

PHOTOVOLTAIC ROOF MOUNT SYSTEM

06 MODULES-ROOF MOUNTED - 2.490 kW DC, 2.304 kW AC  
929 N 33RD ST, MILWAUKEE, WI 53208

PHOTOVOLTAIC SYSTEM SPECIFICATIONS:

SYSTEM SIZE: 2.490 KW DC  
2.304 KW AC  
MODULE TYPE & AMOUNT: (06) SUNPOWER SPR-M415-BLK-H-AC (415W)  
MODULE DIMENSIONS: (L/W/H) 73.7"/40.6"/1.57"  
INVERTER: (06) ENPHASE IQ7HS-66-M-US [240V,1-PHASE]  
EXISTING SYSTEM MODULE: (10) EXISTING MODULE  
EXISTING SYSTEM INVERTER: (01) SOLECTRIA PV INVERTER [240V,1-PHASE]  
INVERTER: (01) EG4 FLEXBOSS21 HYBRID INVERTER  
STORAGE: (01) EG4 POWERPRO BATTERY (14.3KWH)  
INTERCONNECTION METHOD: WHOLE HOME BACKUP

GENERAL STRUCTURAL NOTES:

- a. THE SOLAR PANELS ARE TO BE MOUNTED TO THE ROOF FRAMING USING THE PEGASUS COMP MOUNT & SUNPOWER INVISIMOUNT RAIL SYSTEM. THE MOUNTING FEET ARE TO BE SPACED AS SHOWN IN THE DETAILS, AND MUST BE STAGGERED TO ADJACENT FRAMING MEMBERS TO SPREAD OUT THE ADDITIONAL LOAD.
  - b. UNLESS NOTED OTHERWISE, MOUNTING ANCHORS SHALL BE 5/16" LAG SCREWS WITH A MINIMUM OF 2 1/2" PENETRATION INTO ROOF FRAMING.
  - c. THE PROPOSED PV SYSTEM ADDS 3.0 psf TO THE ROOF FRAMING SYSTEM.
1. ROOF LIVE LOAD = 20 psf TYPICAL, 0 psf UNDER NEW PV SYSTEM.
  2. GROUND SNOW LOAD = 30 psf
  3. WIND SPEED = 109 mph
  4. EXPOSURE CATEGORY = C

SHEET INDEX:

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PV 0.1: PLOT PLAN  
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E 1.4: PLACARD  
D 1.1+: EQUIPMENT SPEC SHEET

GOVERNING CODES

- ALL WORK SHALL CONFORM TO THE FOLLOWING CODES
- a. 2017 NATIONAL ELECTRICAL CODE
  - b. 2015 INTERNATIONAL RESIDENTIAL CODE
  - c. 2024 WISCONSIN UNIFORM DWELLING CODE
  - d. 2015 INTERNATIONAL ENERGY CONSERVATION CODE
  - e. ANY OTHER LOCAL AMENDMENTS

AUTHORITIES HAVING JURISDICTION:

BUILDING: MILWAUKEE CITY  
ZONING: MILWAUKEE CITY  
UTILITY: WE ENERGIES  
UTILITY METER NO: N/A

GENERAL ELECTRIC NOTES:

1. ALL COMPONENTS ARE UL LISTED AND NEC CERTIFIED, WHERE WARRANTED.
2. THE SOLAR PV SYSTEM WILL BE INSTALLED IN ACCORDANCE WITH ARTICLE 690 OF THE NEC 2017.
3. THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION.
4. ALL CONDUCTORS OF A CIRCUIT, INCLUDING THE EGC, MUST BE INSTALLED IN THE SAME RACEWAY, OR CABLE, OR OTHERWISE RUN WITH THE PV ARRAY CIRCUIT CONDUCTORS WHEN THEY LEAVE THE VICINITY OF THE PV ARRAY.
5. WHERE METALLIC CONDUIT CONTAINING DC CONDUCTORS IS USED INSIDE THE BUILDING, IT SHALL BE IDENTIFIED AS "CAUTION: SOLAR CIRCUIT" EVERY 10FT.
6. HEIGHT OF THE AC DISCONNECT SHALL NOT EXCEED 6'-7" PER NEC CODE 240.24.
7. A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH CEC 690.47 AND 250.50 THROUGH 60 AND 250-166 SHALL BE PROVIDED. PER NEC GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE OR INADEQUATE A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT. GROUND ROD WITH ACORN CLAMP. GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO LARGER THAN #6 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE FOR A COMPLETE SYSTEM.
8. PHOTOVOLTAIC MODULES ARE TO BE CONSIDERED NON-COMBUSTIBLE.
9. PHOTOVOLTAIC INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING. MECHANICAL, OR BUILDING ROOF VENTS.
10. ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE. WIRING MUST BE PERMANENTLY AND COMPLETELY HELD OFF THE ROOF SURFACE.
11. ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH THE LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.
12. AS SPECIFIED BY THE AHJ, EQUIPMENT USED IN UNGROUNDED SYSTEMS LABELED ACCORDING TO NEC 690.35(F).
13. INVERTER(S) USED IN UNGROUNDED SYSTEM SHALL BE LISTED FOR THIS USE [NEC 690.35(G)].
14. THE INSTALLATION OF EQUIPMENT AND ALL ASSOCIATED WIRING AND INTERCONNECTION SHALL BE PERFORMED ONLY BY QUALIFIED PERSONS [NEC 690.4(C)]
15. ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R RATED (OR BETTER), INCLUDING ALL ROOF MOUNTED TRANSITION BOXES AND SWITCHES.
16. ALL EQUIPMENT SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH NEC ARTICLE 250.
17. SYSTEM GROUNDING SHALL BE IN ACCORDANCE WITH NEC 690.41.
18. PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION IN ACCORDANCE WITH NEC 690.12
19. DISCONNECTING MEANS SHALL BE LOCATED IN A VISIBLE, READILY ACCESSIBLE LOCATION WITHIN THE PV SYSTEM EQUIPMENT OR A MAXIMUM OF 10 FEET AWAY FROM THE SYSTEM [NEC 690.13(A)]
20. ALL WIRING METHODS SHALL BE IN ACCORDANCE WITH NEC 690.31
21. WORK CLEARANCES AROUND ELECTRICAL EQUIPMENT WILL BE MAINTAINED PER NEC 110.26(A)(1), 110.26(A)(2) AND 110.26(A)(3).
22. ROOFTOP MOUNTED PHOTOVOLTAIC PANELS AND MODULES SHALL BE TESTED, LISTED & IDENTIFIED IN ACCORDANCE WITH UL1703
23. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.



**WOLF RIVER ELECTRIC**  
101 ISANTI PARKWAY NE, SUITE G  
ISANTI, MN 55040  
ELECTRICAL CONTRACTOR: 1522577  
EXPIRATION DATE: 6/30/2028  
CONTACT: (763) 229-6662  
contact@wolfriverelectric.com

REVISIONS		
Description	Date	Rev
CAD 1	SEP. 27, 2025	00
CAD 2	OCT. 25, 2025	01

Signature with Seal

Project Name & Address  
  
TOM FRITZ RESIDENCE  
929 N 33RD ST, MILWAUKEE, WI 53208  
AHJ: MILWAUKEE CITY  
UTILITY: WE ENERGIES

DESIGNED BY:



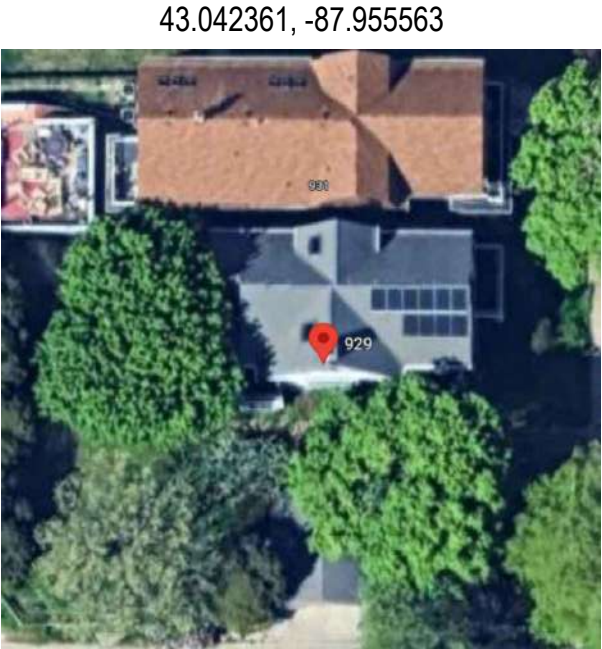
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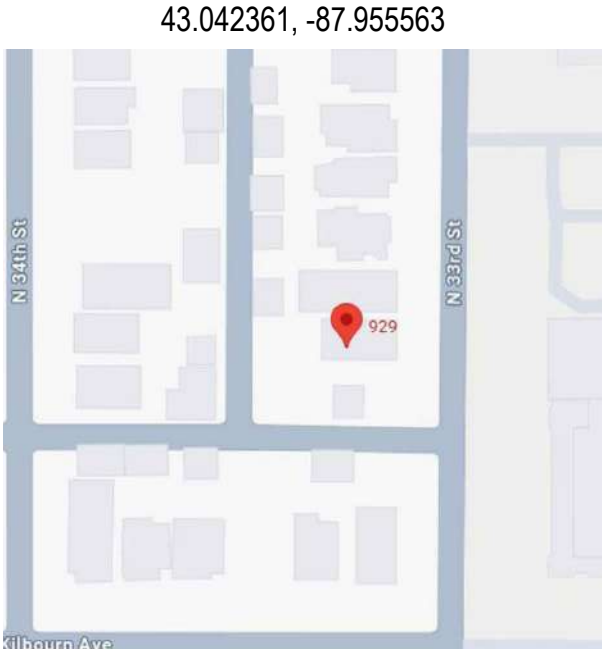
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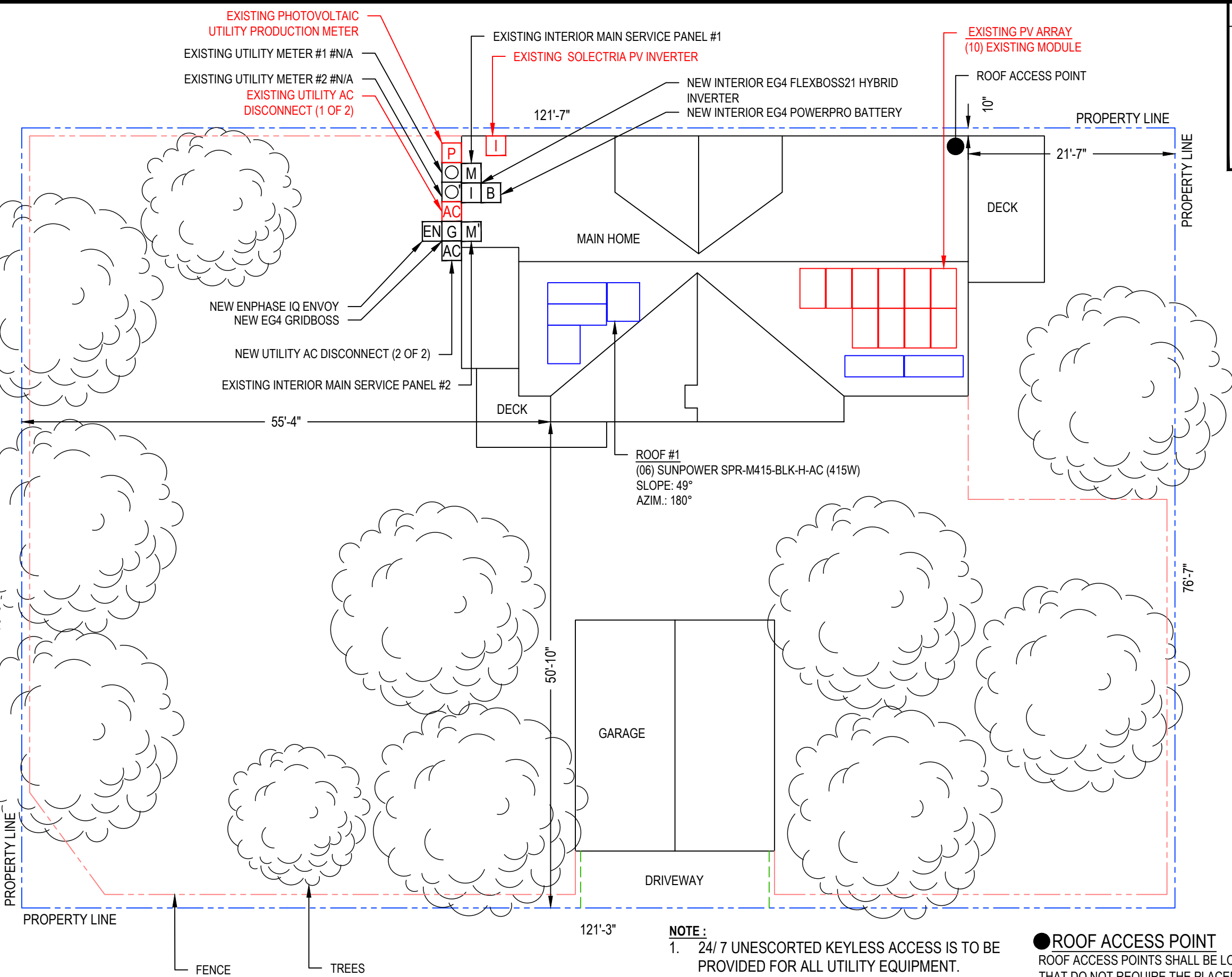
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1 SATELLITE VIEW  
PV 0.0 SCALE: NTS



2 VICINITY MAP  
PV 0.0 SCALE: NTS



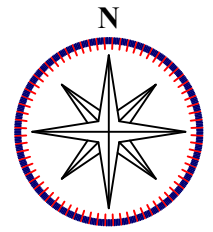
SYSTEM LEGEND

LOT: 0.21 ACRES  
PARCEL: 3880608100

PROPERTY LINE

FENCE LINE

DRIVEWAY



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Sheet Name  
PLOT PLAN

Sheet Size  
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11" X 17"

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PV 0.1

NOTE :

- 24/ 7 UNESCORTED KEYLESS ACCESS IS TO BE PROVIDED FOR ALL UTILITY EQUIPMENT.
- UTILITY AC DISCONNECT SHOULD BE LOCATED TOGETHER VISIBLE-OPEN, LOCKABLE & READILY ACCESSIBLE LOCATION WITHIN 10' OF THE MAIN SERVICE METER.

