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6420 Southpoint Parkway S., Suite 130
Jacksonville, FL 32216
License # EC13011663
Tel. # (888)-501-0115

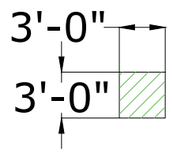
**Property Owner Info:**

GARY ZWERDLING
1534 NW FRONTIER DR
LAKE CITY, FL
32055

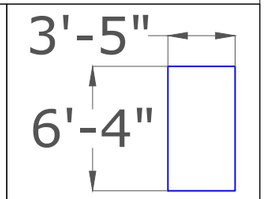

**Legend:**

- Utility Meter
- PV AC Disconnect
- Combiner Box
- Vent Pipe
- Square Vent
- Chimney
- Satellite

**Ground Access Points are a minimum of 36" x 36"**




**Ground Access**




**PV Module**

## Requirements Met:

-2020 Florida Residential Code & FBC, 7th Edition (2021 International Residential Code) - 2nd Printing modified by the FL Building Standards
-2020 Florida Building Energy -Conservation Code 7th edition
-COUNTY OF COLUMBIA Code
-2017 National Electric Code
-2021 International Building Code
-2015 International Energy Code
-2021 International Fire Code
-NFPA 70th Edition, Chapter 11.12
-Florida Fire Prevention Code 2020 7th Edition
-NFPA-1 7th Edition & NFPA-101 2018

**System Info:**

| | |
|---|---|
| Inverter: | Enphase IQ8PLUS-72-2-US |
| PV Module: | (40) Canadian Solar CS3N-395MS |
| Rail: | Q-Rail Light |
| System Wattage: | 15,800 W DC |
| Roof Material: | Composition Shingles |
| Wind Load: | 21 to 27 Deg |
| Fastener(s): | (2) #14 x 3" Lags |

| Roof | # Modules | Pitch | Azimuth |
|---|---|---|---|
| R1 | 40 | 26° | 193° |

**Sheet Index:**



**Date: 8/1/23**
**Drawn by: FL**
**Revised by: ----**
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**Page: S-1**

**General Notes:**

-Enphase IQ8PLUS-72-2-US Micro Inverters are located behind each module.
-Wire run from array to connection is less than 100 feet.
-1st Responder Access minimum of 36" unobstructed as per Section R324 of the 2020 IRC
-AC Disconnect will be Visible, Lockable, Labeled, Accessible and within 10ft of the Utility Meter.

I CERTIFY THAT THE SHEATING AND FRAMING OF THIS STRUCTURE WILL SAFELY ACCOMODATE CALCULATED WIND UPLIFT AND LATERAL FORCES AND EQUIPMENT DEAD LOADS. THIS IS ATTESTED TO BE MY SIGNATURE AND SEAL ON THIS DRAWING AT THE LOWER LEFT BOTTOM

Chad E Widup

Digitally signed by Chad E Widup
Date: 2023.08.03 12:07:58 -04'00'

CHAD WIDUP LICENSE No. 60302 STATE OF FLORIDA PROFESSIONAL ENGINEER

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Chad Widup, P.E. NO. 60302
39905 Grays Airport Road
Lady Lake, FL 32159

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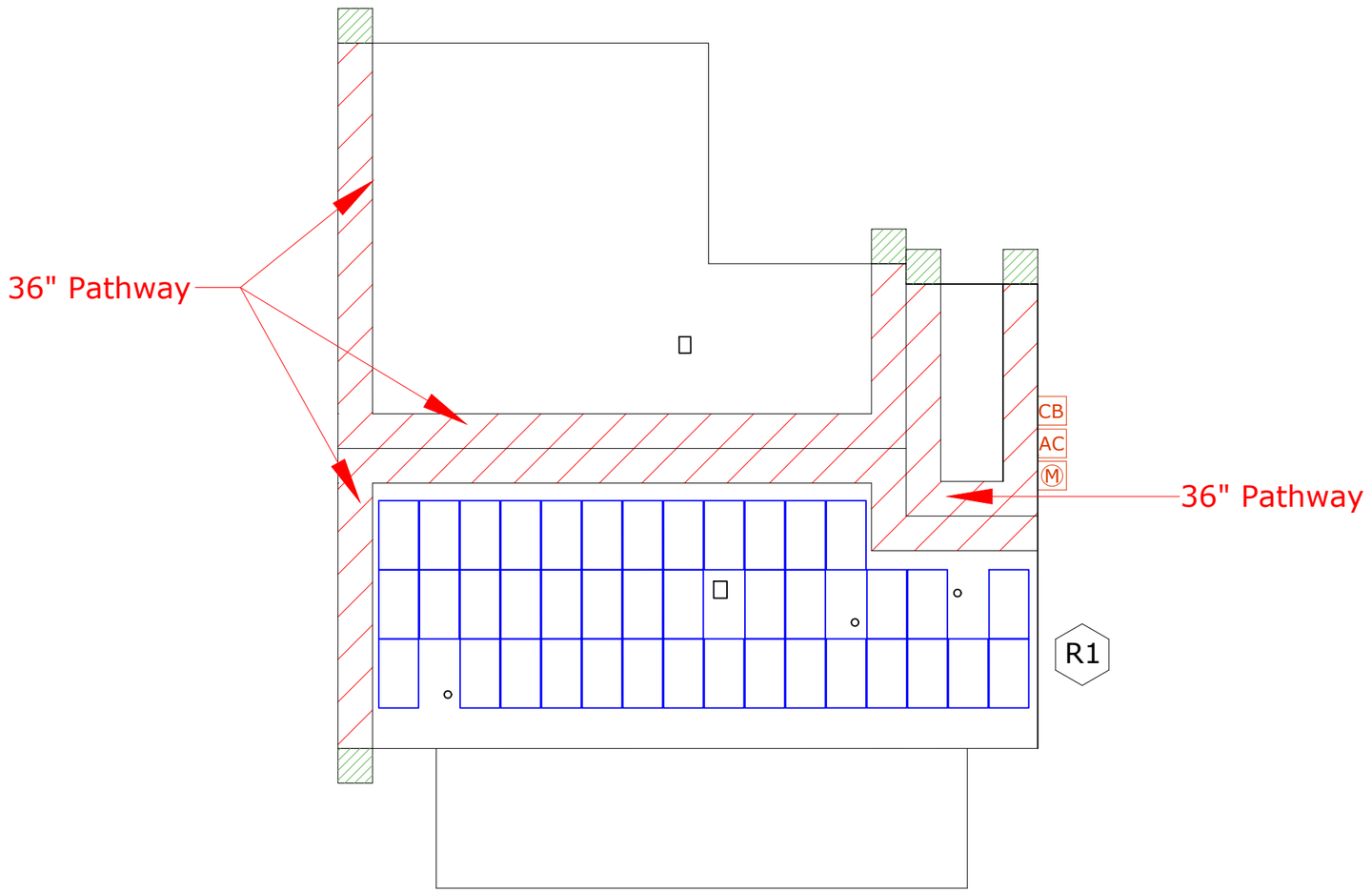
# NW FRONTIER DR




Layout Subject to Change Based on Site Conditions

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| Wind Load: | 21 to 27 Deg |
| Fastener(s): | (2) #14 x 3" Lags |

