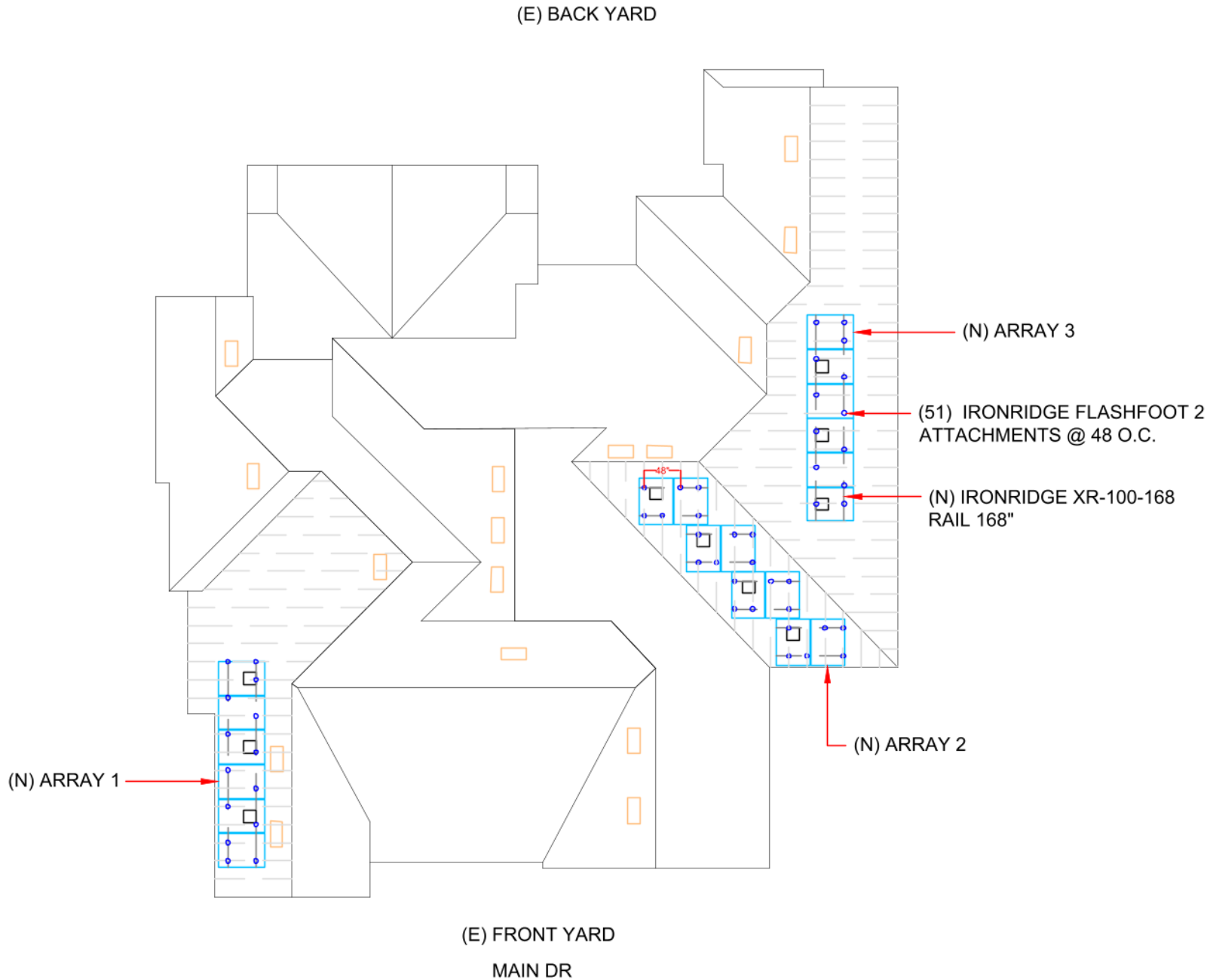
BILL OF MATERIALS		
EQUIPMENT	QTY.	DESCRIPTION
SOLAR PV MODULE	20	AUXIN SOLAR AXN10M435B
MICROINVERTER	10	AP SYSTEMS DS3-L (240V)
AC DISCONNECT	1	60A NON-FUSED AC DISCONNECT LOCKABLE,VISIBLE BLADE TYPE,NEMA 3R, 240V, 1Ø
JUNCTION BOX	3	4"X4"X4" JUNCTION BOX PVC JCT BOX W/CVR
LOAD CENTER	1	LOAD CENTER, 100A RATED WITH A MLO, 240V
ATTACHMENT	51	IRONRIDGE FLASHFOOT 2 ATTACHMENT
RAILS	16	IRONRIDGE XR-100-168 RAIL 168"
RAIL SPLICE	4	RAIL SPLICE
MID CLAMPS	28	MID CLAMPS
END CLAMPS	24	END CLAMPS
GROUNDING LUG	6	WEB LUG