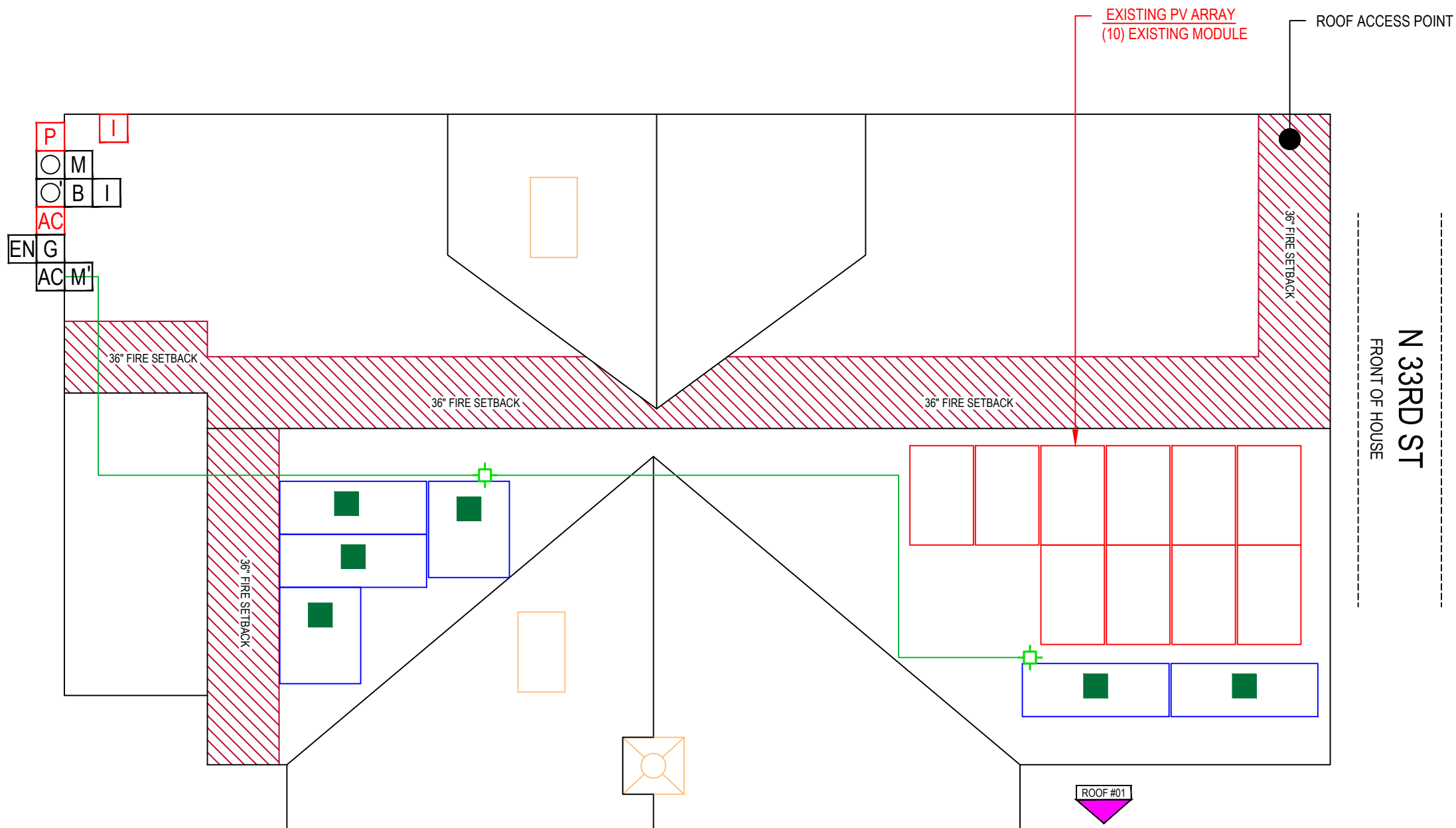
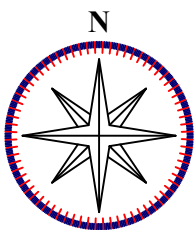
● ROOF ACCESS POINT  
ROOF ACCESS POINTS SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS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

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SYSTEM LEGEND

- EXISTING EXTERIOR UTILITY METER # 1 #N/A.
- EXISTING EXTERIOR UTILITY METER # 2 #N/A.
- EXISTING INTERIOR MAIN SERVICE PANEL #1
- EXISTING INTERIOR MAIN SERVICE PANEL #2
- NEW UTILITY AC DISCONNECT (2 OF 2)
- NEW EG4 GRIDBOSS
- NEW ENPHASE IQ ENVOY
- NEW EG4 FLEXBOSS21 HYBRID INVERTER
- NEW (01) EG4 POWERPRO BATTERY
- EXISTING UTILITY AC DISCONNECT 1 OF 2
- NEW UTILITY PV PRODUCTION METER
- EXISTING SOLECTRIA PV INVERTER
- 06 NEW SUNPOWER SPR-M415-BLK-H-AC (415W) MODULES NEW 06 - ENPHASE IQ7HS-66-M-US [240V, 1 PHASE] INVERTERS, MOUNTED ON THE BACK OF EACH MODULE.
- (10) EXISTING MODULE
- FIRE PATHWAY
- ROOF OBSTRUCTIONS
- = EXTERIOR RUN
- = CONDUIT ROOF TOP JUNCTION BOX

ROOF SECTIONS

- ROOF #01 MODULE - 06  
SLOPE - 49°  
AZIMUTH - 180°  
MATERIAL - COMPOSITION SHINGLE  
RAFTERS SIZE & SPACING - 2"x4" @ 24" O.C.

NOTE:  
ROOFTOP RUN CONDUIT SHALL BE MINIMUM 7/8 INCHES FROM ROOF SURFACE.

TOTAL ROOF AREA: 1507ft<sup>2</sup>  
TOTAL MODULE AREA: 125ft<sup>2</sup>  
TOTAL AREA COVERED: 8.27%



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Sheet Name

SITE PLAN

Sheet Size

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PV 1.0

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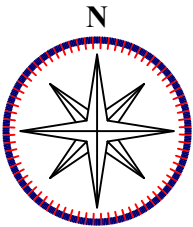
SITE PLAN

PV 1.0

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



NOTE: THE MAXIMUM CANTILEVER OF THE RAIL SHALL BE 1/3 OF THE ATTACHMENT SPACING.



SYSTEM LEGEND

- = ATTACHMENT POINTS(25 Nos)
- = RAFTERS
- = RAIL SYSTEM

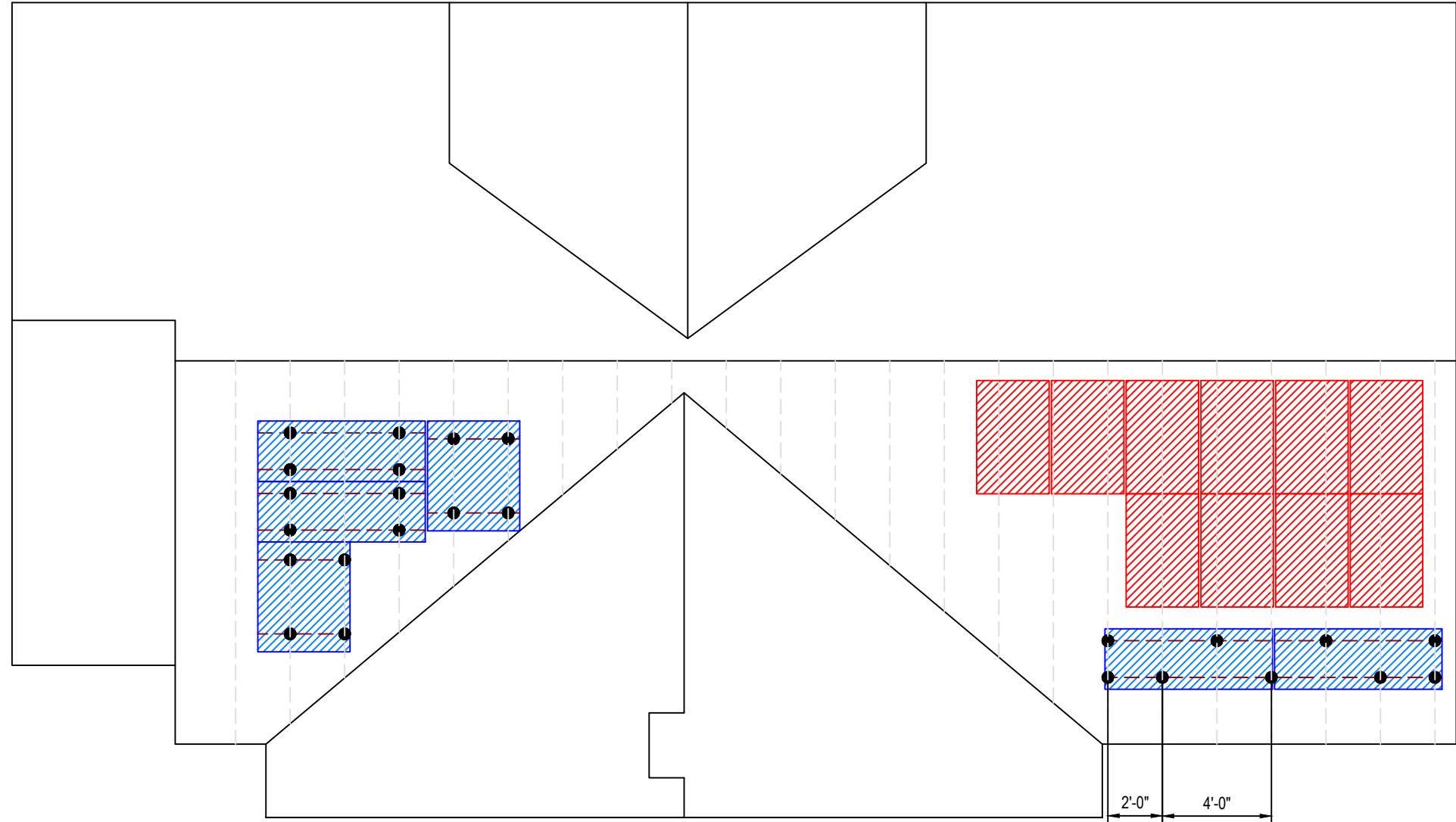
CIRCUIT(S)

CIRCUIT #01

# MODULE - 06

CIRCUIT #10

EXISTING MODULE



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Sheet Name

**ATTACHMENT & STRING LAYOUT**

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**11" X 17"**

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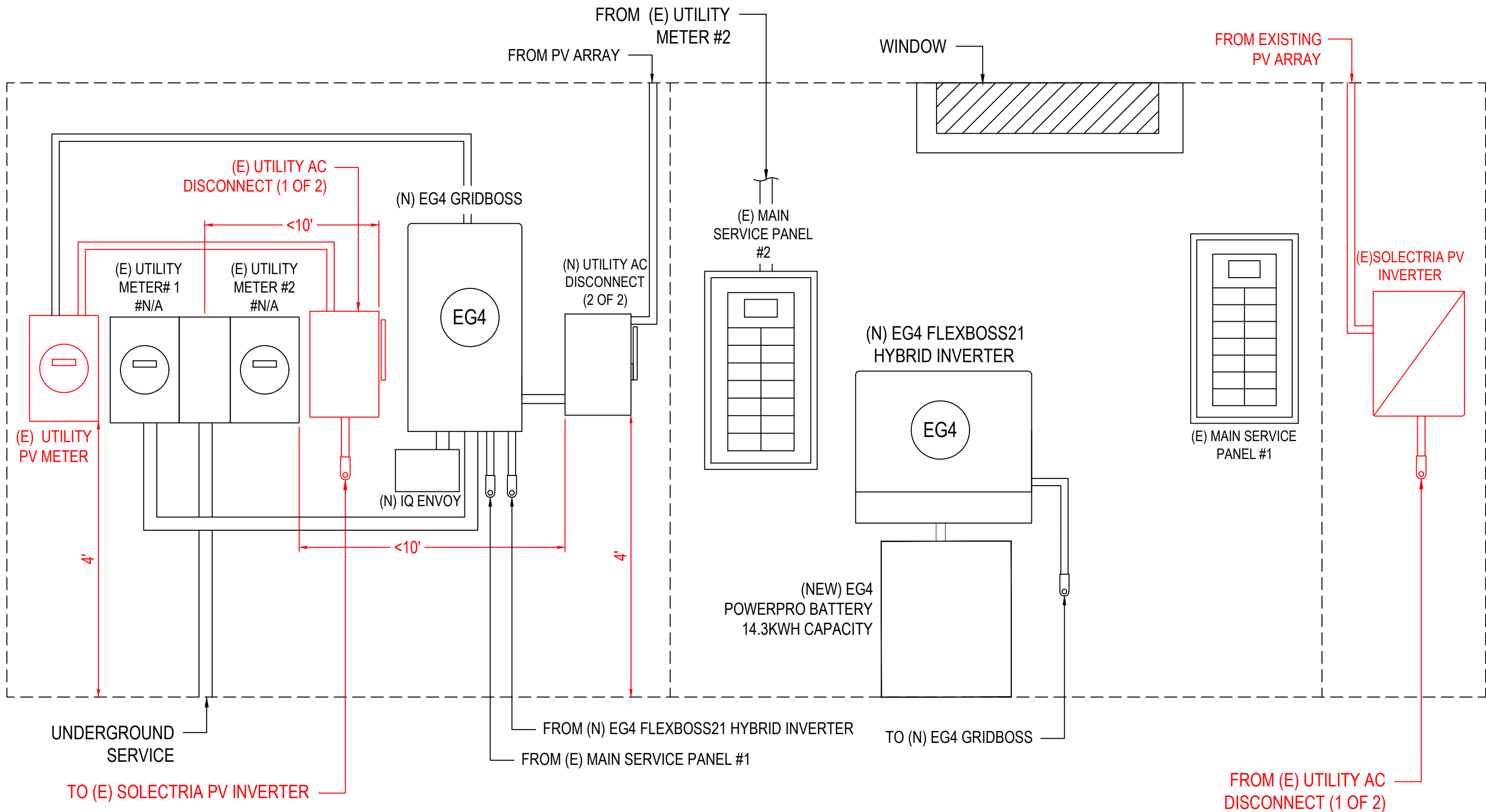
**PV 1.1**