**2020 FBC Roof Mounted PV Design Criteria:**

-Roof Height: 15'
-Wind Speed(Vult): 120mph 3 sec gust
-Exposure Category: B
-Designed as per ASCE7-16
-Snow Load: 0psf

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**Page: S-2**

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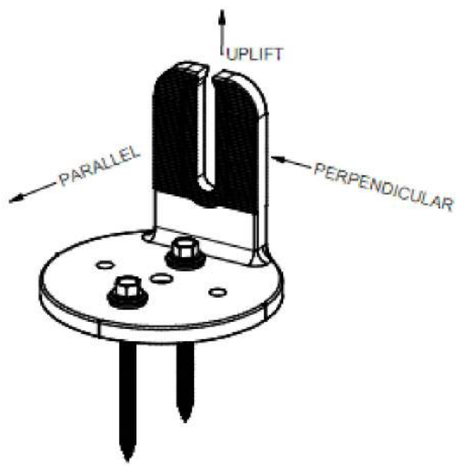
| Roof(s) | Pitch | Roof Structure | Overhang | Roof Type | Notes: |
|---|---|---|---|---|---|
| R1 | 6/12 | 2" x 4" @ 24" O.C. | 12" | Gable | Truss |

General Notes:
- Sunmodo NanoMounts are secured to rafters using (2) #14 x 3" stainless steel Lag bolts.
- Subject roof has One layer.
- All penetrations are sealed.



Minimum 3" Embedment

- Subject roof has One layer.
- All penetrations are sealed and flashed.

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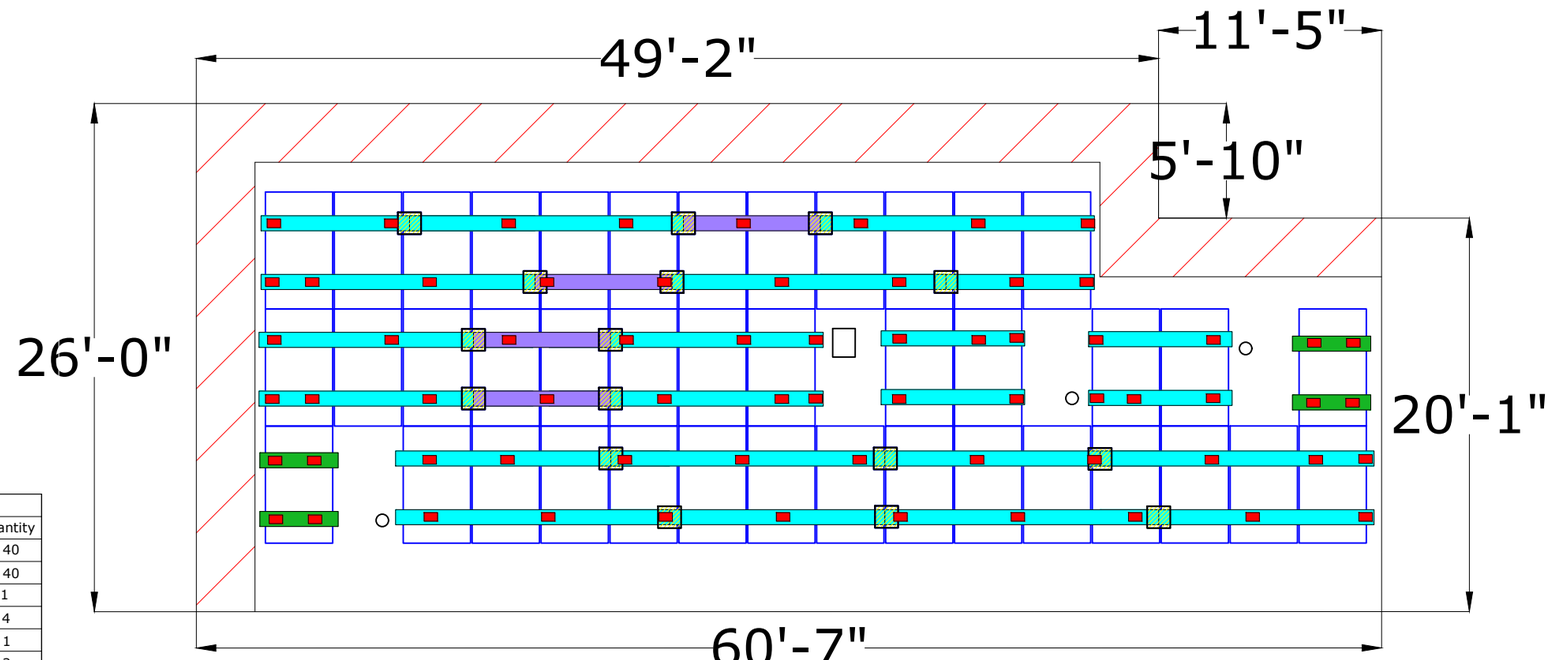
- System meets all requirements of FBC Residential R301.2 and all related tables
- All Flashing to be installed in compliance with FBC Residential R903.2
- All roof mounted equipment will be installed per manufacturer spec.
- Rail to be mounted 1'-6" apart for PV Modules in Landscape
- Wind Zone widths are offset 48" from roof face perimeter
- Rail to be mounted 3' apart for PV Modules in Portrait
- All max cantilevers per manufacturer spec.
- Max Cantilever = Max Span * ($\frac{1}{3}$)

3'-5"
6'-4"
PV Module




R1

| Electrical BOM | |
|---|---|
| Item | Quantity |
| Canadian Solar CS3N-395MS | 40 |
| Enphase IQ8PLUS-72-2-US | 40 |
| Enphase Combiner Box | 1 |
| 20A 2P Breakers | 4 |
| 100A Fused Disconnect | 1 |
| 70A Fuses | 2 |
| | |
| | |

| Structural BOM | |
|---|---|
| Item | Quantity |
| Splice Bar | 16 |
| Sunmodo NanoMounts | 68 |
| QM Mids | 66 |
| QM Ends/End Caps | 28 |
| Roof Top Combiner | 1 |
| QM Ground Lugs | 7 |
| Q-Rail Light 14' Rail | 26 |

Legend

- 14' Rail
- 7' Rail
- 4' Rail
- Mount Attachments
- Splice Bar
- Vent Pipe
- Square Vent
- Chimney
- Satellite

No Exposed or Edge Placements Allowed

| Roof | # Modules | Pitch | Azimuth |
|---|---|---|---|
| R1 | 40 | 26° | 193° |

| Roof Zone | Max Span | Max Cantilever |
|---|---|---|
| Zone 1 | 72" | 24.0" |
| Zone 2e | 72" | 24.0" |
| Zone 2n | 48" | 16.0" |
| Zone 2r | 48" | 16.0" |
| Zone 3e | 48" | 16.0" |
| Zone 3r | 48" | 16.0" |

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LAKE CITY, FL
32055

Inverter: Enphase IQ8PLUS-72-2-US
PV Module:(40) Canadian Solar CS3N-395MS
System Wattage:**15,800 W DC**

Note:
-All wiring to meet the 2017 NEC and Florida electric codes.
-Type of conduit to be determined on site by contractor.
-Number of rooftop Junction Boxes to be determined on site and are at least NEMA 3R rated.
-AC Disconnect will be visible, lockable, labeled, accessible, and located within 10ft of Utility Meter.
-12-2 Romex may be used for interior building and attic runs only. 12-2 Romex not to be used in conduit or outdoor environments.

