

31 SunPower-A415w E-ACPV mods on 6 total comp shingle roof sections:
 ENE (9 mods), SSE (8 & 2 mods), WSW (4 & 2 mods) & NNW (6 mods),
 @ 13° & 27° pitches.
 Rafters @ 24" o.c., visible in soffits

Mounting: Sunmodo EZ comp flashings + L-feet

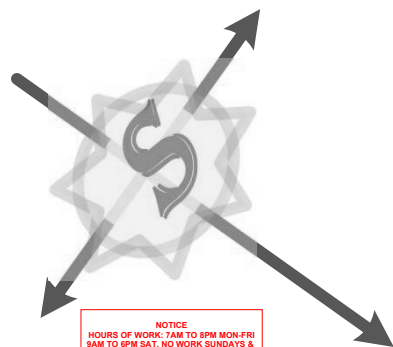
Racking: SMR rails

Distributed Load (PSF):
 2.5 lbs/sq.ft.

Wind Zone: 1 (90 mph)

Exposure Category: B

Access: 28' extension ladder @ front of house OR double ladder jump on back of house



NOTICE
 HOURS OF WORK: 7AM TO 5PM MON-FRI
 9AM TO 5PM SAT. NO WORK SUNDAYS &
 HOLIDAYS (PER KZC SEC. 115.25)
 Exceptions must be approved in
 writing by Planning Official

3 exterior solar components & PSE meter (under outdoor roof)

SEPERATE PERMIT REQUIRED
 A separate OTC electrical permit is required for new load center, EVSE (electric vehicle supply equipment), and energy storage systems

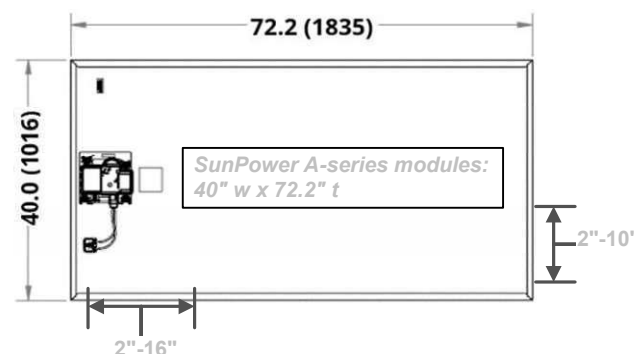
Firefighter Access Required
 36" clear Access
 18" clear from ridge and hips

Panels must adhere to height regulations in KZC 115.60

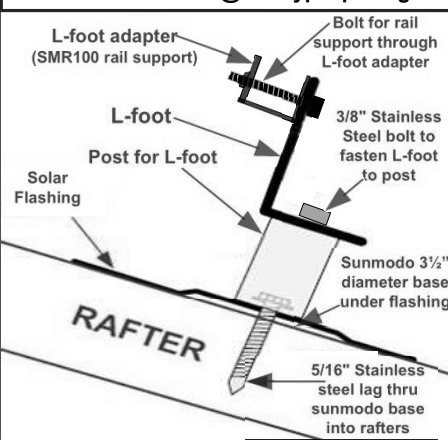
PRE-CON REQUIRED BEFORE THE PLACEMENT OF MODULES ON TO THE ROOF

Reviewed by
 Laszlo Farkas
 City of Kirkland
 Planning & Building
 04/04/2022

FRONT OF HOUSE



Sunmodo EZ comp roof Attachment Details – mounts @ 48" typ. spacing



28' extension ladder

“33% Rule Calculation:”
 Total roof = 3778 sq. ft.
 Module = 20.03 sq. ft.
 31 x 20.03 = 621 sq. ft.
 Arrays = 621 sq. ft
 350 sq. ft. < 33% = **yes**
 Array will take up 16.4% of total roof space

31 SPR-A415w-WHT E-ACPV w/ 384w microinverters – 1 string of 11 + 2 of 10 mods

Utility/District: PSE City of Kirkland	PROPERTY OF Sunergy Systems Hedlund, Bruce	SUNERGY SYSTEMS™ 4546 Leary Way NW Seattle, WA 98107
Drawn By: Michael Pogorzelski	Project: 12.87 kW SunPower E-ACPV Photovoltaic system	
Approved by: Jon Lange, NABCEP Date: 3/7/2022	Site Address: 13628 NE 138 th St., Kirkland, WA 98034	Description: PV ROOF PLAN DRAWING

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Height of the array does
not exceed height of ridge