MODULE, ARRAY & ATTACHMENT POINT WEIGHT

	Quantity	Lbs./Unit	Lbs./Qty.
Module	06	40	240.00
Mount Blk	25	4.50	112.50
Coupling Blk	8	4.00	32.00
Microinverters	06	2.38	14.28
Flashing	25	1.00	25.00
Slidecomp	25	1.00	25.00
Clip SS	06	1.00	6.00
Total Point Attachment Load per Standoff			18.19
Total System Weight (LBS.)			454.78
Attachment Point Weight (LBS.) Per Sq.Ft.		System Weight / Array Area	3.65
ARRAY AREA			
Module Area	Module Dim (73.7" x 40.6")		20.78 SQ. FT.
Area of Array			124.68 SQ. FT.
Roof Area			1507 SQ. FT.
Roof Coverage (in percentage)	Roof Area/Array Area		8.27%

# EXTERIOR WALL

# INTERIOR WALL



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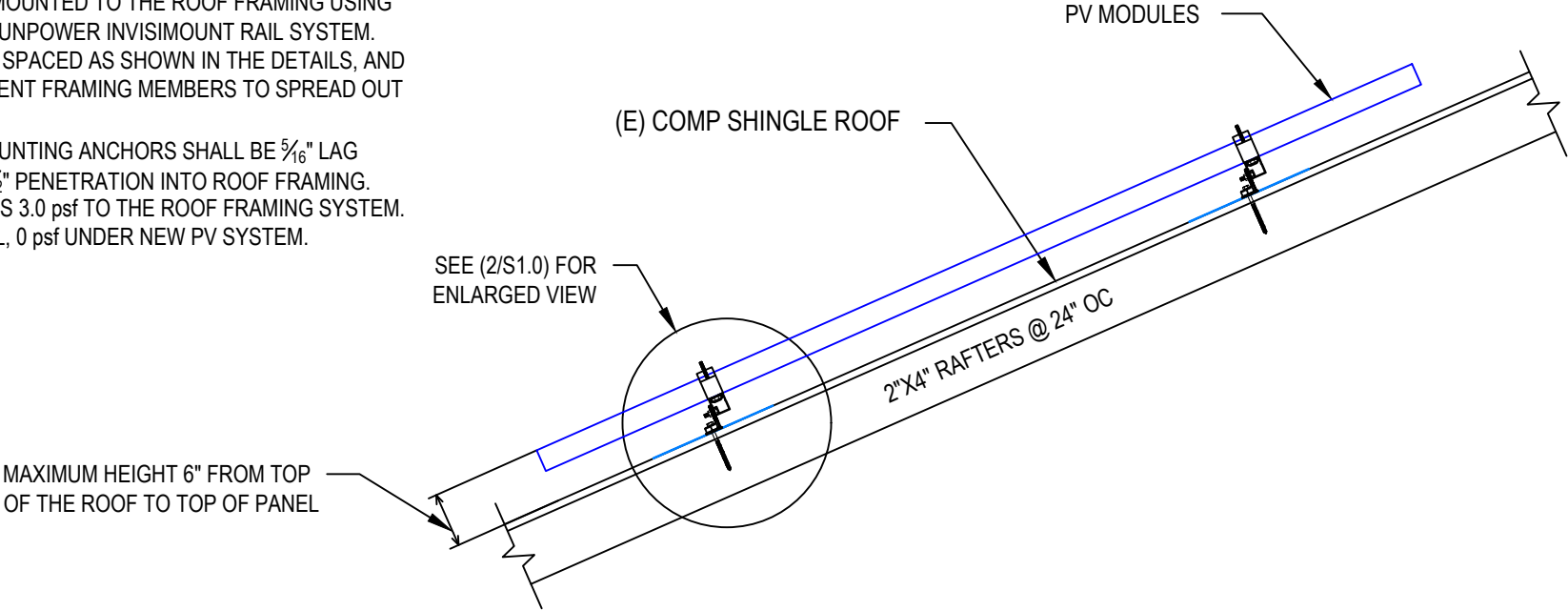
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Sheet Size  
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Sheet Number  
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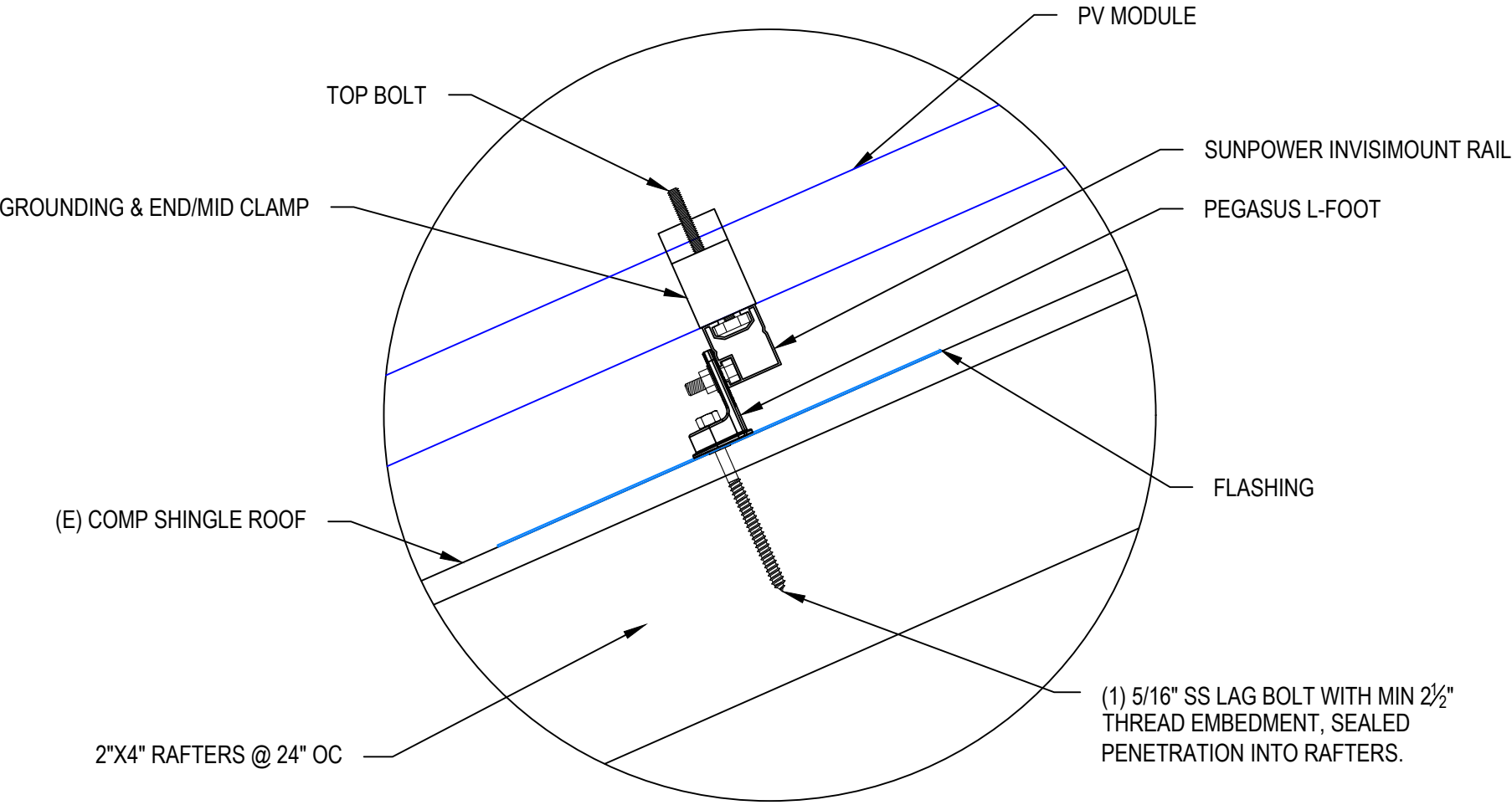
GENERAL STRUCTURAL NOTES:

- a. THE SOLAR PANELS ARE TO BE MOUNTED TO THE ROOF FRAMING USING THE PEGASUS COMP MOUNT & SUNPOWER INVISIMOUNT RAIL SYSTEM. THE MOUNTING FEET ARE TO BE SPACED AS SHOWN IN THE DETAILS, AND MUST BE STAGGERED TO ADJACENT FRAMING MEMBERS TO SPREAD OUT THE ADDITIONAL LOAD.
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2. GROUND SNOW LOAD = 30 psf
3. WIND SPEED = 109 mph
4. EXPOSURE CATEGORY = C



1 ATTACHMENT DETAIL

S 1.0 SCALE: NTS



2 ATTACHMENT DETAIL (enlarged view)

S 1.0 SCALE: NTS



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Sheet Name  
**MOUNT DETAILS**

Sheet Size  
**ANSI B  
11" X 17"**

Sheet Number  
**S 1.0**

NOTE :

- 24/ 7 UNESCORTED KEYLESS ACCESS IS TO BE PROVIDED FOR ALL UTILITY EQUIPMENT.
- UTILITY AC DISCONNECT SHOULD BE LOCATED TOGETHER VISIBLE-OPEN, LOCKABLE & READILY ACCESSIBLE LOCATION WITHIN 10' OF THE MAIN SERVICE METER.

Photovoltaic System	
DC System Size (Watts)	2490
AC System Size (Watts)	2304
Total Module Count	06

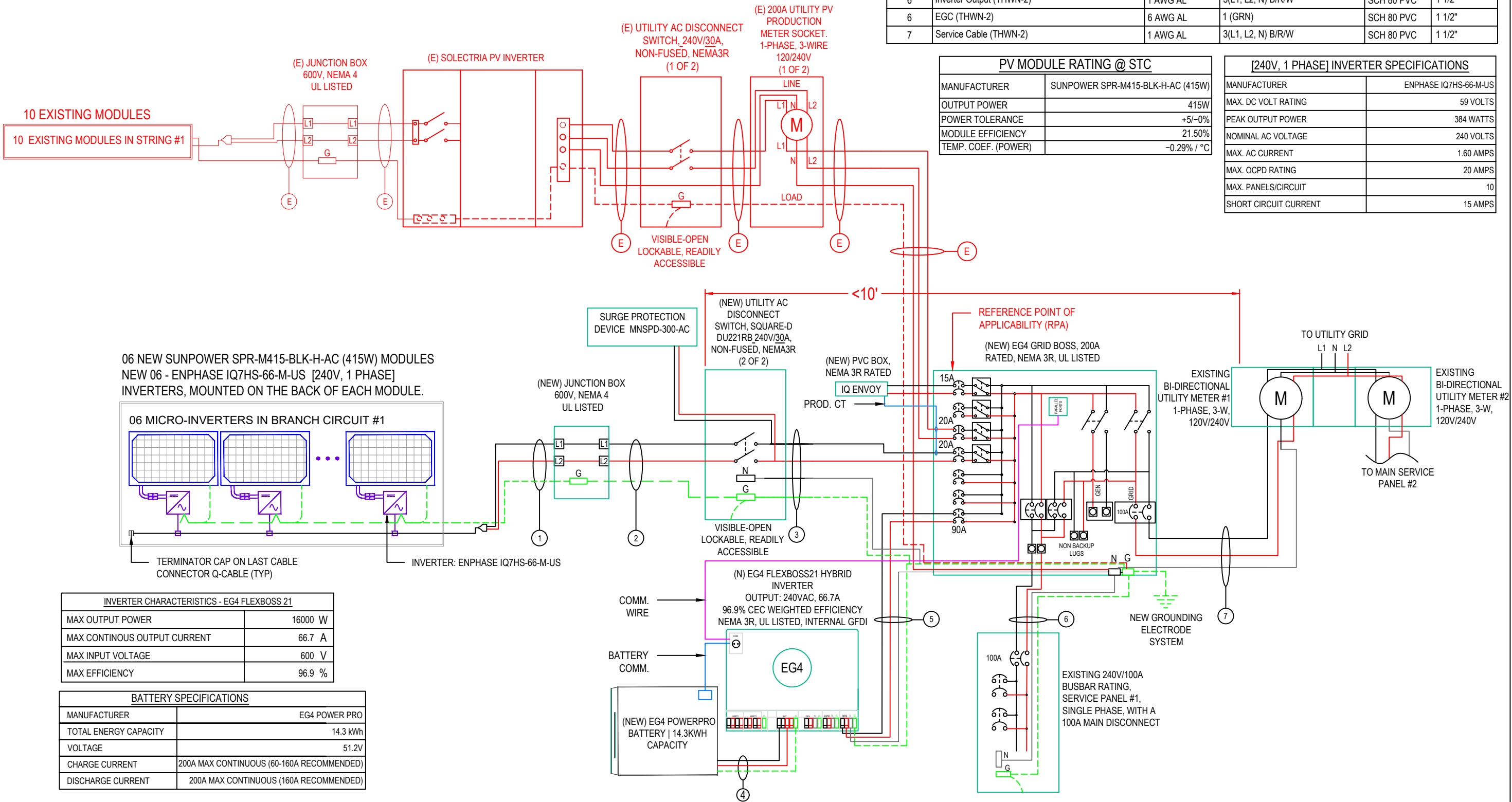
AHJ: MILWAUKEE CITY  
UTILITY: WE ENERGIES

NOTE: UTILITY AC DISCONNECT TO BE INSTALLED WITHIN 10FT FROM UTILITY METER.