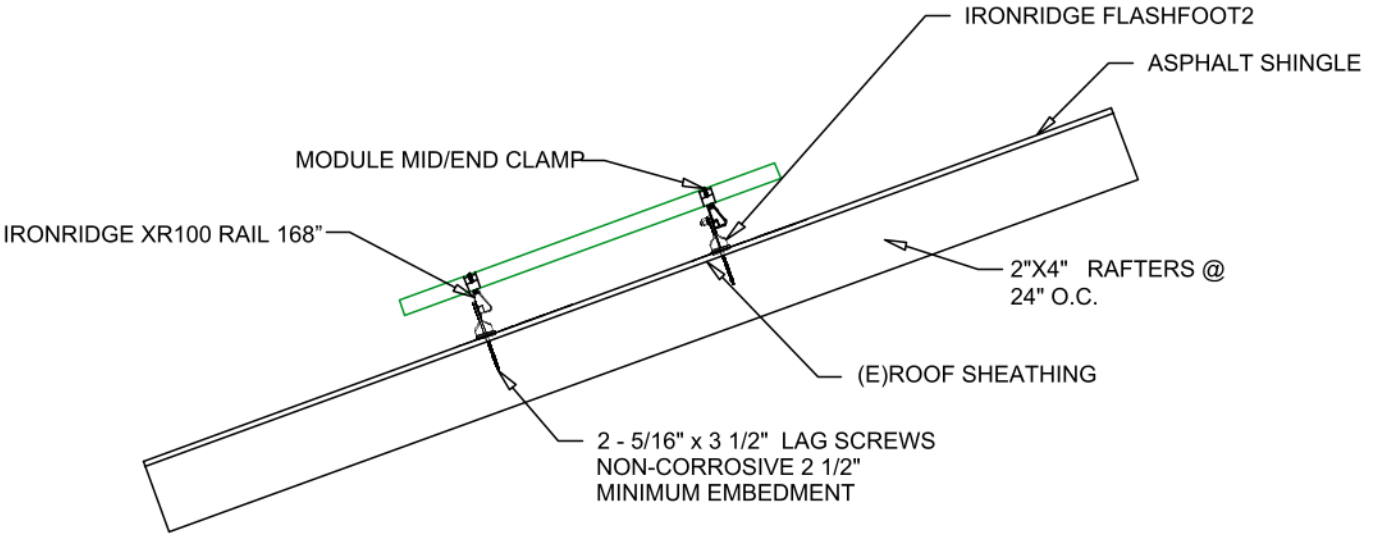
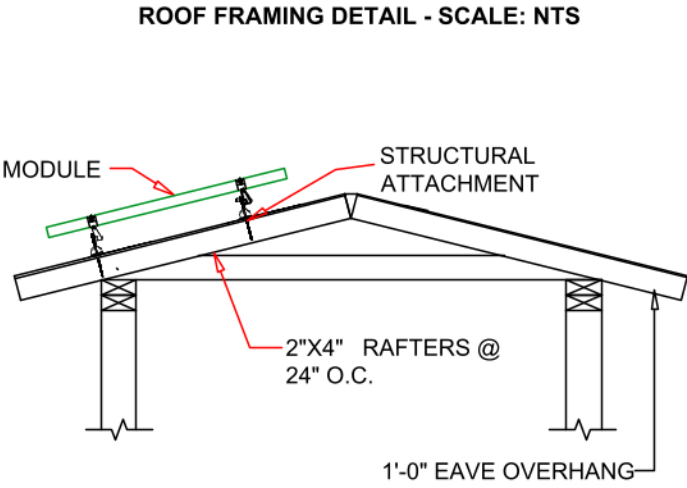
CONDUIT NOTES	
CONDUIT TO BE RUN INSIDE ATTIC WHENEVER POSSIBLE AND UNDER EAVES; AND CLOSE TO RIDGELINES, LABELED AT MAX. 10' INTERVALS.	
CONDUIT TO BE PAINTED TO MATCH EXTERIOR/EXISTING BACKGROUND COLOR OF ITS LOCATION	

	CONTRACTOR:	CLIENT:
SITE PLAN		
REV: ----	07/02/2026	PV-3

	ROOF PITCH (DEG)	AZIMUTH (DEG)	PV AREA (SQ. FT)	NO. OF MODS	ROOF TYPE	ROOF ATTACHMENT	ROOF HEIGHT	EXPOSURE	MATERIAL	CONSTRUCTION	RAFTER SIZE	RAFTER SPAN	RAIL ATTACHMENT SPACING	MAX CANTILEVER LENGTH
ARRAY 1	27°	282°	115.67	6	COMP. SHINGLE	IRONRIDGE FLASHFOOT 2	1 - STORY	ATTIC	WOOD	RAFTER	2"X6"	24" O.C.	48" OC	1'-4"
ARRAY 2	27°	192°	153.70	8	COMP. SHINGLE	IRONRIDGE FLASHFOOT 2	1 - STORY	ATTIC	WOOD	RAFTER	2"X6"	24" O.C.	48" OC	1'-4"
ARRAY 3	27°	102°	115.67	6	COMP. SHINGLE	IRONRIDGE FLASHFOOT 2	1 - STORY	ATTIC	WOOD	RAFTER	2"X6"	24" O.C.	48" OC	1'-4"



MODULE	AUXIN SOLAR AXN10M435B
MODULE DIMENSIONS	68.50" X 44.65" X 1.18"
MODULE WEIGHT	51.66 LBS (23.43 KG)
TOTAL ARRAY AREA	385.04 SQ. FT.
TOTAL ROOF AREA	5827.43 SQ. FT.
ROOF TYPE	COMP. SHINGLE
MAX DISTRIBUTED LOAD	3 PSF
SNOW LOAD	7 PSF
WIND SPEED	92 MPH, 3 SEC GUST
WIND EXPOSURE	C



ROOF PLAN
SCALE: 1/16" = 1'-0"
PLUMBING AND OR MECHANICAL VENTS SHALL NOT BE COVERED,
OBSTRUCTED OR RE-ROUTED AROUND SOLAR MODULES.
ALL CONDUITS AND EQUIPMENT SHALL BE PAINTED TO MATCH THE EXISTING
BACKGROUND MATERIAL COLOR OF THEIR LOCATION.