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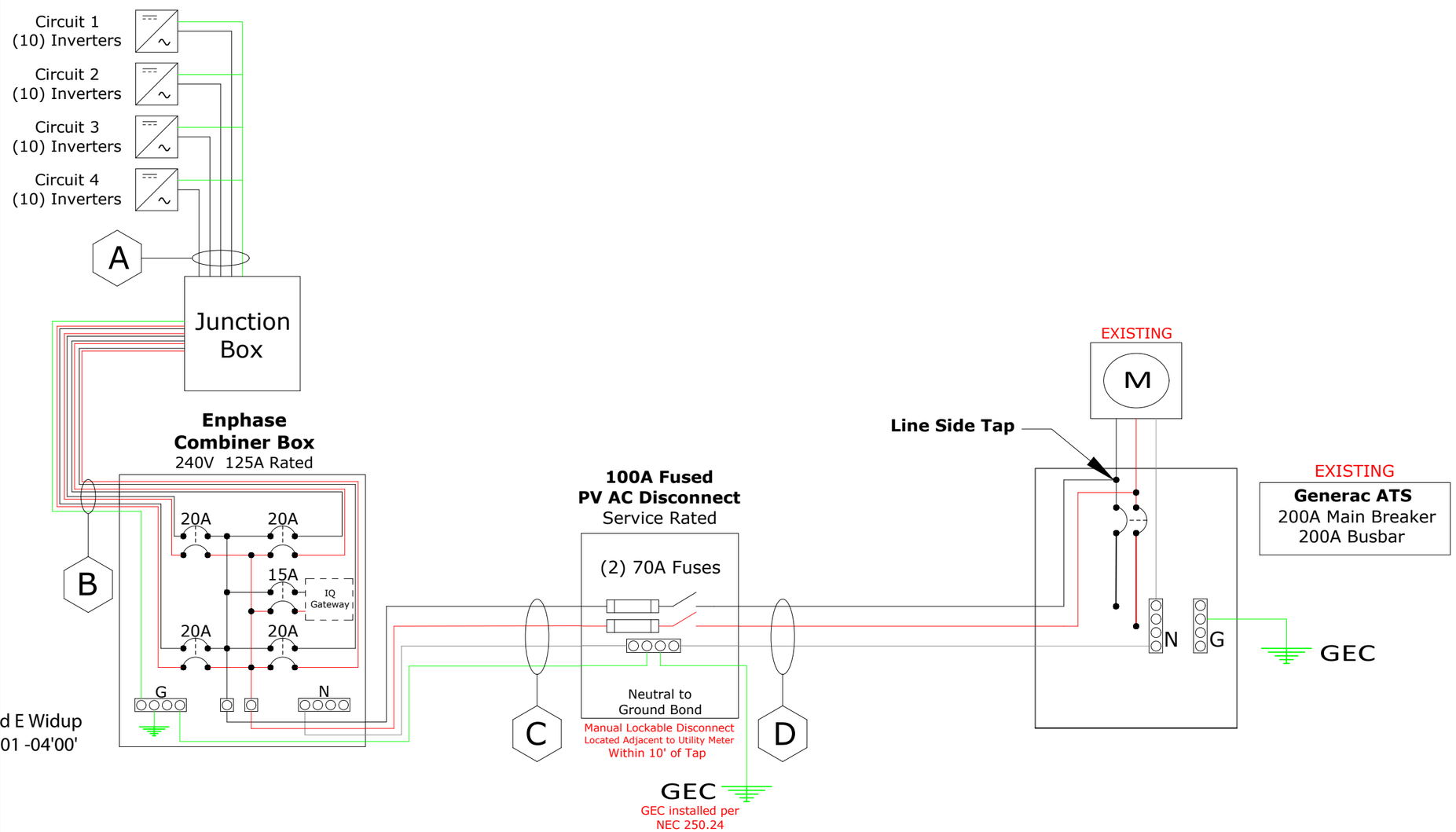
| Label | Wire Type | Wire Size (AWG) | Ground (AWG) | Min. Conduit Size |
|---|---|---|---|---|
| A | PV Cable & Bare Copper | 12 | 6 | N/A |
| B | THHN | 10 | 10 | 3/4" |
| C | THHN | 4 | 8 | 1" |
| D | THHN | 4 | N/A | 1" |

**Photovoltaics:**
(40) Canadian Solar CS3N-395MS
**Inverters:**
(40) Enphase IQ8PLUS-72-2-US Micro Inverters
Maximum Inverters Per 20A Circuit (13)

| Overcurrent Protection Device (OCPD) Calculation | |
|---|---|
| Max AC Output Current | 1.21A |
| No. of Inverters | 40 |
| Total Output Current | 48.40A |
| Total * 125% | 60.50A |
| OCPD Size | 70A |
| Conductor Size | #4AWG |
| No. Current Carrying Conductors | <4 |



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Inverter: Enphase IQ8PLUS-72-2-US
PV Module:(40) Canadian Solar CS3N-395MS
System Wattage:**15,800 W DC**

Note:
-Subject PV Systems has been designed to meet the requirments of the NEC 2017, and those set forth by the Florida Solar Energy Center Certification, Including Maximum Number of Module Strings, Maximum number of modules per string, Maximum Output, Module Manufacturer and model number, inverter manufacturer and model number, as applicable.
-All wiring to meet the 2017 NEC and Florida electric codes.
100A Disconnect
-Type of conduit to be determined on site by contractor.

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## Combined Inverter Output

| | | |
|---|---|---|
| Design Temperature (°F) | 94 | |
| Max Ambient Temperature Range (°F) | 87-95 | 310.15(B)(2)(a) |
| Conductor Temp Rating (°C) | 90 | |
| # of Current Carrying Conductors | <4 | 310.15(B)(3)(a) |
| Max AC Output Current | 1.21A | |
| # of Inverters | 40 | |
| Total Output Current | 48.40A | 690.8(A)(3) |
| Total * 125% | 60.50A | 690.8(B)(1) |
| OCPD Size | 70A | |
| Ambient Temp Correction Factor | 0.96 | 310.15(B)(2)(a) |
| Raceway Fill Adjustment Factor | 100% | 310.15(B)(3)(a) |
| Conductor Allowable Ampacity | 95A | |
| Conductor Adjusted Ampacity | 91.2A | 95A*0.96=91.2A |

## Equipment Temperature Ampacity Limitation

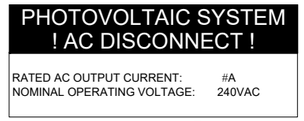
| | |
|---|---|
| Conductor Temp Rating (°C) | 75 |
| OCPD Size | 70A |
| Conductor Size | 4AWG |
| Conductor Allowable Ampacity | 85A |

Conductors Sized to coordinate with the lowest temperature rating of any connected termination, conductor, or device. Temperature ratings for the aforementioned equipment to be 75°C.