Conduit Conductor Schedule (Unless Otherwise Specified Conductors Shall be Copper)					
Tag #	Description	Wire Gauge	# of Conductors/Color	Conduit Type	Conduit Size
1	Inverter Output(Enphase Q Cable)	12 AWG	2(1L1, 1L2)	Free Air	N/A
1	EGC (Bare Copper Ground)	6 AWG	1 BARE	Free Air	N/A
2	Inverter Output (THWN-2)	12 AWG	2(1L1, 1L2)	PVC	1"
2	EGC (THWN-2)	12 AWG	1 (GRN)	PVC	1"
3	Inverter Output (THWN)	10 AWG	3(L1, L2, N) B/R/W	SCH 80 PVC	1"
3	EGC (THWN)	10 AWG	1 (GRN)	SCH 80 PVC	1"
4	Battery Output (THWN-2)	2/0 AWG	2(L1, L2) B/R	SCH 80 PVC	2"
4	EGC (THWN-2)	6 AWG	1 (GRN)	SCH 80 PVC	2"
5	Inverter Output (THWN)	1 AWG AL	3(L1, L2, N) B/R/W	SCH 80 PVC	1 1/2"
5	EGC (THWN)	6 AWG AL	1 (GRN)	SCH 80 PVC	1 1/2"
6	Inverter Output (THWN-2)	1 AWG AL	3(L1, L2, N) B/R/W	SCH 80 PVC	1 1/2"
6	EGC (THWN-2)	6 AWG AL	1 (GRN)	SCH 80 PVC	1 1/2"
7	Service Cable (THWN-2)	1 AWG AL	3(L1, L2, N) B/R/W	SCH 80 PVC	1 1/2"

PV MODULE RATING @ STC	
MANUFACTURER	SUNPOWER SPR-M415-BLK-H-AC (415W)
OUTPUT POWER	415W
POWER TOLERANCE	+5/-0%
MODULE EFFICIENCY	21.50%
TEMP. COEF. (POWER)	-0.29% / °C

[240V, 1 PHASE] INVERTER SPECIFICATIONS	
MANUFACTURER	ENPHASE IQ7HS-66-M-US
MAX. DC VOLT RATING	59 VOLTS
PEAK OUTPUT POWER	384 WATTS
NOMINAL AC VOLTAGE	240 VOLTS
MAX. AC CURRENT	1.60 AMPS
MAX. OCPD RATING	20 AMPS
MAX. PANELS/CIRCUIT	10
SHORT CIRCUIT CURRENT	15 AMPS



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TRIVENT CAD SOLUTION

Sheet Name

**3-LINE DIAGRAM**

Sheet Size

**ANSI B**  
**11" X 17"**

Sheet Number

**E 1.1**

PV MODULE RATING @ STC	
MANUFACTURER	SUNPOWER SPR-M415-BLK-H-AC (415W)
OUTPUT POWER	415W
POWER TOLERANCE	+5/-0%
MODULE EFFICIENCY	21.50%
TEMP. COEF. (POWER)	-0.29% / °C

[240V, 1 PHASE] INVERTER SPECIFICATIONS	
MANUFACTURER	ENPHASE IQ7HS-66-M-US
MAX. DC VOLT RATING	59 VOLTS
PEAK OUTPUT POWER	384 WATTS
NOMINAL AC VOLTAGE	240 VOLTS
MAX. AC CURRENT	1.60 AMPS
MAX. OCPD RATING	20 AMPS
MAX. PANELS/CIRCUIT	10
SHORT CIRCUIT CURRENT	15 AMPS

INVERTER CHARACTERISTICS - EG4 FLEXBOSS 21	
MAX OUTPUT POWER	16000 W
MAX CONTINOUS OUTPUT CURRENT	66.7 A
MAX INPUT VOLTAGE	600 V
MAX EFFICIENCY	96.9 %

BATTERY SPECIFICATIONS	
MANUFACTURER	EG4 POWER PRO
TOTAL ENERGY CAPACITY	14.3 kWh
VOLTAGE	51.2V
CHARGE CURRENT	200A MAX CONTINUOUS (60-160A RECOMMENDED)
DISCHARGE CURRENT	200A MAX CONTINUOUS (160A RECOMMENDED)

Rooftop conductor ampacities designed in compliance with art. 690.8, Tables 310.15(B)(2)(a), 310.15(B)(3)(a), 310.15(B)(3)(c), 310.15(B)(16), Chapter 9 Table 4, 5, & 9. Location specific temperature obtained from ASHRAE 2017 data tables

RECORD LOW TEMP	-24°
AMBIENT TEMP (HIGH TEMP 2%)	32°
CONDUIT HEIGHT	7/8"
CONDUCTOR TEMPERATURE RATE ON ROOF	90°
CONDUCTOR TEMPERATURE RATE OFF ROOF	75°

THIS PANEL IS FED BY MULTIPLE SOURCES (UTILITY AND SOLAR)	
AC OUTPUT CURRENT ACCORDING TO ART. 690.8(B)(1)	9.60A
NOMINAL AC VOLTAGE	240V

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN CONDUIT
.80	4-6
.70	7-9
.50	10-20

### OCPD Calculations

Breakers sized according to continuous duty output current. PV circuit nominal current based off # of modules per Circuit X (1.25[art. 690.8(A)]) X (1.6 Max AC current per micro-inverter)  
Circuit #1 = 06 modules, Output Current w/ continuous duty = 12.00 <= 20A Breaker


system output current w/ continuous duty = 12.00 <= 20A (System OCPD)

### Conductor Calculations

Wire gauge calculated from code art. 310.15(B)(16) with ambient temperature calculations from art. 310.15(B)(2)(a).  
For "On Roof" conductors we use the 90°C column ampacity, the relevant ambient temperature adjustment, and raceway fill adjustments from 310.15(B)(16). Conduit shall be installed at least 7/8" above the roof surface.  
For "Off Roof" conductors we use the 75°C column ampacity, or the 75°C column ampacity with the relevant ambient temperature and raceway fill adjustments, whichever is less.The rating of the conductor after adjustments MUST be greater than, or equal to, the continuous duty output current.  
Calculation Example - Wire Rating x Ambient Temperature Adjustment x Conduit Fill Adjustment >= Continuous Duty Output Current  
(Tag 2 On Roof):  
12 gauge wire rated for 30 A, 30 A x 0.96 x 1 (2 Conductors) = 28.8A > 12.00A  
(Tag 3 Off Roof):  
10 gauge wire rated for 35A , 35A x 0.94 =32.9A > 12.00A (System Output Current)  
(Tag 4 Off Roof):  
2/0 gauge wire rated for 200A Service as per NEC Table 310.12  
(Tag 5 Off Roof):  
1 gauge AL wire rated for 100A , 100A x 0.94 =94.0A > 83.38A (System Output Current)  
(Tag 6, 7 Off Roof):  
1/0 gauge AL wire rated for 100A Service as per NEC Table 310.12

### ELECTRICAL NOTES

- Designed according to and all code citations are relevant to the 2017 National Electrical Code.
- Tag 2-Use 96% temperature derate for conditions of use (On Roof)
- Tag 3 - Use 94% temperature derate for conditions of use (adjusted ambient)
- Bottom of conduit to be installed min. 7/8" above roof surface.
- System grounding & bonding designed in compliance with 690.47(C)3 and 250.64(E)
- Equipment shall be listed, tested, and marked to withstand the available short circuit current



**WOLF RIVER ELECTRIC**  
101 ISANTI PARKWAY NE, SUITE G  
ISANTI, MN 55040  
ELECTRICAL CONTRACTOR: 1522577  
EXPIRATION DATE: 6/30/2028  
CONTACT: (763) 229-6662  
contact@wolfriverelectric.com

REVISIONS		
Description	Date	Rev
CAD 1	SEP. 27, 2025	00
CAD 2	OCT. 25, 2025	01

Signature with Seal

Project Name & Address

TOM FRITZ RESIDENCE

929 N 33RD ST, MILWAUKEE, WI 53208

AHJ: MILWAUKEE CITY  
UTILITY: WE ENERGIES

DESIGNED BY:



**TRIVENTCAD**

TRIVENT CAD SOLUTION

Sheet Name

WIRE  
CALCS

Sheet Size

ANSI B  
11" X 17"

Sheet Number

E 1.2



⚠️

WARNING

ELECTRICAL SHOCK HAZARD

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

LABEL LOCATION: COMBINER PANEL, UTILITY AC  
DISCONNECT, POINT OF INTERCONNECTION  
PER CODE: NEC 690.13(B)

⚠️

WARNING

TURN OFF PHOTOVOLTAIC AC  
DISCONNECT PRIOR TO  
WORKING INSIDE PANEL

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

PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION: DC CONDUIT/RACEWAY/CABLE TRAY  
PER CODE: NEC 690.31(G)(3-4)

PHOTOVOLTAIC SYSTEM UTILITY AC DISCONNECT  
RATED AC OUTPUT CURRENT: 9.60 A  
NOMINAL OPERATING AC VOLTAGE: 240 V

LABEL LOCATION: POINT OF INTERCONNECTION  
PER CODE: NEC 690.54

PHOTOVOLTAIC

UTILITY

AC DISCONNECT

LABEL LOCATION: UTILITY AC DISCONNECT  
PER CODE: NEC 690.13(B)

DO NOT DISCONNECT  
UNDER LOAD

LABEL LOCATION: MAIN SERVICE DISCONNECT  
PER CODE: NEC 690.15(C) & NEC 690.33(E)(2)

⚠️

WARNING

MULTIPLE POWER SOURCE

SOURCES: UTILITY GRID, PV AND ESS SYSTEM

LABEL LOCATION: MAIN SERVICE DISCONNECT  
PER CODE: NEC 705.12(B)(3-4), NEC 690.59

MAIN PHOTOVOLTAIC  
SYSTEM DISCONNECT

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

RAPID SHUTDOWN FOR  
SOLAR PV SYSTEM

LABEL LOCATION: RSD INITIATION DEVICE, UTILITY AC DISCONNECT  
PER CODE: NEC 690.56(C)(3)

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

LABEL LOCATION: MAIN SERVICE DISCONNECT  
PER CODE: NEC 690.56(C)(1)(a)

⚠️

WARNING

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

LABEL LOCATION: MAIN SERVICE DISCONNECT, POINT  
OF INTERCONNECTION  
PER CODE: 705.12(B)(2)(3)(b)

⚠️

CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED


LABEL LOCATION: MAIN SERVICE DISCONNECT  
PER CODE: NEC 690.13(F), NEC 705.12(B)(3-4), NEC 690.59

⚠️

WARNING

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

LABEL LOCATION: POINT OF INTERCONNECTION, COMBINER PANEL  
PER CODE: NEC 705.12(B)(2)(3)(c)



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DESIGNED BY:



TRIVENTCAD SOLUTION

Sheet Name

WARNING  
LABELS

Sheet Size

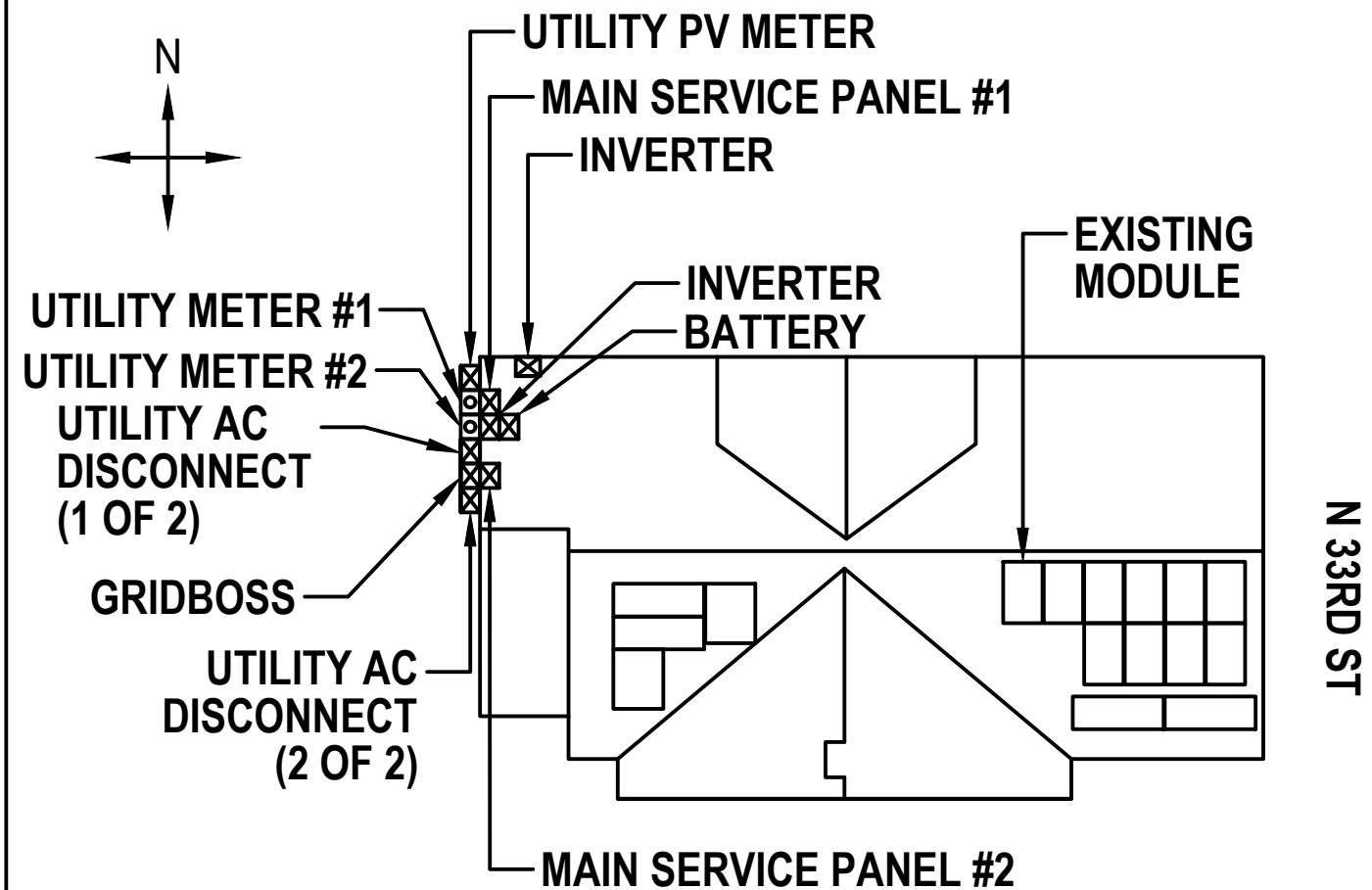
ANSI B  
11" X 17"

Sheet Number

E 1.3

# CAUTION ! MULTIPLE SOURCES OF POWER

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



Serviced by Wolf River Electric  
Contact: (763) 229-6662



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TRIVENT CAD SOLUTION

Sheet Name

PLACARD

Sheet Size

ANSI B  
11" X 17"

Sheet Number

E 1.4



### Part of the SunPower Equinox® Solar System

- Seamless aesthetics
- Compatible with mySunPower monitoring



### Factory-integrated Microinverter

- Highest-power integrated AC module in solar
- Engineered and calibrated by SunPower for SunPower AC modules



# SUNPOWER®

## 425-410 W Residential Black AC Module

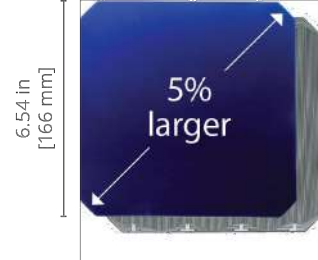
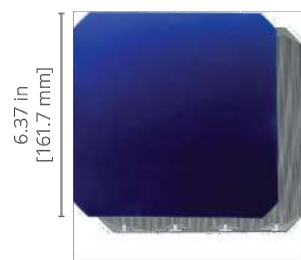
### SunPower® Maxeon® Technology

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



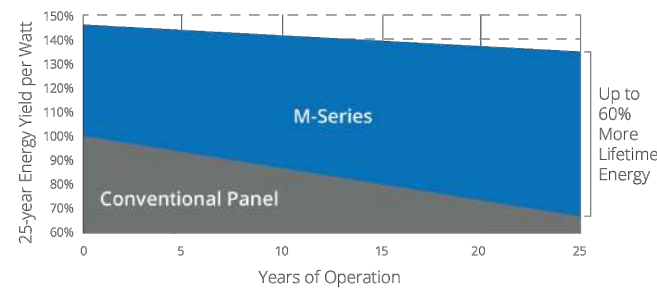
### Highest Power Density Available

The patented, solid-copper foundation Maxeon Gen 6 cell is over 5% larger than prior generations, delivering the highest-efficiency all-black AC solar module available.<sup>1</sup>



### Highest Lifetime Energy and Savings

Designed to deliver 60% more energy over 25 years in real-world conditions like partial shade and high temperatures.<sup>2</sup>



### Best Reliability, Best Warranty

With more than 42.6 million and 15 GW of 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.

## M425-BLK | M415-BLK | M410-BLK SunPower Residential Black AC Module

AC Electrical Data		
Inverter Model: Type H (Enphase IQ7H5)	@240 VAC	@208 VAC
Max. Continuous Output Power (VA)	384	369
Nom. (L-L) Voltage/Range <sup>3</sup> (V)	240 / 211–264	208 / 183–229
Max. Continuous Output Current (A)	1.60	1.77
Max. Units per 20 A (L-L) Branch Circuit <sup>4</sup>	10	9
CEC Weighted Efficiency	97.0%	96.5%
Nom. Frequency	60 Hz	60 Hz
Extended Frequency Range	47–68 Hz	47–68 Hz
AC Short Circuit Fault Current Over 3 Cycles	4.82 A	4.82 A
Overvoltage Class AC Port	III	III
AC Port Backfeed Current	18 mA	18 mA
Power Factor Setting	1.0	1.0
Power Factor (adjustable)	0.85 (inductive) / 0.85 (capacitive)	0.85 (inductive) / 0.85 (capacitive)

DC Power Data			
	SPR-M425-BLK-H-AC	SPR-M415-BLK-H-AC	SPR-M410-BLK-H-AC
Nom. Power <sup>6</sup> (P <sub>nom</sub> ) W	425	415	410
Power Tolerance	+5/–0%	+5/–0%	+5/–0%
Module Efficiency	22.0%	21.5%	21.2%
Temp. Coef. (Power)	–0.29% / °C	–0.29% / °C	–0.29% / °C
Shade Tolerance	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 <sup>8</sup>	Wind: 125 psf, 6000 Pa, 611 kg/m <sup>2</sup> back Snow: 187 psf, 9000 Pa, 917 kg/m <sup>2</sup> front
Max. Design Load	Wind: 75 psf, 3600 Pa, 367 kg/m <sup>2</sup> back Snow: 125 psf, 5400 Pa, 550 kg/m <sup>2</sup> front
Impact Resistance	1 inch (25 mm) diameter hail at 52 mph (23 m/s)

Mechanical Data	
Solar Cells	66 Maxeon Gen 6
Front Glass	High-transmission tempered glass with anti-reflective coating
Environmental Rating	Outdoor rated
Frame	Class 1 black anodized (highest AAMA rating)
Weight	48 lbs (21.8 kg)
Recommended Max. Module Spacing	1.3 in. (33 mm)

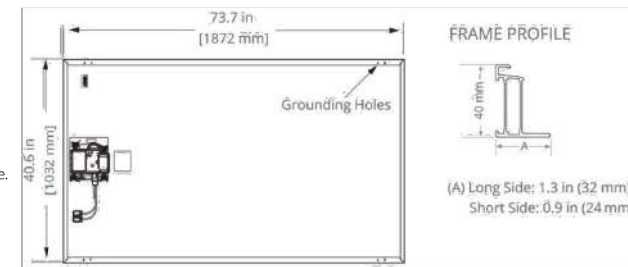
Warranties, Certifications, and Compliance	
Warranties	• 25-year limited power warranty • 25-year limited product warranty
Certifications and Compliance	• UL 1741 / IEEE-1547 • UL 1741 AC Module • UL 61730 (Type 2 fire rated) • UL 62109-1 / IEC 62109-2 • FCC Part 15 Class B • ICES-0003 Class B • CAN/CSA-C22.2 NO. 107.1-01 • CA Rule 21 (UL 1741 SA) <sup>5</sup> (includes Volt/Var and Reactive Power Priority) • UL Listed PV Rapid Shutdown Equipment <sup>7</sup>  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 AC module Q Cables and accessories (UL 6703 and UL 2238) <sup>7</sup> • Rated for load break disconnect
PID Test	1000 V: IEC 62804

Packaging Configuration	
Modules per pallet	25
Packaging box dimensions	75.4 × 42.2 × 48.0 in. (1915 × 1072 × 1220 mm)
Pallet gross weight	1300 lb (590 kg)
Pallets per container	32
Net weight per container	18,880 kg

1 Based on datasheet review of websites of top 20 manufacturers per IHS, as of July 2021.  
2 Maxeon 435 W, 22.5% efficient, compared to a Conventional Panel on same-sized arrays (300 W, 19% efficient, approx. 1.6 m<sup>2</sup>), 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).  
3 Based on search of datasheet values from websites of top 10 manufacturers per IHS, as of June 2021.  
4 Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.  
5 Factory set to IEEE 1547a-2014 default settings. CA Rule 21 default settings profile set during commissioning.  
6 Standard Test Conditions (1000 W/m<sup>2</sup> irradiance, AM 1.5, 25°C). All DC voltage is fully contained within the module.  
7 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.  
8 Please read the safety and installation instructions for more information regarding load ratings and mounting configurations.

See [www.sunpower.com/company](http://www.sunpower.com/company) for more reference information.  
For more details, see extended datasheet: [www.sunpower.com/solar-resources](http://www.sunpower.com/solar-resources).  
Specifications included in this datasheet are subject to change without notice.

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544400 RevA  
January 2022



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AHJ: MILWAUKEE CITY  
UTILITY: WE ENERGIES

DESIGNED BY:



TRIVENT CAD SOLUTION

Sheet Name

**MODULE  
SPEC SHEET**

Sheet Size

**ANSI B  
11" X 17"**

Sheet Number

**D 1.1**



# Enphase SPWR-A5 (IQ7HS) Microinverter

The high-powered smart grid-ready Enphase SPWR-A5 Microinverter™ with integrated MC4 connectors dramatically simplify the installation process while achieving the highest system efficiency.

The IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.



### Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

### Efficient and Reliable

- Optimized for high powered 66-cell\* modules
- Highest CEC efficiency of 97.0%
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

### Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

\* The IQ7HS is required to support 66-cell modules.



To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)



## Enphase IQ7HS Microinverter

INPUT DATA (DC)		IQ7HS-66-M-US
Commonly used module pairings¹	320 W - 460 W +	
Module compatibility	66-cell PV modules	
Maximum input DC voltage	59 V	
Peak power tracking voltage	38 V - 43 V	
Operating range	20 V - 59 V	
Min/Max start voltage	30 V / 59 V	
Max DC short circuit current (module Isc)	15 A	
Overvoltage class DC port	II	
DC port backfeed current	0 A	
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		
Peak output power	@240 VAC	@208 VAC
Maximum continuous output power	384 VA	369 VA
Nominal (L-L) voltage/range²	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current	1.60 A (240V)	1.77 A (208V)
Nominal frequency	60 Hz	60 Hz
Extended frequency range	47 to 68 Hz	47 to 68 Hz
AC short circuit fault current over 3 cycles	4.82 A	4.82 A
Maximum units per 20 A (L-L) branch circuit³	10	9
Overvoltage class AC port	III	III
AC port backfeed current	18 mA	18 mA
Power factor setting	1.0	1.0
Power factor (adjustable)	0.85 leading ...0.85 lagging	0.85 leading ...0.85 lagging
EFFICIENCY		
CEC weighted efficiency	@240 V	@208 V
	97.0 %	96.5 %
MECHANICAL DATA		
Ambient temperature range	-40°C to +60°C	
Relative humidity range	4% to 100% (condensing)	
Connector type	Staubli made MC4	
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)	
Weight	1.08 kg (2.38 lbs)	
Cooling	Natural convection - No fans	
Approved for wet locations	Yes	
Pollution degree	PD3	
Enclosure	Class II, corrosion resistant polymeric enclosure	
Environmental category / UV exposure rating	NEMA type 6 / outdoor	
Altitude	2000m	
FEATURES		
Communication	Power Line Communication (PLC)	
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect means required by NEC 690 and C22.1-2018 Rule 64-220.	
Compliance	CA Rule 21 (UL 1741-SA), HECO v1.1 UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 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.	

1. No enforced DC/AC ratio. See the compatibility calculator at <https://enphase.com/en-us/support/module-compatibility>.  
2. Nominal voltage range can be extended beyond nominal if required by the utility.  
3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)

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05-11-2022



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UTILITY: WE ENERGIES

DESIGNED BY:

TRIVENT CAD SOLUTION

Sheet Name

**INVERTER SPEC SHEET**

Sheet Size

**ANSI B 11" X 17"**

Sheet Number

**D 1.2**



# CERTIFICATE OF COMPLIANCE

Certificate Number 20220608-E341165 SB  
Report Reference E341165-20171030  
Date 2022-08-19

Issued to: Enphase Energy Inc.  
1420 N. McDowell Blvd. Petaluma, CA 94954-6515

## This is to certify that representative samples of

Photovoltaic Grid Support Utility Interactive Inverter with Rapid Shutdown Functionality  
Models IQ7-60, IQ7PLUS-72, IQ7X-96, IQ7XS-96, may be f/b -2, -5, -E or -M, may be f/b -ACM, f/b -US, may be f/b -NM, may be f/b -RMA, may be f/b -&, where "&" designates additional characters.  
Models IQ7A, may be f/b S, f/b -66 or -72, may be f/b -2, -5, -E or -M, may be f/b -ACM, f/b -US, may be f/b -NM, may be f/b -RMA, may be f/b -&, where "&" designates additional characters.  
Model IQ7PD-72-2-US, may be f/b -&, where "&" designates additional characters.  
Model IQ7PD-84-2-US may be f/b -&, where "&" designates additional characters.  
Models IQ7HS, may be f/b -66 or -72, may be f/b -2, -5, -M or -E, may be f/b -ACM, f/b -US, may be f/b -NM, may be f/b -RMA, may be f/b -&, where "&" designates additional characters

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: See Page 2

Additional Information: See the UL Online Certifications Directory at [www.ul.com/database](http://www.ul.com/database) for additional information.