CONTRACTOR:

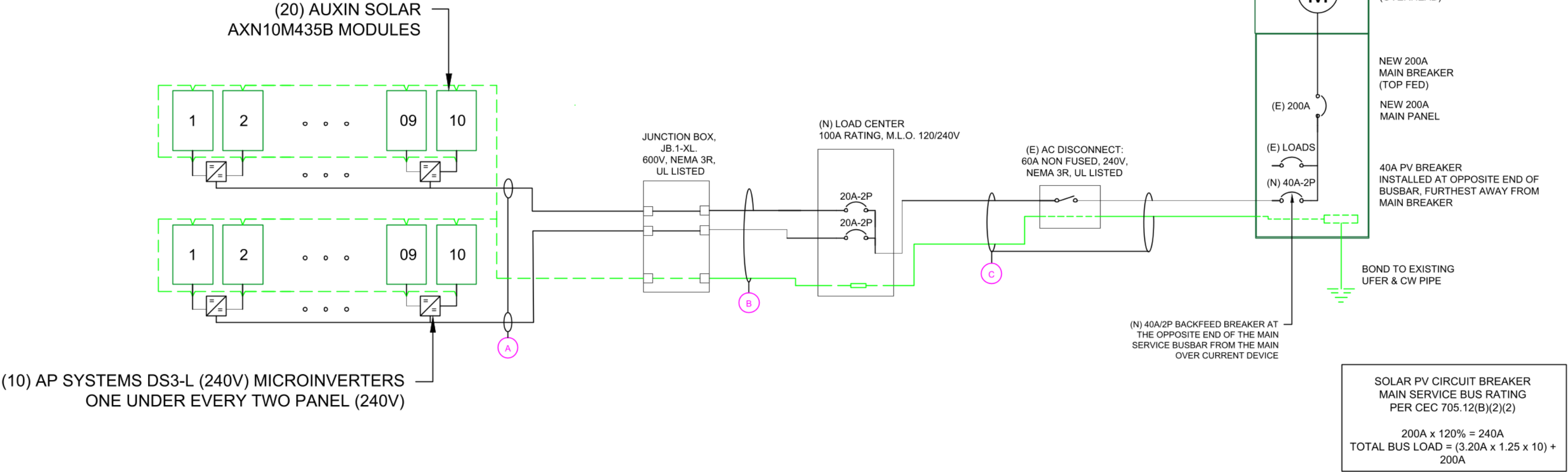
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ROOF PLAN

REV: ---- 07/02/2026

PV-4

ELECTRICAL

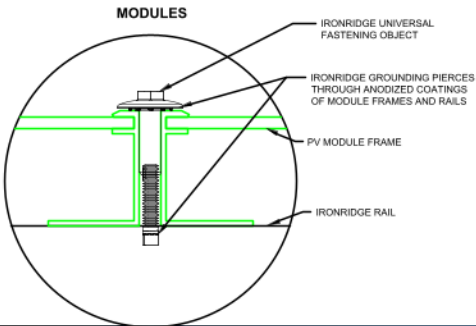


CONDUCTOR / CONDUIT SCHEDULE					
Δ TAG	CONDUCTOR	CONDUCTOR SIZE	NUMBER OF CONDUCTORS	CONDUIT/CABLE TYPE	CONDUIT SIZE
A	Q CABLE	12 AWG	4	FREE AIR	N/A
	EGC/GEC: BARE COPPER	6 AWG	1		
B	LINE: THHN/THWN-2	10 AWG	4	EMT	3/4"
	EGC/GEC: THHN/THWN-2	8 AWG	1		
C	LINE: THHN/THWN-2	8 AWG	2	EMT	3/4"
	NEUTRAL: THHN/THWN-2	8 AWG	1		
	EGC/GEC: THHN/THWN-2	8 AWG	1		

- SYSTEM NOTES:**
- 1. APSYSTEMS DS3 MICROINVERTERS DO NOT REQUIRE GROUNDING ELECTRODE CONDUCTORS OR EQUIPMENT GROUNDING CONDUCTORS. THE MICROINVERTERS ITSELF HAS CLASS II DOUBLE-INSULATED RATING, WHICH INCLUDES GROUND FAULT PROTECTION.
 - 2. Q CABLE HAS NO NEUTRAL WIRE - (2 WIRE DOUBLE INSULATED CABLING)
 - 3. MODULES ARE BONDED TO RAIL.
 - 4. RAILS ARE BONDED WITH UL 2703 RATED LAY-IN LUGS
 - 5. BARE COPPER IS TRANSITIONED TO THHN/THWN-2 VIA IRREVERSIBLE CRIMP; GEC TO BE CONTINUOUS PER CEC 250.64(C)
 - 6. SUB-BRANCHES ARE CENTER-FED AT JBOX TO MAKE ONE TOTAL BRANCH CIRCUIT..
 - 7. APSYSTEMS DS3 MICROINVERTERS ARE ALL RAPID SHUTDOWN READY PER CEC 690.12