Panels must adhere to height
regulations in KZC 115.60

18" minimum

Ridge peak, max height
of existing roof
Solar Panel max height

Reviewed by
László Farkas
City of Kirkland
Planning & Building
04/04/2023

Solar panels

31 SPR-A415-WHT-AC Module:12.87W-DC PV Array- 10,819W AC Max Continuous Output

3 branch circuits AC modules:

SPR A415-ACPV
AC Modules
240AC/1.6ac
max output

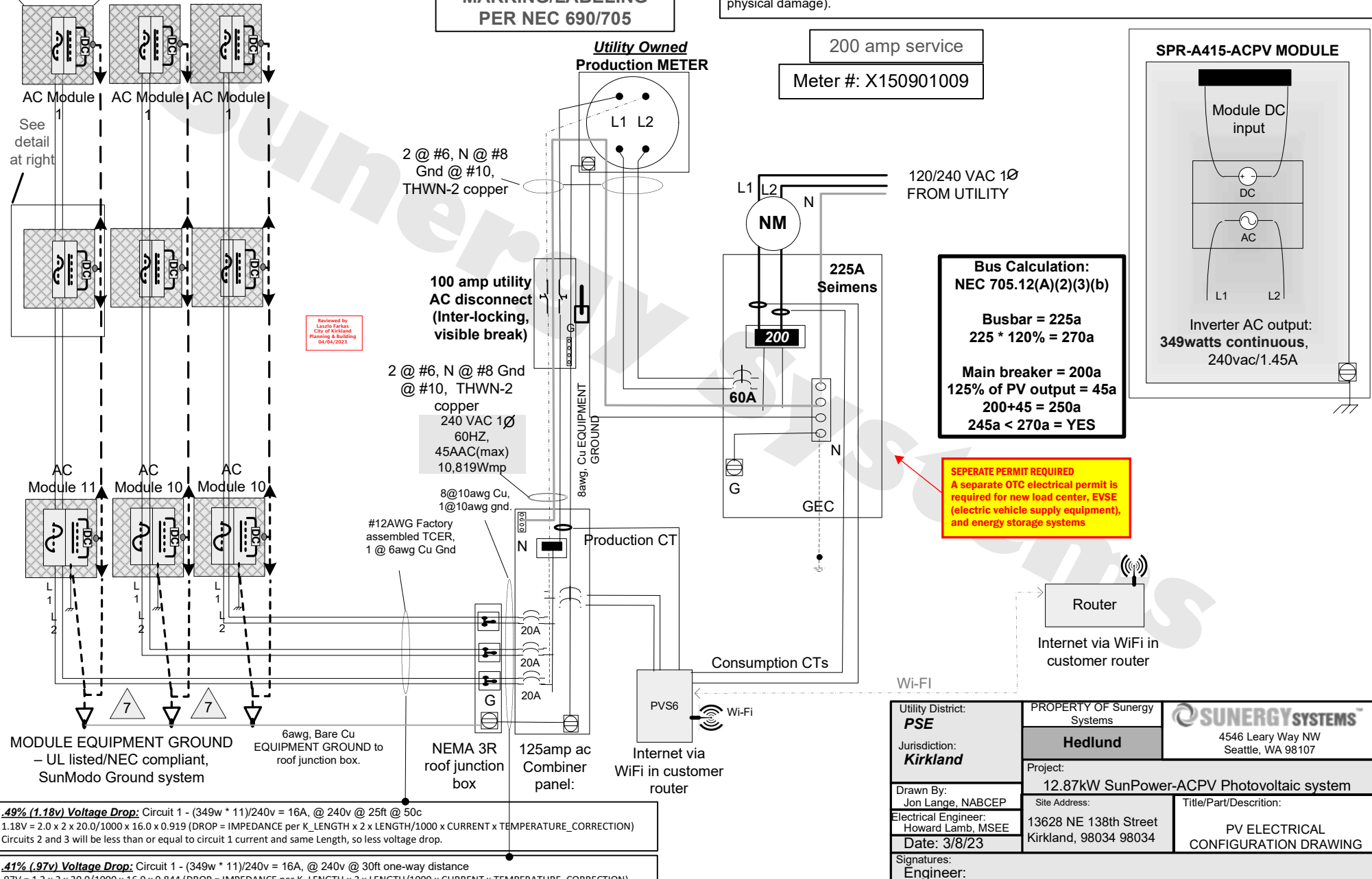
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SYSTEM INCLUDES RAPID
SHUTDOWN AND REQUIRED
LABELING. RAPID SHUTDOWN
IS INITIATED BY LOSS OF
UTILITY POWER.