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

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

Look for the UL Certification Mark on the product.

  
Bruce Mahrenholz, Director North American Certification Program

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# CERTIFICATE OF COMPLIANCE

Certificate Number 20220608-E341165 SB  
Report Reference E341165-20171030  
Date 2022-08-19

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.  
Standards for Safety:

UL 1741, Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources, Edition 3, Issue Date 09/28/2021. Including the requirements in UL 1741 Supplement SA and SB.

IEEE 1547, Interconnection and Interoperability of Distributed Energy Resources (DERs) with Associated Electric Power Systems (EPSs) Interfaces, Issue Date 02/15/2018

IEEE 1547.1, IEEE Standard Conformance Test Procedures for Interconnecting Distributed Energy Resources (DERs) with Electric Power Systems (EPSs) Associated Interfaces, Issue Date 03/05/2020.

UL 62109-1, Safety of Converters for Use in Photovoltaic Power Systems - Part 1: General Requirements; IEC 62109-2, Safety of Power Converters for use in Photovoltaic Power Systems - Part 2: Particular Requirements for Inverters.

CSA C22.2 No. 107.1-01, General Use Power Supplies.

☒ R21 (SA): The evaluation was based Table SA1.1 option in UL1741SA to use the IEEE 1547.1-2020 and UL1741SB test methods in conjunction with using IEEE 1547-2018 as the SRD under which SA11.2 Normal Ramp Rate is not address. Additional testing was conducted to confirmed compliance to Normal Ramp Rate SA11.2.

☐ 14H (SA): The evaluation to the Standards above provides evidence of compliance to HECO Rule 14H, SRD V1.0, Interconnection Application.

☒ 14H (SB): The evaluation to the Standards above provides evidence of compliance to HECO Rule 14H, SRD V2.0, Interconnection Application.

Inverter Firmware Version:		
UL 1998 (grid support)	Date	Version/Revision
Yes	2022-06-01	V04.40.01

  
Bruce Mahrenholz, Director North American Certification Program

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TRIVENT CAD SOLUTION

Sheet Name  
INVERTER  
COMPLIANCE  
CERTIFICATE

Sheet Size

ANSI B  
11" X 17"

Sheet Number

D 1.3



# Enphase IQ Envoy

The **Enphase IQ Envoy™** communications gateway delivers solar production and energy consumption data to Enphase Enlighten™ monitoring and analysis software for comprehensive, remote maintenance and management of the Enphase IQ System.

With integrated revenue grade production metering and optional consumption monitoring, Envoy IQ is the platform for total energy management and integrates with the Enphase Ensemble™ and the Enphase IQ Battery™.



### Smart

- Enables web-based monitoring and control
- Bidirectional communications for remote upgrades
- Supports power export limiting and zeroexport applications

### Simple

- Easy system configuration using Enphase Installer Toolkit™ mobile app
- Flexible networking with Wi-Fi, Ethernet, or cellular

### Reliable

- Designed for installation indoors or outdoors
- Five-year warranty



To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)



## Enphase IQ Envoy

MODEL NUMBERS	
Enphase IQ Envoy™ ENV-IQ-AM1-240	Enphase IQ Envoy communications gateway with integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional consumption monitoring (+/- 2.5%). Includes one 200A continuous rated production CT (current transformer).
ACCESORIES (Order Separately)	
Enphase Mobile Connect™ CELLMODEM-M1 (4G based LTE-M/5-year data plan) CELLMODEM-M1-B (4G-based LTE-M1/5-year data plan)	Plug and play industrial grade cellular modem with data plan for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.)
Consumption Monitoring CT CT-200-SPLIT	Split-core consumption CTs enable whole home metering.
Ensemble Communications Kit COMMS-KIT-01	Installed at the IQ Envoy. For communications with Enphase Encharge™ storage and Enphase Enpower™ smart switch. Includes USB cable for connection to IQ Envoy or Enphase IQ Combiner™ and allows wireless communication with Encharge and Enpower.
POWER REQUIREMENTS	
Power requirements	120/240 VAC split-phase. Max 20 A overcurrent protection required.
Typical Power Consumption	5W
CAPACITY	
Number of microinverters polled	Up to 600
MECHANICAL DATA	
Dimensions (WxHxD)	21.3 x 12.6 x 4.5 cm (8.4" x 5" x 1.8")
Weight	17.6 oz (498 g)
Ambient temperature range	-40° to 65° C (-40° to 149° F) -40° to 46° C (-40° to 115° F) if installed in an enclosure
Environmental rating	IP30. For installation indoors or in an NRTL-certified, NEMA type 3R enclosure.
Altitude	To 2000 meters (6,560 feet)
Production CT	- Limited to 200A of continuous current / 250A OCPD – 72kW AC - Internal aperture measures 19.36mm to support 250MCM THWN conductors (max) - UL2808 certified for revenue grade metering
Consumption CT	- For electrical services to 250A with parallel runs up to 500A - Internal aperture measures 0.84" x 0.96" (21.33mm x 24.38mm) to support 3/0 THWN conductor - UL2808 certified, for use at service entrance for services up to 250Vac
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Ethernet	802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
Mobile	CELLMODEM-M1 (4G) or CELLMODEM-M1-B (4G). Not included. Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
COMPLIANCE	
Compliance	UL 61010-1 CAN/CSA C22.2 No. 61010-1 47 CFR, Part 15, Class B, ICES 003 IEC/EN 61010-1:2010, EN50065-1, EN61000-4-5, EN61000-6-1, EN61000-6-2 Metering: ANSI C12.20 accuracy class 0.5 (PV production only)

To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)

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Project Name & Address

**TOM FRITZ RESIDENCE**  
**929 N 33RD ST, MILWAUKEE, WI 53208**  
AHJ: MILWAUKEE CITY  
UTILITY: WE ENERGIES

DESIGNED BY:

TRIVENT CAD SOLUTION

Sheet Name

**IQ ENVOY  
SPEC SHEET**

Sheet Size

**ANSI B  
11" X 17"**

Sheet Number

**D 1.4**



# EG4® 14.3kWh PowerPro WallMount All Weather Battery

Built-In 200A  
BMS

51.2V 280Ah  
(48V Nominal)

10 Year Warranty  
>8000 Cycles at  
80% DOD

82.6MWh  
Lifetime  
Production\*

### On-Board LCD Touch Screen

Easy to see BMS monitoring, and selectable closed-loop communications with EG4, Schneider, Solark, Victron, Growatt, Megarevo, Luxpower, and Deye inverters.

### Dual On-Board Fire Arrestors

Offer fail-safe protection against thermal runaway.

### Quick Connect Battery Cables

Included battery cables with Amphenol connectors (or SurLok equivalent) allow for fast, safe, and reliable battery connections.

### Integrated Self-Heating Feature

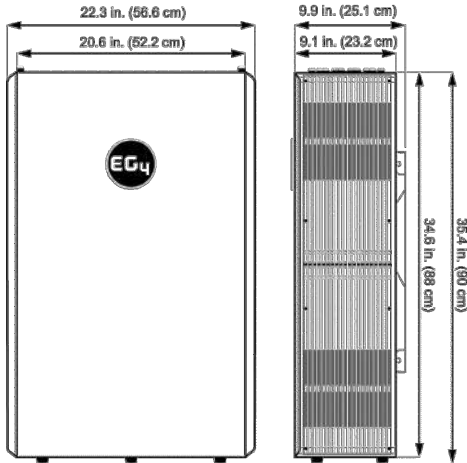
Heats the battery when the ambient temperature is low. A key feature for outdoor LiFePO<sub>4</sub> battery cell operation.

### Innovative Emergency Stop Function

The optional ESS disconnect can shut down all batteries and inverters (if equipped with rapid shut down capability) with the push of a single button.

### The perfect partner to the EG4® 18kPV

The optional conduit box mates directly up to the connection ports of the 18kPV inverter cable box for sleek installation. For other inverters or stand-alone battery installation, the included conduit box plugs should be installed.



Module Operating Parameters			
Parameter	BMS	Recommended Charger Settings	
Total Energy Capacity	14.3kWh @25C, 100% state of charge		
Voltage	51.2V	-	
Capacity	280Ah ±2%	@25°C ±2°C @ 0.5C	
Charging Voltage (Bulk/Absorb)	56.0V (+/-0.8V)	56.2V (+/-0.2V)	
Float	-	54V (+/-0.2V)	
Low DC Cutoff	44.8V	47-45.6V (start high, lower as needed)	
Charging Current	100/140/200A (Max. continuous)* (see note below table)	60A - 160A	
Discharging Current	200A (Max. continuous)	160A	
Environmental Parameters			
Charging Range	32° to ≈113°F (0°C to ≈45°C)		
Discharging Range	-4°F to ≈122°F (-20°C to ≈50°C)		
Storage Range	-4°F to ≈122°F (-20°C to ≈50°C)		
Ingress Protection	IP65		
Charging/Discharging Parameters			
Charge	Spec	Delay	Recovery
Cell Voltage Protection	3.8V	1 sec	3.45V
Module Voltage Protection	60.0V	1 sec	55.2V
Over Charging Current 1	>205A	10 sec	-
Over Charging Current 2	>225A	3 sec	-
Temperature Protection	<23°F or >158°F <-5°C or >70°C	1 sec	>32°F or <140°F >0°C or <60°C
Discharge	Spec	Delay	Recovery
Cell Voltage Protection	2.3V	1 sec	3.1V
Module Voltage Protection	44.8V	1 sec	48V
Over-Charging Current 1	>205A	10 sec	60 sec
Over-Charging Current 2	>300A	3 sec	60 sec
Short Circuit	>600A	<0.1 mS	-
Temperature Protection	<-4°F or >167°F <-20°C or >75°C	1 sec	>14°F or <149°F >-10°C or <65°C
PCB Temp Protection	>230°F (>110°C)	1 sec	@ <176°F (<80°C)

General Specifications		
Parameter	Spec	Condition



Cell Balance	120mA	Passive Balance	Cell Voltage Difference >40mV
Temperature Accuracy	3%	Cycle Measurement	Measuring Range -40°F to ≈212°F (-40°C to ≈100°C)
Voltage Accuracy	0.5%	Cycle Measurement	For Cells & Module
Current Accuracy	3%	Cycle Measurement	Measuring Range -200A - 200A
SOC	5%	-	Integral Calculation
Power Consumption	Sleep & Off Mode	<300uA	Storage/Transport/Standby
Power Consumption	Operating Mode	<25mA	Charging/Discharging
Communication Ports	RS485/CAN		Can be customized
Battery Heater Specifications			
Parameter	Spec		Condition
Voltage	56V		-
Power Consumption	224W		-
Internal Battery Temperature	≤32°F (0°C)≥41°F (5°C)		Heat On/Heat Off
Physical Specifications			
Dimensions (H×W×D)	34.6 in.×22.3 in.×9.1 in. (88.0 cm×56.6 cm×23.2 cm)		
Weight	308.6 lbs. (140 kg) +/-1kg		
Design Life	>15 Years		
Cycle Life	>8000 Cycles, 0.5C 80% DOD		
Lifetime Production	82.6MWh*		

\* (51.2V×280Ah/1000×80%×8000 cycles/1000)90%=MWh

\*Note: The default BMS in the module allows for 100A charging current maximum. To achieve higher charging currents, please contact your distributor for optional firmware files, or navigate to <https://eg4electronics.com/downloads/> for the most up to date firmware.

Please also make note that if the battery firmware is updated to allow 200A maximum charge, the internal thermal sensors will throttle the charge current to what the BMS deems necessary to prevent overheating.

Scan the QR code for the most recent version of the unit's manual!



Scan the QR code for the most recent version of the unit's spec sheet!



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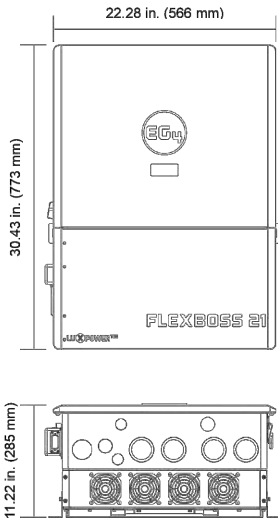
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Sheet Name  
BATTERY  
SPEC SHEET

Sheet Size  
ANSI B  
11" X 17"

Sheet Number  
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## EG4® FLEXBOSS21 HYBRID INVERTER

The EG4 FlexBOSS21 is a versatile 48V split-phase, hybrid inverter/charger that offers the same dependable power as the 18kPV with enhanced flexibility. Powerful enough to start a 5-ton AC unit, the FlexBOSS21 supports up to 21kW of PV input. Capable of paralleling up to 16 units together, the FlexBOSS21 has an impressive total output of 560kW. Able to provide 16kW of continuous output power with PV & battery, and up to 12kW continuous output by using battery alone. Three individual MPPTs give users optimal control over their solar needs, while the updated EG4 monitoring software allows for convenient total remote management, complete with mobile notifications and remote setting. Seamless interaction with the EG4 GridBOSS gives users control over the entire Energy Storage System (ESS).

HIGH  
FREQUENCY  
SPLIT-PHASE  
DESIGN

10-YEAR  
WARRANTY

REMOTE  
ADJUSTMENT  
VIA EG4  
SOFTWARE

### ALL-IN-ONE HYBRID INVERTER

Capable of running entirely off grid, using grid electricity, and selling power back to the grid.