GROUNDING DETAIL

SCALE: NTS



	CONTRACTOR:	CLIENT:
	ELECTRICAL	
	REV: ---- 07/02/2026	PV-5

MODULE CHARACTERISTICS - AUXIN SOLAR AXN10M435B		
MAX POWER (PMAX) @ STC	435	W
OPEN CIRCUIT VOLTAGE (VOC)	38.66	V
SHORT CIRCUIT CURRENT (ISC)	13.76	A
MAX POWER VOLTAGE (VMP)	33.40	V
MAX POWER CURRENT (IMP)	13.02	A
SERIES FUSE RATING	30	A

INVERTER CHARACTERISTICS - APSYSTEMS DS3-L (240V)		
MAX OUTPUT POWER	768	W
SYSTEM OPERATING VOLTAGE	16-60	V
MAX CONTINOUS OUTPUT CURRENT	3.20	A
MAX INPUT VOLTAGE	60	V
SYSTEM SHORT CIRCUIT CURRENT	30	A
CEC MAX EFFICIENCY	96.5	%

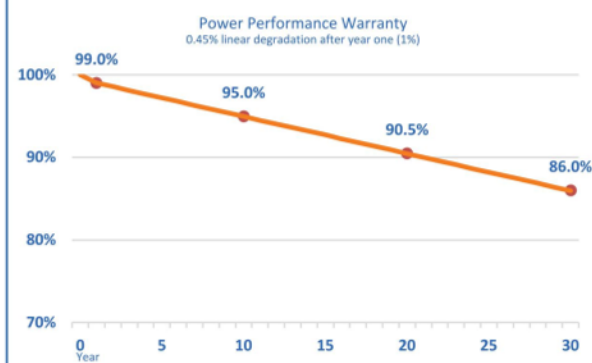
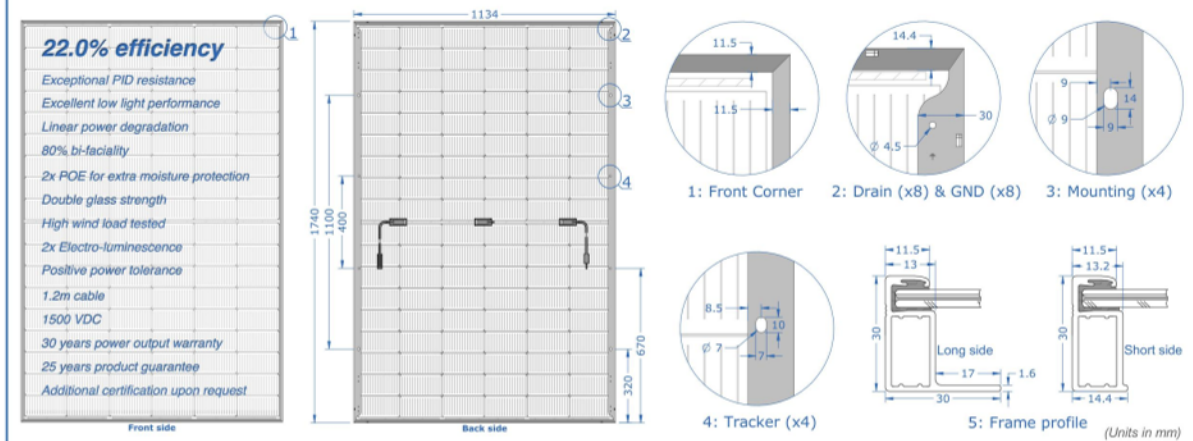
TEMPERATURE ADDERS		
CONDUIT TO BE INSTALLED MIN. OF 7⁄8" ABOVE ROOF		
HIGH TEMPERATURE	60	°C
LOW TEMPERATURE	-6	°C
TEMP ADDER FOR ROOF RUN	0	°C
TEMP ADDER FOR ATTIC RUN	7	°C

AC WIRE SIZING CALCULATIONS			
AT ARRAY	QCable = 10 AWG, 50 A @90°C		
BRANCH CIRCUITS	(Max Micro Inverter Output) x (Continuous Load)[210.19(A)(1)] x (# Micros In Branch Circuit)=	3.20 A X1.25 X 5	20.00
TOTAL AMPACITY	(High Temp)[Table 310(B)(2)(A) x (Conductor Ampacity)[Table 310.15(B)(16)] x (Conduit Fill)[Table 310.15(B)(3)(a)]	0.71 X 30 A X 1.0	28.40 A
20.00 A < 28.40 A Therefore 12 AWG/ Q CABLE is sufficient			
AFTER JBOX	Wire = 10 AWG, 40 A @ 90°C		
BRANCH CIRCUITS	(Max Micro Inverter Output) x (Continuous Load)[210.19(A)(1)] x (# Micros In Branch Circuit)=	3.20 A X 1.25 X5	20.00
TOTAL AMPACITY	(High Temp)[Table 310(B)(2)(A) x (Conductor Ampacity)[Table 310.15(B)(16)] x (Conduit Fill)[Table 310.15(B)(3)(a)]	1.00 X 40 A X 0.8	32.00 A
20.00 A < 32.00 A Therefore 10 AWG is sufficient			
AC WIRE SIZING CALCULATIONS			
AFTER COMBINER BOX	Wire = 8 AWG, 55 A @ 90°C		
MAX AC OUTPUT CURRENT	(Σ of Micros in Branch Circuits) x (Max Micro Inverter Output Current) x (Continuous Load)[210.19(A)(1)]+ ESS Load	(10 X 3.20 A X 1.25)	40.00
TOTAL AMPACITY	(High Temp)[Table 310(B)(2)(A) x (Conductor Ampacity)[Table 310.15(B)(16)] x (Conduit Fill)[Table 310.15(B)(3)(a)]	1.00 X 55 A X 1.0	55.00 A
40.00 A < 55.00 A Therefore 8 AWG is sufficient			
OCPD CALCULATIONS			
MAX AC OUTPUT CURRENT	(Σ of Micros in Branch Circuits) x (Max Micro Inverter Output Current) x (Continuous Load)[210.19(A)(1)]+ ESS Load	(10 X 3.20 A X 1.25)	40.00
40.00 A ---> 40 A Overcurrent Protection			