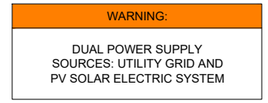
Line Side Tap will be done inside Generac ATS Panel adjacent to Utility Meter

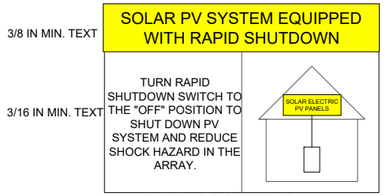
Combiner box in compliance
Per Code NEC 705.12
4* 20A < 125A
*No other loads to be added


NEC 690.56(C)(3)

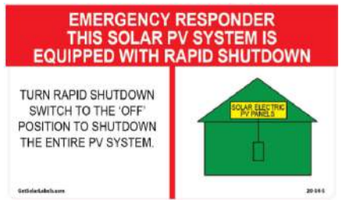



NEC 690.54

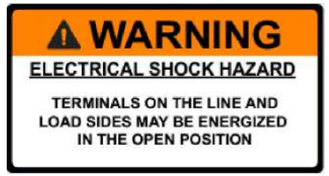



NEC 690.56(C)(1)




NFPA 1.11.12.2.1.1.1.1


NEC 690.13(B)

Load Side Connection ONLY


705.12(B)(2)(3)(b)


Main Service Disconnect

-The label shall be red with white capital letters at least 3/4 in. in height and in a nonserif font.
-Materials used for the label shall be reflective, weather resistant, and
suitable for the environment.

PV Disconnect and other equipment

-The label shall be red with white capital letters at least 3/8 in. in height and in a nonserif font.
-Materials used for the label shall be reflective, weather resistant, and
suitable for the environment.

NEC LABEL NOTES:
1. THE WARNING SIGN(S) OR LABEL(S) SHALL COMPLY WITH NEC 110.21(B)
2. LABELS SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE THEY ARE INSTALLED.
3. LABELS TO BE A MIN LETTER HEIGHT OF 3/8" AND PERMANENTLY AFFIXED.
4. LABELS SHALL ALSO COMPLY WITH THE SPECIFIC REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

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**Requirements Met:**

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**PROJECT NOTES:**

- THIS PHOTOVOLTAIC(PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURERS'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.
- THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION
- ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC 690.4 & NEC 690.60: PV MODULES: UL1703, IEC61730, AND IEC61215, AND NFPA 70 CLASS C FIRE INVERTERS: UL 1741 CERTIFIED, IEEE 1547, 929, 519 COMBINER BOX(ES): UL 1703 OR UL 1741 ACCESSORY
- NEC 690.35 REFERS SPECIFICALLY TO "UNGROUNDED" PV SYSTEMS. ALSO DESIGNATED AS "TRANSFORMERLESS" BY INVERTER MANUFACTURERS AND "NON-ISOLATED" BY UNDERWRITERS LABORATORY.
- INVERTER(S) USED IN UNGROUNDED SYSTEM SHALL BE LISTED FOR THIS USE [NEC 690.35 (G)].
- AS SPECIFIED BY THE AHJ, EQUIPMENT USED IN UNGROUNDED SYSTEMS LABELED ACCORDING TO NEC 690.35 (F).
- MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7.
- ALL INVERTERS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AND SOURCE CIRCUIT COMBINERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D). SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS FROM LISTING OR LABELING [NEC 110.3].
- ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH 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.

**SCOPE OF WORK:**

- PRIME CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT. PRIME CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTING EXISTING ONSITE REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE ROOF MOUNT ARRAY PORTION OF THE PHOTOVOLTAIC SYSTEMS DETAILED IN THIS DOCUMENT.

**SITE NOTES:**

- THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
- THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING OR MECHANICAL.
- PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION NEC 110.26.

**EQUIPMENT LOCATIONS**

- ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26.
- WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31 (A),(C) AND NEC TABLES 310.15 (B)(2)(A) AND 310.15 (B)(3)(C).
- JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO NEC 690.34.
- ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.
- ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.
- ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.
- SOLAR ARRAY LOCATION SHALL BE ADJUSTED ACCORDINGLY TO MEET LOCAL SETBACK REQUIREMENTS.

**STRUCTURAL NOTES:**

- RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAIL MANUFACTURER'S INSTRUCTIONS.
- JUNCTION BOX WILL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IT SHALL BE SEALED PER LOCAL REQUIREMENTS.
- ALL PV RELATED ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.

**GROUNDING NOTES:**

- GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
- AS IN CONVENTIONAL PV SYSTEMS, UNGROUNDED PV SYSTEMS REQUIRE AN EQUIPMENT GROUNDING CONDUCTOR. ALL METAL ELECTRICAL EQUIPMENT AND STRUCTURAL COMPONENTS BONDED TO GROUND, IN ACCORDANCE WITH 250.134 OR 250.136(A). ONLY THE DC CONDUCTORS ARE UNGROUNDED.
- PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.122.
- METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURE CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A).
- EACH MODULE WILL BE GROUNDED USING WEEB GROUNDING CLIPS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ. IF WEEBS ARE NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURERS' INSTALLATION REQUIREMENTS.
- THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
- GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [NEC 250.119]
- THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690.47 AND NEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED ACCORDING TO NEC 250, NEC 690.47 AND AHJ.
- ACCORDING TO NEC 690.47 (C)(3), UNGROUNDED SYSTEMS INVERTER MAY SIZE DC GEC ACCORDING TO EGC REQUIREMENTS OF NEC 250.122. HOWEVER, DC GEC TO BE UNSPLICED OR IRREVERSIBLY SPLICED.
- IN UNGROUNDED INVERTERS, GROUND FAULT PROTECTION IS PROVIDED BY "ISOLATION MONITOR INTERRUPTER," AND GROUND FAULT DETECTION PERFORMED BY "RESIDUAL-CURRENT DETECTOR."

**INTERCONNECTION NOTES:**

- LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH[NEC690.64 (B)]
- THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120% OF BUSBAR RATING [NEC 705.12(D)(2)(3)].
- PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD [NEC 705.12(D)(2)(3)].
- AT MULTIPLE INVERTERS OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE COMBINED OVERCURRENT DEVICE MAY BE EXCLUDED ACCORDING TO NEC 705.12 (D)(2)(3)(C).
- FEEDER TAP INTERCONNECTION (LOAD SIDE) ACCORDING TO NEC 705.12 (D)(2)(1)
- SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12 (A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42
- BACKFEEDING BREAKER FOR UTILITY-INTERACTIVE INVERTER OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (D)(5)].

**DISCONNECTION AND OVER-CURRENT PROTECTION NOTES:**

- DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
- DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH.
- BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDED. THEREFORE BOTH MUST OPEN WHERE A DISCONNECT IS REQUIRED, ACCORDING TO NEC 690.13. 2.6.5 DC DISCONNECT INTEGRATED INTO DC COMBINER OR INSTALLED WITHIN 6 FT, ACCORDING TO NEC 690.15 (C).
- RAPID SHUTDOWN OF ENERGIZED CONDUCTORS BEYOND 10 FT OF PV ARRAY OR 5 FT INSIDE A BUILDING WITHIN 10 SECONDS. CONTROLLED CONDUCTORS ≤30V AND ≤240VA [NEC 690.12]. LOCATION OF LABEL ACCORDING TO AHJ.
- ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.
- BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDED, THEREFORE BOTH REQUIRE OVER-CURRENT PROTECTION, ACCORDING TO NEC 240.21. (SEE EXCEPTION IN NEC 690.9) 2.6.9 IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.
- THE SERVICE DISCONNECTING MEANS SHALL HAVE A RATING NOT LESS THAN THE CALCULATED LOAD TO BE CARRIED, DETERMINED IN ACCORDANCE WITH PART III, IV, OR V OF ARTICLE 220, AS APPLICABLE. IN NO CASE SHALL THE RATING BE LOWER THAN SPECIFIED IN 230.79(A), (B), (C), OR (D)
- SERVICE DISCONNECTING MEANS WILL BE IN COMPLIANCE WITH NEC 230.71 AND NEC 230.72.