### UP TO 600VDC INPUT

The extra high voltage enables lower cable sizing for the 3 MPPTs and a maximum recommended PV input of 24kW, eliminating the need for a combiner box.

### PLUG-IN WI-FI DEVICE

Enables wireless connection between our monitoring platform and the FlexBOSS21 through the EG4® app or EG4 Monitor system for remote system management.

### CLOSED-LOOP COMMUNICATIONS

Able to communicate with EG4 48V batteries and other battery brands. A battery firmware update is required for closed-loop communications with LifePower4 batteries.

### RAPID SHUTDOWN

The FlexBOSS21 is CSA C22.2#330:2017 and NEC 690.12 ready with its built-in RSD capabilities.

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MODEL# IV-16000-HYB-AV-FX-00



## EG4 ELECTRONICS

### TECHNICAL SPECIFICATIONS

AC INPUT DATA				
NOMINAL AC VOLTAGE	120/240VAC; 120/208VAC (L1/L2/N required)			
FREQUENCY	60 Hz (Default)   50 Hz			
MAX. AC CURRENT	50A @ 240V   57.7A @ 208V			
MAX. AC INPUT POWER	12kW			
MAX. AC BYPASS	90A			
AC GRID OUTPUT DATA				
MAX. OUTPUT CURRENT	66.7A			
OUTPUT VOLTAGE	120/240VAC; 120/208VAC (L1/L2/N required)			
OPERATING VOLTAGE RANGE	180 – 270VAC			
NOMINAL POWER OUTPUT	w/ PV: 16000W @240V   13800kW @208V w/ out PV: 12000W @240V   12000W @208V			
OUTPUT FREQUENCY	60 Hz (Default)   50 Hz			
POWER FACTOR	.99 @ Full Load			
REACTIVE POWER ADJUST RANGE	(-0.8) – (+0.8) Leading Adjustable			
THD @FULL LOAD	<5%			
TRANSFER TIME	20ms (Default), 10ms (Configurable)   Parallel – 20ms			
BACKUP/UPS AC OUTPUT DATA				
RATED OUTPUT CURRENT (240   208VAC)	50A   57.7A			
NOMINAL OUTPUT VOLTAGE	120/240   120/208 VAC			
RATED OUTPUT POWER	12kW @ 240VAC   12kW @ 208VAC			
PEAK POWER	24kW (.5 sec)	18kW (1 sec)	15kW (6 min)	13.2kW (12 min)
OPERATING FREQUENCY	60 Hz (Default)   50 Hz			
THDV (TOTAL HARMONIC DISTORTION VOLTAGE)	<5%			
TRANSFER TIME	20ms (Default), 10ms (Configurable), 20ms (Parallel)			
PV INPUT DATA				
NUMBER OF MPPTS	3			
INPUTS PER MPPT	2 (MPPT 1)   2 (MPPT 2)   1 (MPPT 3)			
MAX. USABLE INPUT CURRENT	26A (MPPT 1)   26A (MPPT 2)   15A (MPPT 3)			
MAX. SHORT CIRCUIT INPUT CURRENT	31A (MPPT 1)   31A (MPPT 2)   19A (MPPT 3)			
DC INPUT VOLTAGE RANGE	100 – 600VDC			
UNIT START-UP VOLTAGE	100VDC			
MPPT OPERATING VOLTAGE RANGE	120 – 440VDC			
NOMINAL MPPT VOLTAGE	360VDC			
MAX. UTILIZED SOLAR POWER	21kW			
MAX. RECOMMENDED SOLAR INPUT	25kW			
EFFICIENCY				
CEC	96.9%			
MAX. EFFICIENCY (PV TO GRID)	97%			
MAX. EFFICIENCY (BATTERY TO GRID)	94%			
MAX. EFFICIENCY (PV TO BATTERY)	94.5%			
IDLE CONSUMPTION (NORMAL)   (STANDBY MODE)	<80W   <60W			

## EG4 ELECTRONICS

BATTERY DATA	
COMPATIBLE BATTERY TYPES	Lead-acid/ Lithium
MAX. CHARGE/DISCHARGE POWER	12000W
NOMINAL VOLTAGE	48VDC
VOLTAGE RANGE	40 – 60 VDC
RECOMMENDED BATTERY CAPACITY PER INVERTER	>300Ah
GENERAL DATA	
MAX. UNITS IN PARALLEL	16
PRODUCT DIMENSIONS (H×W×D)	30.43 × 22.28 × 11.22 in. (750 × 520 × 285 mm)
UNIT WEIGHT	88 lbs. (52 kg)
DESIGN TOPOLOGY	High Frequency – Transformerless
RELATIVE HUMIDITY	0 – 100%
OPERATING ALTITUDE	<8561 ft (<2000 m)
OPERATING AMBIENT TEMPERATURE RANGE	-13° – 140°F (-25° – 60°C)
STORAGE AMBIENT TEMPERATURE RANGE	-13° – 140°F (-25° – 60°C)
NOISE EMISSION (TYPICAL)	<50dB @ 3 ft
COMMUNICATION INTERFACE	RS485/Wi-Fi/CAN
STANDARD WARRANTY	10-year standard warranty*
OUTDOOR RATING	NEMA 4X
SAFETY FEATURES	Integrated DC disconnect, Reverse polarity protection, Output over-voltage protection varistor, Output over current protection, Ground fault monitoring, Grid monitoring, Pole sensitive leakage current monitoring unit, AFCI, RSD
STANDARDS AND CERTIFICATIONS	
UL1741, SA, SB, PCS CRD	
California Rule 21 Phase I, II, III	
Arc-Fault Circuit Interrupter (AFCI) NEC 2020:690.11/UL1699B	
Ground Fault Monitoring (GFDI) NEC 2020:690.41(B)	
CSA 22.2.107.1:2016 Ed. 4	
CSA 22.2.330:2017 Ed. 1	
IEEE 1547.1:2020; IEEE 1547:2018	
Hawaii Rule 14H [HECO SRD IEEE 1547.1-2020 Ed. 2]	
Rapid Shutdown (RSD) NEC 2020:690.12	
FCC Part 15, Class B (PENDING)	

\*See EG4 Warranty Registration for terms and conditions



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#### REVISIONS

Description	Date	Rev
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CAD 2	OCT. 25, 2025	01

Signature with Seal

Project Name &  
Address

TOM FRITZ RESIDENCE  
929 N 33RD ST, MILWAUKEE, WI 53208  
AHJ: MILWAUKEE CITY  
UTILITY: WE ENERGIES

DESIGNED BY:



TRIVENT CAD SOLUTION

Sheet Name

INVERTER  
SPEC SHEET

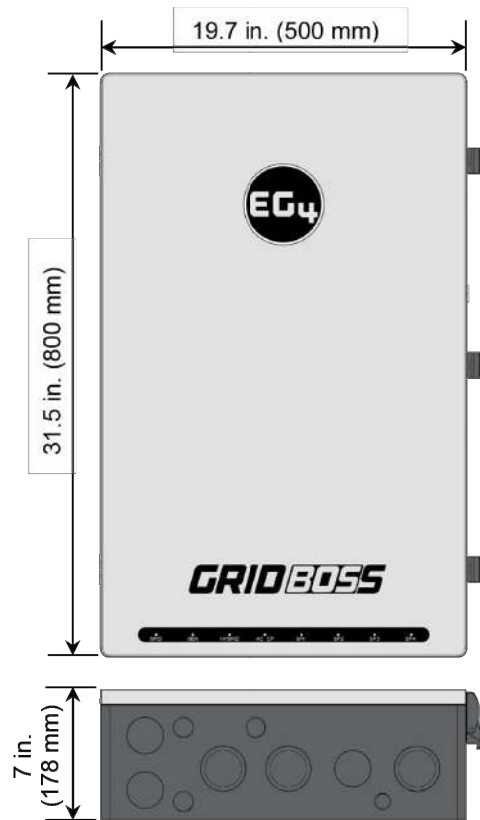
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200A SERVICE  
ENTRANCE\*

4 CONFIGURABLE  
SMART PORTS

INTEGRATED  
GENERATOR SUPPORT

CENTRALIZED ESS CONTROL

Provides a single point of connection for utility, hybrid inverters, generators, smart loads, and AC-coupled inverters.

REDUCED ESS COMPLEXITY

Replaces up to 10 components with one unit, including point of common connection, back-fed breakers, feeder taps, feeder tap breakers, supply side taps & breakers, transfer switches, and dedicated combiner panels for grid-in, load/EPS, and generator input.

SERVICE ENTRANCE RATED

200 Amp service entrance with a 22 kAIC main breaker, acts as service entrance equipment in conjunction with a utility meter and a 200A Eaton braker (CSR25K).

REMOTE MONITORING

Enable remote monitoring, configuration, and firmware updates through the EG4 mobile app or online monitoring system.

SMART PORTS

Includes load shedding, which disconnects loads during low battery voltage and reconnects on high voltage. Power shedding connects loads when at full SOC and PV flow and disconnects on low SOC or PV loss.



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MODEL #: MI-200-2P-HYB-AW-01

\*When used with an Eaton 200A main breaker (model CSR25k)

EG4® GRID BOSS

MICRO-GRID INTERCONNECTION DEVICE (MID)

The EG4 GridBOSS Micro-Grid Interconnection Device (MID) simplifies Energy Storage Systems (ESS) by consolidating multiple components into a single, innovative unit. It replaces traditional elements such as the point of common connection, back-fed breakers, feeder taps, tap breakers, supply-side taps, transfer switches, and dedicated combiner panels for grid-in, grid-out, and generator input. As a versatile solution, the GridBOSS serves as the service entrance equipment\* when paired with the utility meter, providing a single point of connection for utilities, hybrid inverters, generators, smart loads, and AC-coupled inverters.

EG4 ELECTRONICS

TECHNICAL SPECIFICATIONS

GRID	
NOMINAL AC VOLTAGE	120/240 VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT	200A
SERVICE ENTRANCE RATED	22kAIC with 200A Eaton breaker (model: (CSR2200N) CSR25K)
GENERATOR	
NOMINAL VOLTAGE	120/240 VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT	125A
NON-BACKUP	
NOMINAL VOLTAGE	120/240 VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT	200A
BACKUP	
NOMINAL VOLTAGE	120/240 VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT	200A
HYBRID	
NUMBER OF PORTS	3
NOMINAL VOLTAGE	120/240 VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT PER PORT	90A*
SUPPORTED INVERTERS	EG4® 12kPV, 18kPV, & FlexBOSS21**
SMART PORTS	
NUMBER OF PORTS	4
NOMINAL VOLTAGE	120/240 VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT PER PORT	1: 125A   2: 80A   3: 60A   4: 60A
GENERAL DATA	
COMMUNICATION INTERFACE	RS485/Wi-Fi/CAN
IDLE CONSUMPTION	~55W
TRANSFER TIME	~25 ms
INTERNAL BUS RATING	350A
INTERNAL FUSE RATING	315A
OPERATING ALTITUDE	<6561 ft (<2000 m)
RELATIVE HUMIDITY	0 – 100%
OUTDOOR RATING	NEMA 3R
OPERATING AMBIENT TEMPERATURE RANGE	-40°F – 113°F (-40°C – 45°C)
PRODUCT DIMENSIONS (H×W×D)	31.5×19.7×7 in (800×500×178 mm)
UNIT WEIGHT	55 lbs. (25 kg)
STANDARD WARRANTY	10-year standard warranty***

\*Install a properly sized breaker based on the connected inverter: 50A - 12kPV; 70A - 18kPV; 90A - FlexBOSS21.

\*\*Third party inverters are not supported and cannot be connected to the hybrid ports.

\*\*\*For information regarding warranty registration on EG4® Electronics products, please navigate to <https://eq4electronics.com/warranty/> and select the corresponding product to begin the registration process.



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Sheet Name  
GRIDBOSS  
SPEC SHEET

Sheet Size  
ANSI B  
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Sheet Number  
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STANDARDS AND CERTIFICATIONS
UL1741, UL67, UL869A*
FCC PART 15, CLASS B (PENDING)
*When used with a 200A Eaton CSR25K (CSR2200N) main breaker.

- 02-07-25 - Published v1.1.3
  - Changed ambient operating temperature to -40°F – 113°F (-40°C – 45°C)
  - Changed maximum current per hybrid port to 90A.
- 11-12-24 - Published v1.1.2
  - Added QR code to cover page
  - Added idle consumption and transfer time data.
  - Modified warranty information and added direct link
- 10-31-24 - Published v1.1.1
  - Modified spec sheet FCC Part 15, Class B to read as (pending)




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Sheet Name
GRIDBOSS SPEC SHEET

Sheet Size
ANSI B 11" X 17"

Sheet Number
D 1.8





SunPower® InvisiMount™ | Residential Mounting System

Simple and Fast Installation

- Integrated module-to-rail grounding
- Pre-assembled mid and end clamps
- Levitating mid clamp for easy placement
- Mid clamp width facilitates even module spacing
- Simple, pre-drilled rail splice
- UL 2703 Listed integrated grounding

Flexible Design

- Addresses nearly all sloped residential roofs
- Design in landscape and portrait
- Rails enable easy obstacle management

Customer-Preferred Aesthetics

- #1 module and #1 mounting aesthetics
- Best-in-class system aesthetics
- Premium, low-profile design
- Black anodized components
- Hidden mid clamps and end clamps hardware, and capped, flush rails

Part of Superior System

- Built for use with SunPower DC and AC modules
- Best-in-class system reliability and aesthetics
- Combine with SunPower modules and monitoring app



Elegant Simplicity

SunPower® InvisiMount™ is a SunPower-designed rail-based mounting system. The InvisiMount system addresses residential sloped roofs and combines faster installation time, design flexibility, and superior aesthetics. The InvisiMount product was specifically envisioned and engineered to pair with SunPower modules. The resulting system-level approach will amplify the aesthetic and installation benefits for both homeowners and installers.