	CONTRACTOR:	CLIENT:	
		CALCS	
		REV: ---- 07/02/2026	PV-6

Model Name	AXN10M435B	Total power output for different bi-facial gain coefficients			
		5%	10%	20%	30%
Maximum Power (+3%)	435W	457W	478W	522W	565W
Voc (V)	38.66	38.66	38.66	38.66	38.66
Isc (A)	13.76	14.45	15.14	16.51	17.89
Vmp (V)	33.40	33.40	33.40	33.40	33.40
Imp (A)	13.02	13.67	14.32	15.62	16.93
Module Efficiency (%)	22.0%	23.4%	24.5%	26.7%	29.0%
Series Fuse Rating	30A	Bi-Facial modules produce power on both front and back. The actual power output from the back side is determined by installation conditions. Nominal bi-facial module gain coefficient can run from 5% to 30% or more, depending on the installation height and the amount of indirect irradiance. It is recommended to design the electrical circuits with safety factor that accounts for the additional power in order to protect electrical hardware.			
Junction Box Protection	IP68				
Maximum System Voltage	VDC1500				
Operating Temperature	-40°C to 85°C				
Module type	Framed Bi-Facial Double Glass				
Connector type	Staubli EVO-2A				
Cable length	12AWG 1200mm ¹				
Maximum snow/wind load	5400Pa(snow)/5400Pa(wind)				
Certification/Fire Type	UL61730 ¹ ; UL1703 Fire Type 3				

¹) Amphenol connectors available upon request, ⁱⁱ) Cable length may be customized, ⁱⁱⁱ) Additional certifications available upon request



Mechanical Characteristics	
Frame	Anodized Aluminum (Silver and Black)
Solar Panel	51.66 lbs/23.43 kg 68.50" x 44.65" x 1.18" 1740mm x 1134mm x 30mm
Shipping Pallet	39 pcs per pallet 2085 lbs/946 kgs 72.52" x 48.66" x 51.06" 1842mm x 1236mm x 1297mm
Container	20 pallets (780 pcs) per 53'
Temperature Coefficients	
NOCT	45 °C
Isc/Voc (per °C)	+0.05%/-0.25%
Pmax (per °C)	-0.29%
Standard Test Conditions (STC)	
Irradiance	1000W/m ²
Module Temperature	25 °C
AM	1.50

Specifications subject to change without notice

Auxin Solar, 6835 Via Del Oro, San Jose, CA 95119, USA
+1 408 225-4380(office)
salesusa@auxinsolar.com
www.auxinsolar.com



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PV-7



DS3 Series

The most powerful Dual Microinverter

- One microinverter connects to two solar modules
- Max output power reaching 640VA, 768VA or 880VA
- Two independent input channels (MPPT)
- CA Rule 21 (UL 1741 SA) compliant
- NEC 2020 690.12 Rapid Shutdown Compliant
- Encrypted Wireless ZigBee Communication
- Phase Monitored and Phase Balanced

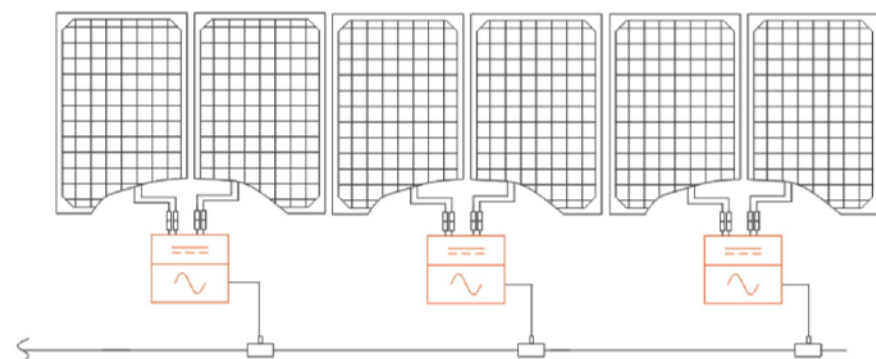
PRODUCT FEATURES

APsystems 3rd generation of dual microinverters are reaching unprecedented power outputs of 640VA or 768VA or 880VA to adapt to today's larger power module. With 2 independent MPPT, encrypted ZigBee signals, the DS3-S, DS3-L and DS3 benefit from an entirely new architecture and are fully backwards compatible with the QS1 and YC600 microinverters.

The innovative and compact design make the product lighter while maximizing power production. The components are encapsulated with silicone to reduce stress on the electronics, facilitate thermal dissipation, enhance waterproof properties, and ensure maximum reliability of the system via rigorous testing methods including accelerated life testing. A 24/7 energy access through Apps or web based portal facilitate remote diagnosis and maintenance.