**WIRING & CONDUIT NOTES:**

- ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
- ALL CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.
- EXPOSED UNGROUNDED PV SOURCE AND OUTPUT CIRCUITS SHALL USE WIRE LISTED AND IDENTIFIED AS PHOTOVOLTAIC (PV) WIRE [690.35 (D)]. PV MODULES WIRE LEADS SHALL BE LISTED FOR USE WITH UNGROUNDED SYSTEMS, ACCORDING TO NEC 690.35 (D)(3).
- PV WIRE BLACK WIRE MAY BE FIELD-MARKED WHITE [NEC 200.6 (A)(6)].
- MODULE WIRING SHALL BE LOCATED AND SECURED UNDER THE ARRAY.
- ACCORDING TO NEC 200.7, UNGROUNDED SYSTEMS DC CONDUCTORS COLORED OR MARKED AS FOLLOWS: DC POSITIVE- RED, OR OTHER COLOR EXCLUDING WHITE, GRAY AND GREEN DC NEGATIVE- BLACK, OR OTHER COLOR EXCLUDING WHITE, GRAY AND GREEN
- AC CONDUCTORS COLORED OR MARKED AS FOLLOWS: PHASE A OR L1- BLACK PHASE B OR L2- RED, OR OTHER CONVENTION IF THREE PHASE PHASE C OR L3- BLUE, YELLOW, ORANGE*, OR OTHER CONVENTION NEUTRAL- WHITE OR GRAY * IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE [NEC 110.15].
- ELECTRICAL WIRES INTRENCH SHALL BE AT LEAST 18IN. BELOW GRADE(RESIDENTIAL).

NEW

CanadianSolar

# HiKuBlack Mono PERC

## BLACK FRAME ON BLACK BACKSHEET

## F23 Frame

## 380 W ~ 410 W

## CS3N-380|385|390|395|400|405|410MS

### MORE POWER

- Module power up to 410 W
  Module efficiency up to 20.2 %
- Lower LCOE & BOS cost
- Comprehensive LID / LeTID mitigation technology, up to 50% lower degradation
- Better shading tolerance

### MORE RELIABLE

- Minimizes micro-crack impacts
- Heavy snow load up to 8100 Pa, enhanced wind load up to 6000 Pa*

25 Years — Industry Leading Product Warranty on Materials and Workmanship*

25 Years — Linear Power Performance Warranty*

1st year power degradation no more than 2%

Subsequent annual power degradation no more than 0.55%

*Subject to the terms and conditions contained in the applicable Canadian Solar Limited Warranty Statement. Also this 25-year limited product warranty is available only for products installed and operating on residential rooftops in certain regions.

### MANAGEMENT SYSTEM CERTIFICATES*

ISO 9001: 2015 / Quality management system
ISO 14001: 2015 / Standards for environmental management system
ISO 45001: 2018 / International standards for occupational health & safety

### PRODUCT CERTIFICATES*

IEC 61215 / IEC 61730 / CE
FSEC (US Florida) / UL 61730 / IEC 61701 / IEC 62716

* The specific certificates applicable to different module types and markets will vary, and therefore not all of the certifications listed herein will simultaneously apply to the products you order or use. Please contact your local Canadian Solar sales representative to confirm the specific certificates available for your Product and applicable in the regions in which the products will be used.

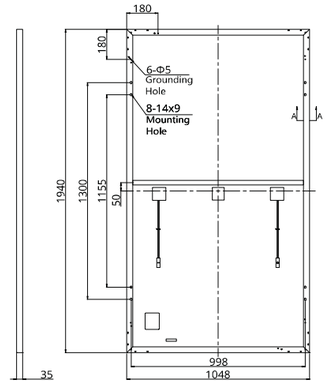
**CSI SOLAR (USA) CO., LTD.** is committed to providing high quality solar photovoltaic modules, solar energy and battery storage solutions to customers. The company was recognized as the No. 1 module supplier for quality and performance/price ratio in the IHS Module Customer Insight Survey. Over the past 20 years, it has successfully delivered over 63 GW of premium-quality solar modules across the world.

* For detailed information, please refer to Installation Manual.

**CSI SOLAR (USA) CO., LTD.**
1350 Treat Blvd. Suite 500, Walnut Creek, CA 94598, USA | www.csisolar.com/na | service.ca@csisolar.com

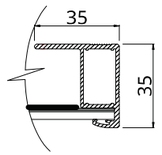
### ENGINEERING DRAWING (mm)

Rear View

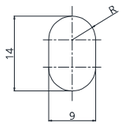



Frame Cross Section

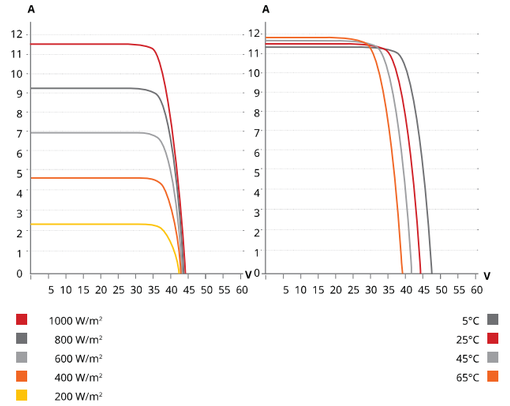
A - A




Mounting Hole




### CS3N-400MS / I-V CURVES




### ELECTRICAL DATA | STC*

| CS3N | 380MS | 385MS | 390MS | 395MS | 400MS | 405MS | 410MS |
|---|---|---|---|---|---|---|---|
| Nominal Max. Power (Pmax) | 380 W | 385 W | 390 W | 395 W | 400 W | 405 W | 410 W |
| Opt. Operating Voltage (Vmp) | 36.4 V | 36.6 V | 36.8 V | 37.0 V | 37.2 V | 37.4 V | 37.6 V |
| Opt. Operating Current (Imp) | 10.44 A | 10.52 A | 10.60 A | 10.68 A | 10.76 A | 10.83 A | 10.92 A |
| Open Circuit Voltage (Voc) | 43.7 V | 43.9 V | 44.1 V | 44.3 V | 44.5 V | 44.7 V | 44.9 V |
| Short Circuit Current (Isc) | 11.26 A | 11.32 A | 11.38 A | 11.44 A | 11.50 A | 11.56 A | 11.62 A |
| Module Efficiency | 18.7% | 18.9% | 19.2% | 19.4% | 19.7% | 19.9% | 20.2% |
| Operating Temperature | -40°C ~ +85°C | | | | | | |
| Max. System Voltage | 1000V (UL) | | | | | | |
| Module Fire Performance | TYPE 2 (UL 61730 1000V) | | | | | | |
| Max. Series Fuse Rating | 20 A | | | | | | |
| Application Classification | Class A | | | | | | |
| Power Tolerance | 0 ~ + 10 W | | | | | | |

* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.