MARKING/LABELING
PER NEC 690/705

MUST REMAIN ON
JOB SITE

- NOTES:
1. ALL AC PV MODULES SHALL BE CONNECTED WITH MANUFACTURER SUPPLIED CONNECTORS.
 2. INVERTER BRANCH CIRCUIT TRANSITION BOX SHALL BE LOCATED ON THE ROOF AND NEMA 3R RATED.
 3. ALL WIRES FROM ROOF TRANSITION BOX TO AC COMBINER PANEL SHALL BE 10AWG.THWN-2 AND IN CONDUIT TO MEET NEC CODE AND LIMIT VOLTAGE DROP TO LESS THAN 2%.
 4. WIRING IN DC CIRCUITS TO BE RATED 600V-90C, EXPOSED CABLES SUNLIGHT RESISTANT.
 5. PV SYSTEM Voc SHALL NEVER EXCEED 600 VDC.
 6. PRODUCTION METER & PV SYSTEM DISCONNECT SHALL BE LOCATED NEXT TO NET-METER.
 7. PV MODULE, AND RACKING GROUNDING CONDUCTOR SHALL BE 10AWG, (6awg where exposed to physical damage).





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SUNPOWER®

420–390 W Residential AC Module

SunPower® Maxeon® Technology

Built specifically for use with the SunPower Equinox™ system, the only fully integrated solution designed, engineered, and warranted by one manufacturer.

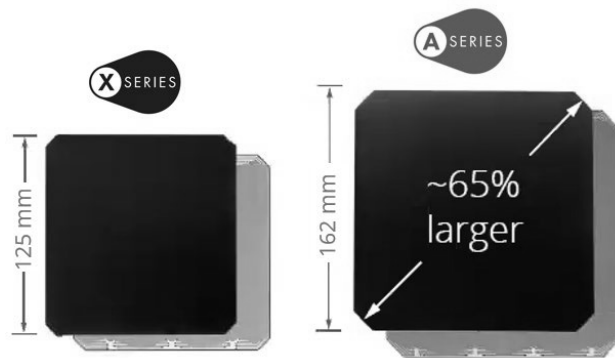


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Highest Power Density Available.

SunPower's new Maxeon® Gen 5 cell is 65% larger than prior generations, delivering the most powerful cell and highest-efficiency module in residential solar. The result is more power per square meter than any commercially available solar.



Fundamentally Different. And Better.



SunPower® Maxeon® Technology

- Most powerful cell in home solar ²
- Delivers unmatched reliability ³
- Patented solid metal foundation prevents breakage and corrosion



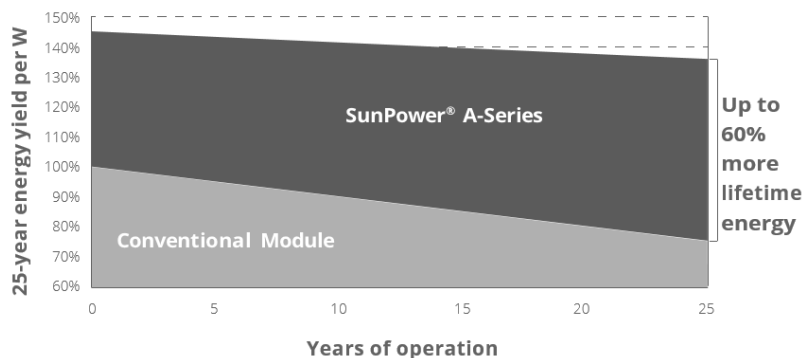
Factory-integrated Microinverter (MI)

- Highest-power integrated AC module in solar
- 60% lighter than prior SunPower MIs
- Engineered and calibrated by SunPower for SunPower AC modules



Highest Lifetime Energy and Savings.

Designed to deliver 60% more energy over 25 years in real-world conditions like partial shade and high temperatures.¹



Best Reliability. Best Warranty.

With more than 25 million modules deployed around the world, SunPower technology is proven to last. That's why we stand behind our module and microinverter with the industry's best 25-year Combined Power and Product Warranty, including the highest Power Warranty in solar.



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A-Series: A420 | A415 | A410 | A400 | A390 SunPower® Residential AC Module

JOB SITE

Electrical Data	
Inverter Model: SPWR-A4 (Enphase IQ 7AS)	@240 VAC
Peak Output Power	366 VA
Max. Continuous Output Power	349 VA
Nom. (L-L) Voltage/Range ² (V)	240 / 211–264
Max. Continuous Output Current (A)	1.45
Max. Units per 20 A (L-L) Branch Circuit ³	11
CEC Weighted Efficiency	97.0%
Nom. Frequency	60 Hz
Extended Frequency Range	47–68 Hz
AC Short Circuit Fault Current Over 3 Cycles	5.8 A rms
Overvoltage Class AC Port	III
AC Port Backfeed Current	18 mA
Power Factor Setting	1.0
Power Factor (adjustable)	0.7 lead. / 0.7 lag.