The DS3 series is interactive with power grids through a feature referred to as RPC (Reactive Power Control) to better manage photovoltaic power spikes in the grid. With a performance and an efficiency of 97%, a unique integration with 20% less components, APsystems DS3-S, DS3-L and DS3 are a game changer to residential and commercial PV.

WIRING SCHEMATIC



2022/02/15 Rev1.3

Datasheet | DS3 Microinverter Series

Model	DS3-S	DS3-L	DS3
Input Data (DC)			
Recommended PV Module Power (STC) Range	250Wp-480Wp+	265Wp-570Wp+	300Wp-660Wp+
Peak Power Tracking Voltage	22V-48V	25V-55V	32V-55V
Operating Voltage Range	16V-60V	16V-60V	26V-60V
Maximum Input Voltage	60V		
Maximum Input Current	16A x 2	18A x 2	20A x 2
Output Data (AC)			
Maximum Continuous Output Power	640VA	768VA	880VA
Nominal Output Voltage/Range ^①	240V / 211V-264V		
Nominal Output Current	2.66A	3.20A	3.7A
Nominal Output Frequency/ Range ^①	60Hz/59.3Hz-60.5Hz		
Power Factor(Default/Adjustable)	0.99/0.7 leading...0.7 lagging		
Maximum Units per 20A and 30A Branch ^②	6/9	5/7	4/6
AC Bus Cable	12AWG / 10AWG		

Efficiency

Peak Efficiency	97%
CEC Efficiency	96.5%
Nominal MPPT Efficiency	99.5%
Night Power Consumption	20mW

Mechanical Data

Operating Ambient Temperature Range	-40°F to +149°F (-40°C to +65°C)
Storage Temperature Range	-40°F to +185°F (-40°C to +85°C)
Dimensions (W x H x D)	10.3" x 8.6" x 1.6" (262mm X 218mm X41.2mm)
Weight	5.7lbs(2.6kg)
DC Connector Type	Stäubli MC4 PV-ADBP4-S2&ADSP4-S2
Cooling	Natural Convection - No Fans
Enclosure Environmental Rating	NEMA 6

Features

Communication (Inverter To ECU) ^③	Encrypted ZigBee
Isolation Design	High Frequency Transformers, Galvanically Isolated
Energy Management	Energy Management Analysis (EMA) system
Warranty ^④	10 Years Standard ; 25 Years Optional

Compliance

Safety and EMC Compliance	UL1741;CSA C22.2 No. 107.1-16;CA Rule 21 (UL 1741 SA); FCC Part15; ANSI C63.4; ICES-003; IEEE1547; NEC2014&NEC2017 Section 690.11 DC Arc-Fault circuit; Protection NEC2014&NEC2017 Section 690.12 Rapid Shutdown of PV systems on Buildings; NEC 2020
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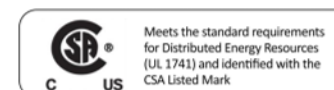
^① Nominal voltage/frequency range can be extended beyond nominal if required by the utility.
^② Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

^③ Recommend no more than 80 inverters register to one ECU for stable communication.

^④ To be eligible for the warranty, APsystems microinverters need to be monitored via the EMA portal. Please refer to our warranty T&Cs available on usa.APsystems.com.

APsystems
600 Ericksen Ave NE, Suite 200 Seattle, WA 98110
Tel : 844-666-7035
apsystems.com

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ECU-R

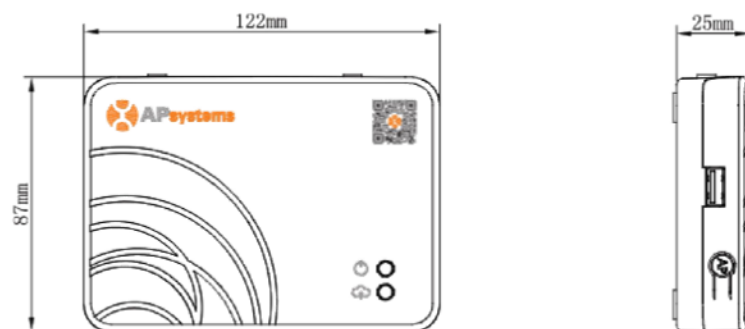
Energy Communication Unit

- Collection and transmission of inverter data
- Real time monitoring of each inverter
- Stable wireless encrypted ZigBee communication with microinverters, built in Wi-Fi and Ethernet
- Small size, flexible installation

PRODUCT FEATURES

The APsystems Energy Communication Unit (ECU-R) is the information gateway for our microinverters. The ECU-R collects module performance data from each individual microinverter and transfers the information to an Internet database in real time. Through the APsystems Energy Monitoring and Analysis (EMA) software, the ECU-R gives you precise analysis of each micro-inverter and PV module in your solar installation powered by APsystems. The user-friendly interface gives you access to your solar array performance in seconds from our web based portal or from our APP.