### ELECTRICAL DATA | NMOT*

| CS3N | 380MS | 385MS | 390MS | 395MS | 400MS | 405MS | 410MS |
|---|---|---|---|---|---|---|---|
| Nominal Max. Power (Pmax) | 284 W | 288 W | 291 W | 295 W | 299 W | 303 W | 306 W |
| Opt. Operating Voltage (Vmp) | 34.0 V | 34.2 V | 34.4 V | 34.6 V | 34.7 V | 34.9 V | 35.1 V |
| Opt. Operating Current (Imp) | 8.35 A | 8.42 A | 8.48 A | 8.54 A | 8.60 A | 8.66 A | 8.73 A |
| Open Circuit Voltage (Voc) | 41.2 V | 41.4 V | 41.6 V | 41.8 V | 41.9 V | 42.1 V | 42.3 V |
| Short Circuit Current (Isc) | 9.08 A | 9.13 A | 9.18 A | 9.23 A | 9.28 A | 9.33 A | 9.37 A |

* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m² spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

### MECHANICAL DATA

| Specification | Data |
|---|---|
| Cell Type | Mono-crystalline |
| Cell Arrangement | 132 [2 X (11 X 6) ] |
| Dimensions | 1940 X 1048 X 35 mm (76.4 X 41.3 X 1.38 in) |
| Weight | 23.4 kg (51.6 lbs) |
| Front Cover | 3.2 mm tempered glass |
| Frame | Anodized aluminium alloy |
| J-Box | IP68, 3 bypass diodes |
| Cable | 12 AWG (UL) |
| Cable Length (Including Connector) | Portrait: 400 mm (15.7 in) (+) / 280 mm (11.0 in) (-) (supply additional cable jumper: 2 lines/pallet); landscape: 1250 mm (49.2 in)* |
| Connector | T4 or MC4 series |
| Per Pallet | 30 pieces |
| Per Container (40' HQ) | 720 pieces |

* For detailed information, please contact your local Canadian Solar sales and technical representatives.

### TEMPERATURE CHARACTERISTICS

| Specification | Data |
|---|---|
| Temperature Coefficient (Pmax) | -0.34 % / °C |
| Temperature Coefficient (Voc) | -0.26 % / °C |
| Temperature Coefficient (Isc) | 0.05 % / °C |
| Nominal Module Operating Temperature | 42 ± 3°C |

### PARTNER SECTION

Chad E Widup

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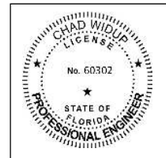
Date: 2023.08.03 12:10:55 -04'00'

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Chad Widup, P.E. NO. 60302
39905 Grays Airport Road
Lady Lake, FL 32159

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* The specifications and key features contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement. CSI Solar Co., Ltd. reserves the right to make necessary adjustment to the information described herein at any time without further notice. Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

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39905 Grays Airport Road
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ENPHASE.

DATA SHEET


# IQ8 Series Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.

Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.

Enphase 25 year limited warranty

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.

Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.

UL CERTIFIED SAFETY

IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

**Easy to install**

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

**High productivity and reliability**

- Produce power even when the grid is down
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

**Microgrid-forming**

- Complies with the latest advanced grid support
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements





# IQ8 Series Microinverters

| INPUT DATA (DC) | | IQ8-60-2-US | IQ8PLUS-72-2-US | IQ8M-72-2-US | IQ8A-72-2-US | IQ8H-240-72-2-US | IQ8H-208-72-2-US[1] |
|---|---|---|---|---|---|---|---|
| Commonly used module pairings[2] | W | 235 – 350 | 235 – 440 | 260 – 460 | 295 – 500 | 320 – 540+ | 295 – 500+ |
| Module compatibility | | 60-cell/120 half-cell | 60-cell/120 half-cell and 72-cell/144 half-cell | | | | |
| MPPT voltage range | V | 27 – 37 | 29 – 45 | 33 – 45 | 36 – 45 | 38 – 45 | 38 – 45 |
| Operating range | V | 25 – 48 | 25 – 58 | | | | |
| Min/max start voltage | V | 30 / 48 | 30 / 58 | | | | |
| Max input DC voltage | V | 50 | 60 | | | | |
| Max DC current[3] [module Isc] | A | 15 | | | | | |
| Overvoltage class DC port | | II | | | | | |
| DC port backfeed current | mA | 0 | | | | | |
| PV array configuration | | 1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit | | | | | |
| **OUTPUT DATA (AC)** | | **IQ8-60-2-US** | **IQ8PLUS-72-2-US** | **IQ8M-72-2-US** | **IQ8A-72-2-US** | **IQ8H-240-72-2-US** | **IQ8H-208-72-2-US** |
| Peak output power | VA | 245 | 300 | 330 | 366 | 384 | 366 |
| Max continuous output power | VA | 240 | 290 | 325 | 349 | 380 | 360 |
| Nominal (L-L) voltage/range[4] | V | 240 / 211 – 264 | | | | | 208 / 183 – 250 |
| Max continuous output current | A | 1.0 | 1.21 | 1.35 | 1.45 | 1.58 | 1.73 |
| Nominal frequency | Hz | 60 | | | | | |
| Extended frequency range | Hz | 50 – 68 | | | | | |
| Max units per 20 A (L-L) branch circuit[5] | | 16 | 13 | 11 | 11 | 10 | 9 |
| Total harmonic distortion | | <5% | | | | | |
| Overvoltage class AC port | | III | | | | | |
| AC port backfeed current | mA | 30 | | | | | |
| Power factor setting | | 1.0 | | | | | |
| Grid-tied power factor (adjustable) | | 0.85 leading – 0.85 lagging | | | | | |
| Peak efficiency | % | 97.5 | 97.6 | 97.6 | 97.6 | 97.6 | 97.4 |
| CEC weighted efficiency | % | 97 | 97 | 97 | 97.5 | 97 | 97 |
| Night-time power consumption | mW | 60 | | | | | |
| **MECHANICAL DATA** | | | | | | | |
| Ambient temperature range | | -40°C to +60°C (-40°F to +140°F) | | | | | |
| Relative humidity range | | 4% to 100% (condensing) | | | | | |
| DC Connector type | | MC4 | | | | | |
| Dimensions (HxWxD) | | 212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2") | | | | | |
| Weight | | 1.08 kg (2.38 lbs) | | | | | |
| Cooling | | Natural convection – no fans | | | | | |
| Approved for wet locations | | Yes | | | | | |
| Acoustic noise at 1 m | | <60 dBA | | | | | |
| Pollution degree | | PD3 | | | | | |
| Enclosure | | Class II double-insulated, corrosion resistant polymeric enclosure | | | | | |
| Environ. category / UV exposure rating | | NEMA Type 6 / outdoor | | | | | |
| **COMPLIANCE** | | | | | | | |
| Certifications | | CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01<br><br>This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions. | | | | | |