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DC Power Data					
	A420-G-AC	A415-G-AC	A400-G-AC	A390-G-AC	
Nom. Power ⁵ (P _{nom}) W	420	415	400	390	
Power Tol.	+5/-0%				
Module Efficiency	22.5	22.3	22.0	21.5	20.9
Temp. Coef. (Power)	-0.29%/°C				
Shade Tol.	Integrated module-level max. power point tracking				

Tested Operating Conditions	
Operating Temp.	-40°F to +185°F (-40°C to +85°C)
Max. Ambient Temp.	122°F (50°C)
Max. Test Load ⁷	Wind: 187 psf, 9000 Pa, 917 kg/m ² back Snow: 187 psf, 9000 Pa, 917 kg/m ² front
Design Load	Wind: 62 psf, 3000 Pa, 305 kg/m ² back Snow: 125 psf, 6000 Pa, 611 kg/m ² front
Impact Resistance	1 inch (25 mm) diameter hail at 52 mph (23 m/s)

Mechanical Data	
Solar Cells	66 Monocrystalline Maxis Gen 5
Front Glass	High-transmission tempered glass with anti-reflective coating
Environmental Rating	Outdoor rated
Frame	Class 1 black anodized (highest AAMA rating)
Weight	46.5 lbs (21.1 kg)
Recommended Max. Module Spacing	1.3 in. (33 mm)

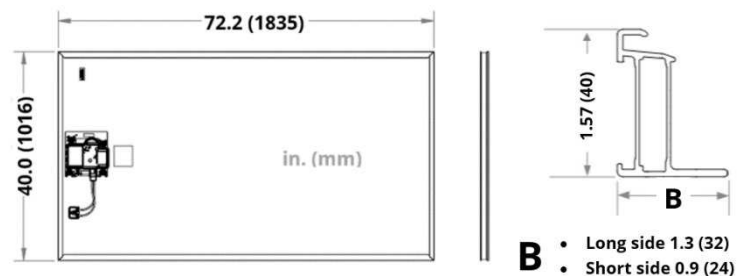
- 1 SunPower 415 W, 22.3% efficient, compared to a Conventional Panel on same-sized arrays (260 W, 16% efficient, approx. 1.6 m²), 7.9% more energy per watt (based on PVSyst pan files for avg. US climate), 0.5%/yr slower degradation rate (Jordan, et. al. "Robust PV Degradation Methodology and Application." PVSC 2018).
- 2 Based on search of datasheet values from websites of top 10 manufacturers per IHS, as of January 2019.
- 3 #1 rank in "Fraunhofer PV Durability Initiative for Solar Modules: Part 3." PV Tech Power Magazine, 2015. Campeau, Z. et al. "SunPower Module Degradation Rate," SunPower white paper, 2013.
- 4 Factory set to 1547a-2014 default settings. CA Rule 21 default settings profile set during commissioning.
- 5 Standard Test Conditions (1000 W/m² irradiance, AM 1.5, 25°C). NREL calibration standard: SOMS current, LACCS FF and voltage. All DC voltage is fully contained within the module.
- 6 This product is UL Listed as PVRSE and conforms with NEC 2014 and NEC 2017 690.12; and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors; when installed according to manufacturer's instructions.
- 7 Please read the safety and installation instructions for more information regarding load ratings and mounting configurations.

See www.sunpower.com/facts for more reference information.

For more details, see extended datasheet www.sunpower.com/datasheets Specifications included in this datasheet are subject to change without notice.

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Warranties, Certifications, and Compliance	
Warranties	• 25-year limited power warranty • 25-year limited product warranty
Certifications and Compliance	• UL 1703 • UL 1741 / IEEE-1547 • UL 1741 AC Module (Type 2 fire rated) • UL 62109-1 / IEC 62109-2 • FCC Part 15 Class B • ICES-0003 Class B • CAN/CSA-C22.2 NO. 107.1-01 • CA Rule 21 (UL 1741 SA)⁴ (includes Volt/Var and Reactive Power Priority) • UL Listed PV Rapid Shutdown Equipment⁶ Enables installation in accordance with: • NEC 690.6 (AC module) • NEC 690.12 Rapid Shutdown (inside and outside the array) • NEC 690.15 AC Connectors, 690.33(A)-(E)(1) When used with InvisiMount racking and InvisiMount accessories (UL 1703): • Module grounding and bonding through InvisiMount • Class A fire rated When used with AC module Q Cables and accessories (UL 6703 and UL 2238)⁶: • Rated for load break disconnect
PID Test	Potential-induced degradation free



Module Fire Performance: Type 2
Please read the Safety and Installation Instructions 532628 for additional details.