DIMENSIONS



2022/08/30 Rev3.4

ECU-R Datasheet

Model ECU-R

Communication to Microinverter

Communication	ZigBee 2.4 GHz
Maximum Communicating Quantity*	100

Communication to EMA

Ethernet	10/100M Auto-sensing, Auto-negotiation
Wireless	Wi-Fi 802.11g/n /GSM Cellular
Wireless Security	WEP, WPA2-PSK
USB Interface	5Vdc - 0.5A Output

Power Date

Power Supply	5V, 2A
Power Consumption	1.7 W

Product Specifications

Frequency Range	2412MHZ-2472MHZ (WIFI), 2405mhz-2480mhz (ZigBee)
RF Output Power (EIRP)	16.56 dbm (WIFI), 9.50 dbm (ZigBee)
Type of Antenna	External antenna,SMA type connector
Modulation	DSSS, OFDM
Mode of Operation(Simplex/Duplex)	Duplex

Mechanical Data

Dimensions (W×H×D)	4.8" x 3.4" x 0.98" (122 mm x 87 mm x 25 mm)
Weight	0.33lbs (150g)
Energy Management	-4°F to +149°F (-20°C to +65°C)
Cooling	Nature Convection; No Fans
Enclosure Environmental Rating	Indoor - NEMA 1 (IP20)
Warranty	3 Years Standard

Features

Compliance	IEC 60950-1, EN60950-1, IEC 60529, EN 60529, ANSI/UL 60950-1, CAN/CSA C22.2 No.60950-1, UL50E, FCC part 15, EN61000-6-1, EN61000-6-3, ICES-003, AS NZS 60950-1, GB/T17799
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*Maximum number of microinverters per ECU may vary depending on the PV array size and layout, maximum distance between ECU and microinverters in the array, obstacles (thick concrete wall, metallic roof top).



Please scan this QR code to download our APPs or check the link:
<https://apsystems.com/qr-code/>



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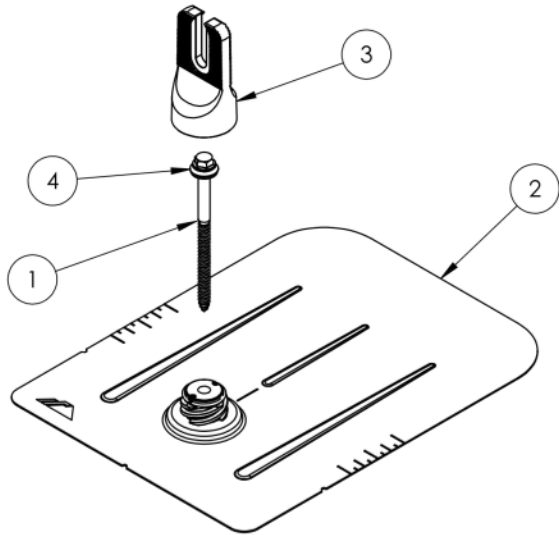
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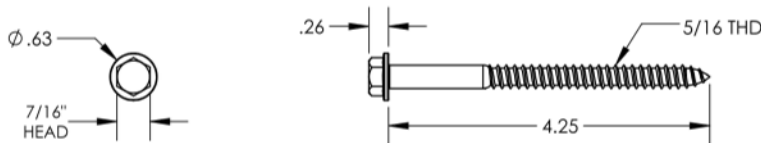


ITEM NO.	DESCRIPTION	QTY IN KIT
1	BOLT LAG 5/16 X 4.25"	1
2	ASSY, FLASHING	1
3	ASSY, CAP	1
4	WASHER, EPDM BACKED	1

FLASHFOOT 2

PART NUMBER	DESCRIPTION
FF2-02-M2	FLASHFOOT2® (MILL)
FF2-02-B2	FLASHFOOT2® (BLACK)