(1) The IQ8H-208 variant will be operating in grid-tied mode only at 208V AC. (2) No enforced DC/AC ratio. See the compatibility calculator at https://link.enphase.com/module-compatibility (3) Maximum continuous input DC current is 10.6A (4) Nominal voltage range can be extended beyond nominal if required by the utility. (5) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

Chad E Widup Digitally signed by Chad E Widup
Date: 2023.08.03 12:12:14 -04'00'

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RSTC Enterprises, Inc.
2214 Heimstead Road
Eau Claire, WI 54703
715-830-9997

SOLADECK
FLASHED PV ROOF-MOUNT COMBINER/ENCLOSURES

# Outdoor Photovoltaic Enclosures

## 0799 Series

Composition/Cedar Roof System

**ETL listed and labeled**

Report # 3171411PRT-002 Revised May, 2018

- UL50 Type 3R, 11 Edition Electrical equipment enclosures
- CSA C22.2 No. 290 Nema Type 3R
- Conforms to UL 1741 Standard

**0799 Series Includes:**

| | |
|---|---|
| 0799 - 2 | Wire size 2/0-14 |
| 0799 - 5 | Wire size 14-6 |
| 0799 - D | Wire size 14-8 |

Models available in Grey, Black or Stainless Steel


SolaDeck 0799-2S


SolaDeck 0799-5G


SolaDeck 0799-DG

**Basic Specifications**

Material options:
- Powder coated, 18 gauge galvanized 90 steel (1,100 hours salt spray)
- Stainless steel

Process - Seamless draw (stamped)
Flashing - 15.25” x 17.25”
Height - 3”
Cavity - 255 Cubic inches

**Base Plate:**

- Fastened to base using toggle fastening system
- 5 roof deck knockouts
- Knockout sizes: (3) .5”, (1) .75” and (1) 1”
- 8”, 35mm slotted din rail
- Ground Block

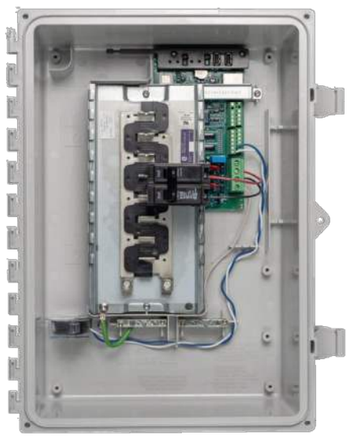
Passthrough and combiner kits are available for either AC or DC applications.

Data Sheet
Enphase Networking

# Enphase IQ Combiner 3

**(X-IQ-AM1-240-3)**

The **Enphase IQ Combiner 3™** with Enphase IQ Envoy™ consolidates interconnection equipment into a single enclosure and streamlines PV and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.



### Smart

- Includes IQ Envoy for communication and control
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and optional consumption monitoring

### Simple

- Reduced size from previous combiner
- Centered mounting brackets support single stud mounting
- Supports back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80 A total PV or storage branch circuits

### Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year warranty
- UL listed

UL LISTED

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

## Enphase IQ Combiner 3

| | |
|---|---|
| **MODEL NUMBER** | |
| IQ Combiner 3 X-IQ-AM1-240-3 | IQ Combiner 3 with Enphase IQ Envoy™ printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional* consumption monitoring (+/- 2.5%). |
| **ACCESSORIES** and **REPLACEMENT PARTS** (not included, order separately) | |
| Enphase Mobile Connect™<br>CELLMODEM-03 (4G / 12-year data plan)<br>CELLMODEM-01 (3G / 5-year data plan)<br>CELLMODEM-M1 (4G based LTE-M / 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<br>CT-200-SPLIT | Split core current transformers enable whole home consumption metering (+/- 2.5%). |
| Circuit Breakers<br>BRK-10A-2-240<br>BRK-15A-2-240<br>BRK-20A-2P-240 | Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers.<br>Circuit breaker, 2 pole, 10A, Eaton BR210<br>Circuit breaker, 2 pole, 15A, Eaton BR215<br>Circuit breaker, 2 pole, 20A, Eaton BR220 |
| EPLC-01 | Power line carrier (communication bridge pair), quantity 2 |
| XA-PLUG-120-3 | Accessory receptacle for Power Line Carrier in IQ Combiner 3 (required for EPLC-01) |
| XA-ENV-PCBA-3 | Replacement IQ Envoy printed circuit board (PCB) for Combiner 3 |
| **ELECTRICAL SPECIFICATIONS** | |
| Rating | Continuous duty |
| System voltage | 120/240 VAC, 60 Hz |
| Eaton BR series busbar rating | 125 A |
| Max. continuous current rating (output to grid) | 65 A |
| Max. fuse/circuit rating (output) | 90 A |
| Branch circuits (solar and/or storage) | Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included) |
| Max. continuous current rating (input from PV) | 64 A |
| Max. total branch circuit breaker rating (input) | 80A of distributed generation / 90A with IQ Envoy breaker included |
| Production Metering CT | 200 A solid core pre-installed and wired to IQ Envoy |
| **MECHANICAL DATA** | |
| Dimensions (WxHxD) | 49.5 x 37.5 x 16.8 cm (19.5" x 14.75" x 6.63"). Height is 21.06" (53.5 cm with mounting brackets). |
| Weight | 7.5 kg (16.5 lbs) |
| Ambient temperature range | -40° C to +46° C (-40° to 115° F) |
| Cooling | Natural convection, plus heat shield |
| Enclosure environmental rating | Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction |
| Wire sizes | • 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors<br>• 60 A breaker branch input: 4 to 1/0 AWG copper conductors<br>• Main lug combined output: 10 to 2/0 AWG copper conductors<br>• Neutral and ground: 14 to 1/0 copper conductors<br>Always follow local code requirements for conductor sizing. |
| Altitude | To 2000 meters (6,560 feet) |
| **INTERNET CONNECTION OPTIONS** | |
| Integrated Wi-Fi | 802.11b/g/n |
| Ethernet | Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included) |
| Cellular | Optional, CELLMODEM-01 (3G) or CELLMODEM-03 (4G) or CELLMODEM-M1 (4G based LTE-M) (not included) |
| **COMPLIANCE** | |
| Compliance, Combiner | UL 1741<br>CAN/CSA C22.2 No. 107.1<br>47 CFR, Part 15, Class B, ICES 003<br>Production metering: ANSI C12.20 accuracy class 0.5 (PV production) |
| Compliance, IQ Envoy | UL 60601-1/CANCSA 22.2 No. 61010-1 |

* Consumption monitoring is required for Enphase Storage Systems.

To learn more about Enphase offerings, visit **enphase.com**


2018-09-13

ENPHASE.

*Product Data Sheet*

# D223NRB

## SWITCH FUSIBLE GD 240V 100A 2P NEMA3R

SQUARE D by Schneider Electric

List Price $480.00 USD

Availability **Stock Item: This item is normally stocked in our distribution facility.**

This item has been digitally signed and sealed by Chad Widup, PE on Aug 03, 2023 using a Digital Signature.