[sunpower.com](https://sunpower.com)



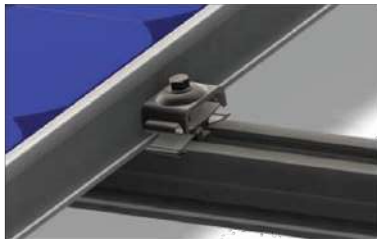
SUNPOWER®



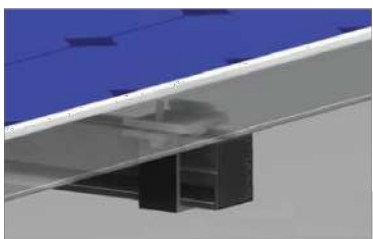
SunPower® InvisiMount™ | Residential Mounting System

InvisiMount Component Images

Module\* / Mid Clamp and Rail



Module\* / End Clamp and Rail



Mid Clamp



End Clamp



Rail & Rail Splice



Ground Lug Assembly



End Cap



InvisiMount Component Details		
Component	Material	Weight
Mid Clamp	Black oxide stainless steel AISI 304	63 g (2.2 oz)
End Clamp	Black anodized aluminum alloy 6063-T6	110 g (3.88 oz)
Rail	Black anodized aluminum alloy 6005-T6	830 g/m (9 oz/ft)
Rail Splice	Aluminum alloy 6005-T5	830 g/m (9 oz/ft)
Ground Lug Assembly	304 stainless (A2-70 bolt; tin-plated copper lug)	106.5 g/m (3.75 oz)
End Cap	Black acetal (POM) copolymer	10.4 g (0.37 oz)

Roof Attachment Hardware Supported by InvisiMount System Design Tool	
Application	<ul style="list-style-type: none"><li>• Composition Shingle Rafter Attachment</li><li>• Composition Shingle Roof Decking Attachment</li><li>• Curved and Flat Tile Roof Attachment</li><li>• Universal Interface for Other Roof Attachments</li></ul>

InvisiMount Operating Conditions	
Temperature	-40° C to 90° C (-40° F to 194° F)
Max. Load	2400 Pa uplift 5400 Pa downforce

InvisiMount Warranties And Certifications	
Warranties	25-year product warranty 5-year finish warranty
Certifications	UL 2703 Listed Class A fire rating when distance between roof surface and bottom of SunPower module frame is ≤ 3.5"

Roof Attachment Hardware Warranties	
Refer to roof attachment hardware manufacturer's documentation	

\*Module frame that is compatible with the InvisiMount system required for hardware interoperability.

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Document #509506 Rev B

SUNPOWER®



**WOLF RIVER ELECTRIC**  
101 ISANTI PARKWAY NE, SUITE G  
ISANTI, MN 55040  
ELECTRICAL CONTRACTOR: 1522577  
EXPIRATION DATE: 6/30/2028  
CONTACT: (763) 229-6662  
[contact@wolfriverelectric.com](mailto:contact@wolfriverelectric.com)

REVISIONS		
Description	Date	Rev
CAD 1	SEP. 27, 2025	00
CAD 2	OCT. 25, 2025	01

Signature with Seal

Project Name & Address

**TOM FRITZ RESIDENCE**  
**929 N 33RD ST, MILWAUKEE, WI 53208**  
AHJ: MILWAUKEE CITY  
UTILITY: WE ENERGIES

DESIGNED BY:



TRIVENT CAD SOLUTION

Sheet Name  
**RAIL  
SPEC SHEET**

Sheet Size

**ANSI B  
11" X 17"**

Sheet Number

**D 1.9**



# COMP MOUNT

## One-Piece Flashing with Elevated Cone

No press-fits or deck-level EPDM washers to fail

## Encapsulating Design

Raises the water seal 0.9" Above roof deck



# COMP MOUNT

**1**  
Drill pilot hole in the center of the rafter.



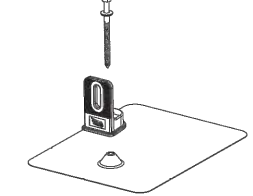
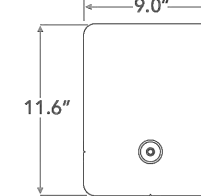
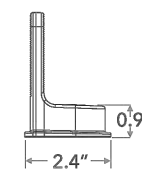
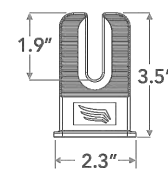
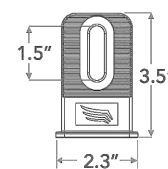
**2**  
Optional: Apply a "u-shape" of sealant to the underside of the flashing and position under 2nd shingle course, cone over pilot hole.



**3**  
Place L-Foot over cone and install lag with washer through L-Foot.



**4**  
Drive lag to required depth. Attach rail per rail manufacturer's instructions.



## Simple 3-Piece Design Watertight For Life

Pegasus solar's comp mounts are a cost effective, high-quality option for rail installations on composition shingle roofs.

Designed to last decades, the one-piece flashing with elevated cone means there is simply nothing to fail.



### 25-Year Warranty

Manufactured with advanced materials and coatings to outlast the roof itself



### Code Compliant

Fully IBC/CBC Code Compliant  
Exceeds ASCE 7-16 Standards



### Superior Waterproofing

Tested to AC286 without sealant  
Water seal elevated 0.9" above



### All-In-One Kit Packaging

Flashings, L-Feet and SS lags with bonded EPDM washers are included in each 24-pack

Pegasus Solar Inc | 506 West Ohio Avenue, Richmond, CA 94804 | T: 510.210.3797 | [www.pegasussolar.com](http://www.pegasussolar.com)

SPECIFICATIONS	COMP MOUNT INSTALL KITS				
SKU	PSCR-CBB0	PSCR-UBB0	SPCR-CBBH	PSCR-CMM0	PSCR-UMM0
Finish	Black L-Foot And Black Flashing			Mill	
L-Foot Type	Closed Slot	Open Slot	Closed Slot	Closed Slot	Open Slot
Kit Contents	L-Foot, Flashing, 5/16" x 4 1/2" SS Lag with metalized EPDM washer	L-Foot, Flashing, 5/16" x 4 1/2" SS Lag with metalized EPDM washer and M10 Hex Bolt	L-Foot, Flashing, 5/16" x 4 1/2" SS Lag with metalized EPDM washer	L-Foot, Flashing, 5/16" x 4 1/2" SS Lag with metalized EPDM washer	L-Foot, Flashing, 5/16" x 4 1/2" SS Lag with metalized EPDM washer
Roof Type	Composition Shingle				
Certifications	IBC, ASCE/SEI 7-16, AC286				
Install Application	Railed Systems				
Compatible Rail	Most				
Kit Quantity	24				
Boxes per Pallet	72				

Protected under US Patent: 10,998,847. Additional patents pending. All rights reserved. ©2021 Pegasus

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Sheet Name

**MOUNTING  
SPEC SHEET**

Sheet Size

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Sheet Number

**D 1.10**



MIDNITE SOLAR INC.  
**Surge Protection**

**Surge Protection You Can Count On!**

MidNite Solar Surge Protection Devices are type 1 devices, designed for indoor and outdoor applications. Engineered for both AC and PV DC electrical systems, they provide protection to service panels, load centers or electronic devices that are directly connected to a MidNite Surge Protection Device (SPD).

MidNite's SPD's are offered in four models to protect a variety of different voltage ranges. They achieve this protection by clamping surge voltage to a level that your system can sustain without damaging the components of the system.

Compare our SPD's against other surge protection devices. You will see there is no comparison in both our price and features. All our SPD's have a 5 year warranty.

**With lightning you only get one chance, so get the best!**



www.midnitesolar.com/spd  
19115 - 62nd Ave. NE., Arlington, WA. 360-403-7207 FAX: 360-691-6862



MNSPD300ACFM (Cut-in box)  
(MNSPD-300-AC included)

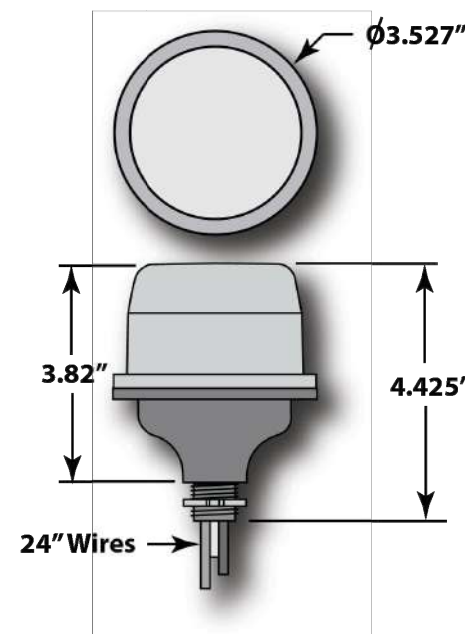


**Four Models:**  
MNSPD-115  
MNSPD-300-AC  
MNSPD-300-DC  
MNSPD-600



**MidNite Surge Protection Devices**

PART NUMBER	MNSPD-115	MNSPD-300-AC	MNSPD-300-DC	MNSPD-600
Nominal Voltage	0 to 90 VAC 0 to 115 VDC	0 to 250 VAC	0 to 300 VDC	0 to 480 VAC 0 to 600 VDC
MCOV	180V	470V	470V	780V
VPR Line to Ground	600V	1200V	1200V	1800V
Suggested Placement	Up to 90VAC circuits, 12V, 24V, 48VDC battery circuits	120/240 VAC circuits	Off-grid PV combiners Charge controller inputs up to 300VDC	316V/480 VAC circuits Grid-tie PV combiners Grid-tie inverter input Non-Isolated Inverters
Type	UL1449 4th Ed. Type 1	UL1449 4th Ed. Type 1	UL1449 4th Ed. Type 1	UL1449 4th Ed. Type 1
Diagnostic Blue LED	MNSPD-300-AC LED indicates when voltage is present between L1 + ground and L2 + ground MNSPD-115, MNSPD-300-DC and MNSPD-600: LED indicates when voltage is present between L1 + L2 (PV+ PV-)			
Thermal Disconnect	Internal Fuse			
Response Time	<1 micro sec.			



<b>Performance</b>	
Surge Current Rating per Phase	80kA
Short Circuit Current Rating	10kA
Fusing	Individually fused MOVs
Thermal Fusing	Yes
Over current Fusing	Yes
Operating Frequency	0 to 500 Hz
<b>Mechanical Description</b>	
Enclosure	Polycarbonate UL94V-0
Environmental Rating	Type 4X
Connection Method	#12 AWG
Weight	1 lb.
Mounting Method	1/2" Conduit Knockout
Operating Altitude	Sea Level - 12,000' (3,658 Meters)
Storage Temp	-40° F to +185° F (-40° C to +85° C)
Operating Temp	-40° F to +185° F (-40° C to +85° C)
<b>Diagnostics</b>	
Blue status LED, one per leg	
<b>Listings and Performance</b>	
UL Standard for Safety, UL 1449 Surge Protective Devices-Fourth Edition CSA C22.2 No. 8-M1986 Electromagnetic Interference (EMI) Filters, Fourth Edition	

Model No.	Max Operating Voltage	Surge Current per Phase	Configuration	MCOV	SCCR	VPR 600V/3kA L-G
MNSPD-115	100 VAC/150VDC	80kA	1Ø, 3-wire (2 Legs)	180V L-N	10kA	600V
MNSPD-300-AC	300VAC	80kA	1Ø, 3-wire (2 Legs)	470V L-N	10kA	1200V
MNSPD-300-DC	385VDC	80kA	1Ø, 3-wire (2 Legs)	470V L-N	10kA	1200V
MNSPD-600	480VAC/600VDC	80kA	1Ø, 3-wire (2 Legs)	780V L-N	10kA	1800V

www.midnitesolar.com/spd  
19115 - 62nd Ave NE, Arlington, WA 98223 PH. 360-403-7207 FAX 360-691-6862



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UTILITY: WE ENERGIES

DESIGNED BY:



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Sheet Name

SPD  
SPEC SHEET

Sheet Size

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11" X 17"

Sheet Number

D 1.11

Product data sheet

Specifications

SQUARE D



Safety switch, general duty, non fusible, 2 pole, 2 wire, 240VAC, 30A, Type 3R with bolt on hub prov

DU221RB

Product availability: Stock - Normally stocked in distribution facility

Main

Product	Single Throw Safety Switch
Duty Rating	General duty
Device Application	Residential
Disconnect Type	Non-fusible disconnect switch
Factory Installed Neutral	None
Number of Poles	2
Current Rating	30 A
Voltage Rating	240 V AC
Enclosure Rating NEMA	NEMA 3R
Motor power hp	3 hp at 240 V AC 60 Hz for 1 phase motors

Complementary

Mounting Type	Surface
Electrical Connection	Lugs
Wiring configuration	2 wires
Wire Size	AWG 14...AWG 6 copper AWG 12...AWG 6 aluminium
Tightening torque	30 lbf.in (3.4 N.m) 0.003...0.02 in² (2.08...13.3 mm²) (AWG 14...AWG 6)
Depth	3.75 in (95.25 mm)
Width	7.75 in (196.85 mm)
Height	9.63 in (244.60 mm)
Net Weight	17.0 lb(US) (7.7 kg)

Environment

Certifications	UL listed file E2875
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Ordering and shipping details

Category	US1DE1A00106
Discount Schedule	DE1A
GTIN	785901490340
Returnability	Yes

Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

Sep 27, 2025

Life Is On Schneider Electric



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Sheet Name  
ACD  
SPEC SHEET

Sheet Size  
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Sheet Number  
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