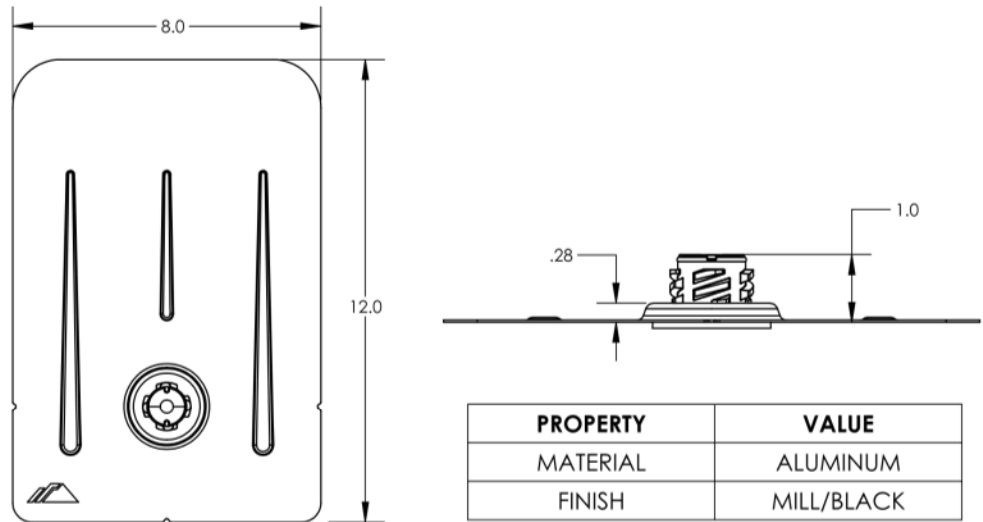
1) BOLT, LAG 5/16 x 4.25



PROPERTY	VALUE
MATERIAL	300 SERIES STAINLESS STEEL
FINISH	CLEAR

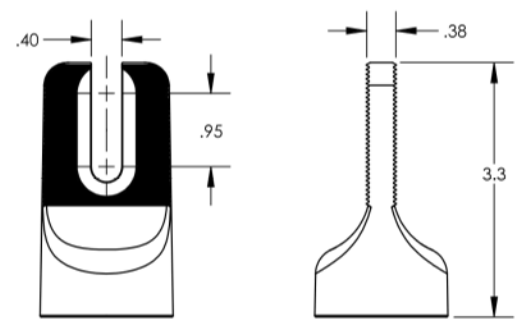
v2.10

2) ASSY, FLASHING



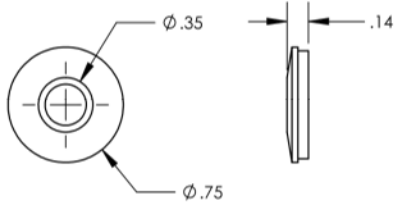
PROPERTY	VALUE
MATERIAL	ALUMINUM
FINISH	MILL/BLACK

3) ASSY, CAP



PROPERTY	VALUE
MATERIAL	ALUMINUM
FINISH	MILL/BLACK

4) WASHER, EPDM BACKED



PROPERTY	VALUE
MATERIAL	300 SERIES STAINLESS STEEL
FINISH	CLEAR

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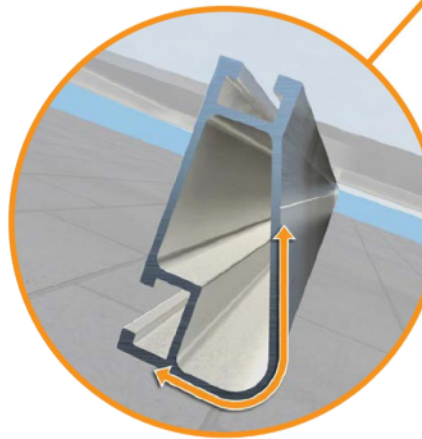
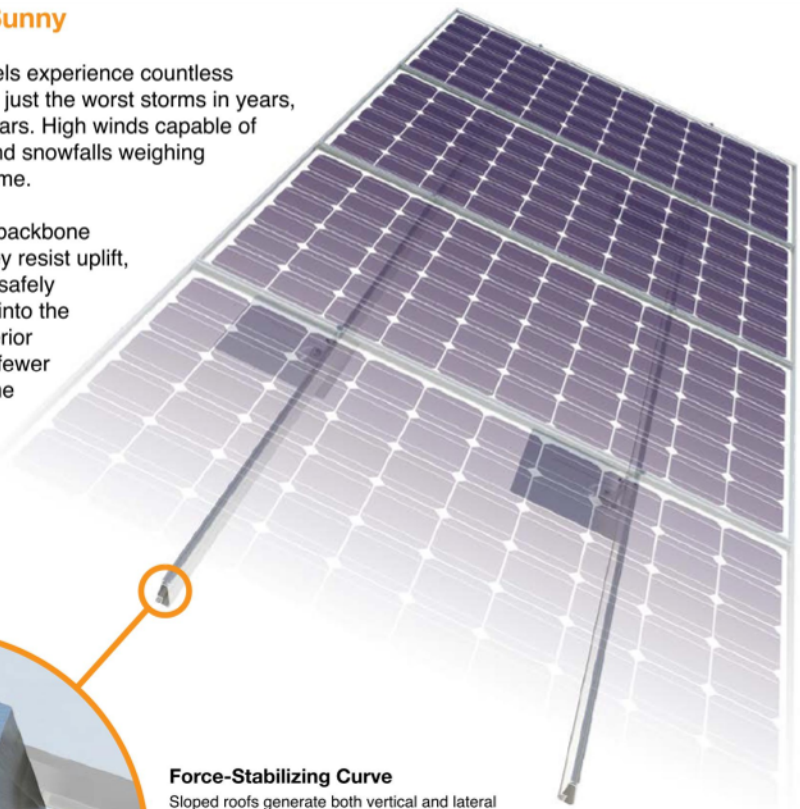


XR Rail® Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails® are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.



Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails® is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs



XR Rails® are compatible with FlashFoot® and other pitched roof attachments.



IronRidge® offers a range of tilt leg options for flat roof mounting applications.

6000-Series Aluminum

All XR Rails® are made of 6000-series aluminum alloy, with anodized options. Anodizing prevents corrosion, while also providing a more attractive appearance. Available in mill and black-anodized finish.



Tech Brief

XR Rail® Family

The XR Rail® Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail® to match.



XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves spans up to 6 feet, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Mill & black-anodized finish
- Internal splices available



XR100

XR100 is a residential and commercial mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 10 feet.

- 10' spanning capability
- Heavy load capability
- Mill & black-anodized finish
- Internal splices available



XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans up to 12 feet for commercial applications.

- 12' spanning capability
- Extreme load capability
- Mill, non-anodized finish
- Internal splices available

Rail Selection

The table below was prepared in compliance with applicable engineering codes and standards.* Values are based on the following criteria: ASCE 7-16, Gable Roof Flush Mount, Roof Zones 1 & 2e, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	90	XR10		XR100		XR1000	
	120						
	140						
	160						
20	90						
	120						
	140						
	160						
30	90						
	160						
40	90						
	160						
80	160						
120	160						

*Table is meant to be a simplified span chart for conveying general rail capabilities. Use approved certification letters for actual design guidance.

Tech Brief

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