SUNPOWER®

534092 RevB

SUNMOD

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POP-ON

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TECHNOLOGY

LETS YOU

HEAR

WHEN IT

IS RIGHT

SMR Pitched Roof System

SunModo introduces the SMR Pitched Roof System, the best value pitched roof mounting system on the market.

With fast and easy Pop-On Clamps and L-Foot Adaptors, professional installers can mount, adjust, and secure PV panels with a single tool.

Whether rafter or deck, portrait or landscape, the SMR System is the ideal solution for your solar installation. Save money on materials and installation time.

The SMR System Advantage

- ✓ The best value, best performing rail system on the market
- ✓ Lag-to-Panel single tool installation
- ✓ Pop-On universal clamps make installation fast, reliable and flexible
- ✓ A full range of roof attachments to meet every need
- ✓ Fastest install and lowest cost

The SMR System represents a huge leap in racking technology. Optimized design makes the SMR Rails not only the lightest but also the strongest rails on the market. One tool assembly and Pop-On technology allow fast and worry-free installation. The cost and performance cannot be beaten.

**SMR100 Rail****SMR200 Rail**

Reviewed by
Lindsay Turkus
City of Kirkland
Planning & Building
04/04/2023

Clamps & Grounding



Mid Clamp

The Bonding Pop-On Universal Mid Clamps accommodate PV module frame heights ranging from 30mm to 50mm. The fastest installing Mid Clamps on the market.



L Foot Adaptor

Fast and easy Pop-On L-Foot Adaptor speeds installation and eliminates old-fashioned T-Bolts. Install fast with full confidence in every attachment.



End Clamp

Universal height accommodates 30mm to 50mm module frame thicknesses. Pop-On Clamp provides fast and easy install with a single SKU for any install.



Rail Splice

Fully structural bonding splice with fast and easy single bolt installation



Shared Rail Mid/End Clamp

Easily adapt racking to Shared Rail install. Uses the same Pop-On technology as standard clamps to provide fast and easy install.



Grounding Lug

The Lug provides proper grounding of the PV System

Technical Data

Application	Pitched Roof
Roof Type	Composition shingle, Metal and Tile
Material	High grade aluminum and 304 stainless steel hardware
PV Modules	Compatible with all common module types
Module Orientation	Portrait and landscape
Roof Attachment	Rafter and decking
Structural Integrity	IBC compliant, stamped engineering letters available
Certificate	UL 2703 listed by ETL
Warranty	25 years

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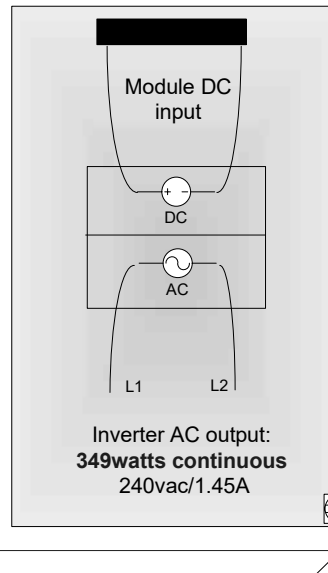
PV Array:

31 SPR-A415-WHT-AC Modules:12.87W-DC PV Array-
10,819W AC Max Continuous Output
3 branch circuits AC modules: 11, 10, 10

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Solar Module:
SPR A415-ACPV
AC Modules
240AC/1.6ac max
output

SPR-A415-ACPV MODULE



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Main Bus Calculation:
NEC 705.12(A)(2)(3)(b)

Panel Busbar = 225a
 $225 * 120\% = 270a$

Main breaker = 200a
 $125\% \text{ of PV output} = 45a$
 $200+45 = 250a$
 $245a < 270a = \text{YES}$

Utility District: PSE	PROPERTY OF Sunergy Systems	 4546 Leary Way NW Seattle, WA 98107
Jurisdiction: Kirkland	Hedlund	
Drawn By: Jon Lange, NABCEP	Project: 12.87kW SunPower-ACPV Photovoltaic system	
Electrical Engineer: Howard Lamb, MSEE	Site Address: 13628 NE 138th Street Kirkland, 98034 98034	Title/Part/Description: PV ELECTRICAL CONFIGURATION DRAWING
Date: 3/8/23		
Signatures: Engineer:		