Chad Widup, P.E. NO. 60302
39905 Grays Airport Road
Lady Lake, FL 32159

Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

Chad E Widup
Digitally signed by Chad E Widup
Date: 2023.08.03 12:13:11 -04'00'

### Technical Characteristics

| | |
|---|---|
| Terminal Type | Lugs |
| Type of Duty | General Duty |
| Maximum Voltage Rating | 240VAC |
| Wire Size | #12 to #1/0 AWG(Al) - #14 to #1/0 AWG(Cu) |
| Depth | 6.50 Inches |
| Height | 17.50 Inches |
| Width | 8.50 Inches |
| Action | Single Throw |
| Ampere Rating | 100A |
| Approvals | UL Listed File: E2875 |
| Enclosure Rating | NEMA 3R |
| Enclosure Type | Rainproof and Sleet/Ice proof (Indoor/Outdoor) |
| Enclosure Material | Galvannealed Steel |
| Factory Installed Neutral | Yes |
| Fuse Type | Cartridge (Class H, K or R) |
| Disconnect Type | Fusible |
| Short Circuit Current Rating | 100kA (max. depending on fuse type) |
| Mounting Type | Surface |
| Number of Poles | 2-Pole |

### Shipping and Ordering

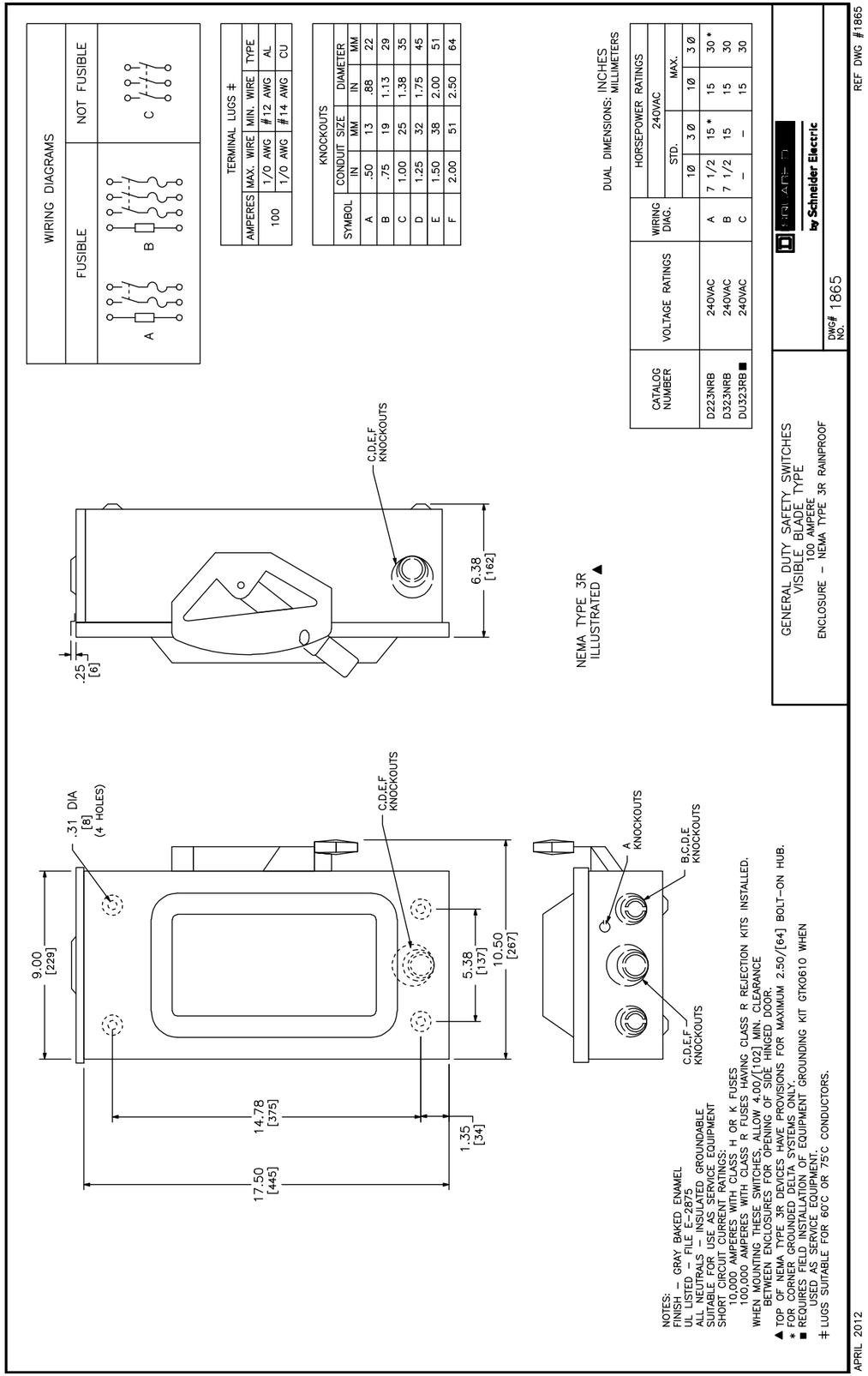
| | |
|---|---|
| Category | 00106 - Safety Switch, General Duty, 30 - 200 Amp, NEMA3R |
| Discount Schedule | DE1A |
| GTIN | 00785901460701 |
| Package Quantity | 1 |
| Weight | 15.46 lbs. |
| Availability Code | Stock Item: This item is normally stocked in our distribution facility. |
| Returnability | Y |
| Country of Origin | US |

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this document.

Generated: 12/19/2012 18:53:48





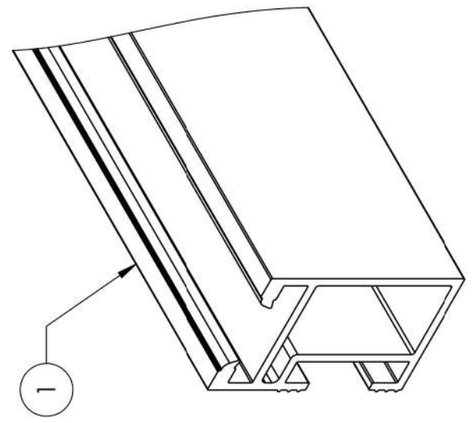


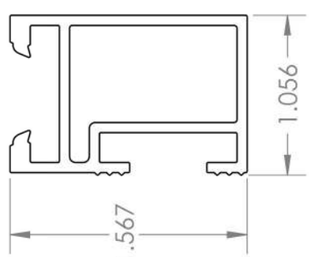
| ITEM NO. | QTY. | DESCRIPTION |
|---|---|---|
| 1 | 1 | QRAIL, LIGHT, AL, MILL |



Chad E Widup

Digitally signed by Chad E Widup
Date: 2023.08.03 12:13:35 -04'00'




NOTES:
1. AVAILABLE IN MILL FINISH AND BLACK FINISH
2. WEIGHT = 0.50 POUNDS PER FOOT

Quick Mount PV

TITLE: QMR-RL: QRAIL LIGHT

| SIZE | DRAWN BY: | REV |
|---|---|---|
| A | DATE: 10/7/2019 | 4 |

SCALE: 1:1 WEIGHT: 0.50 SHEET 1 OF 1

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/8
TWO PLACE DECIMAL ± .19
THREE PLACE DECIMAL ± .094

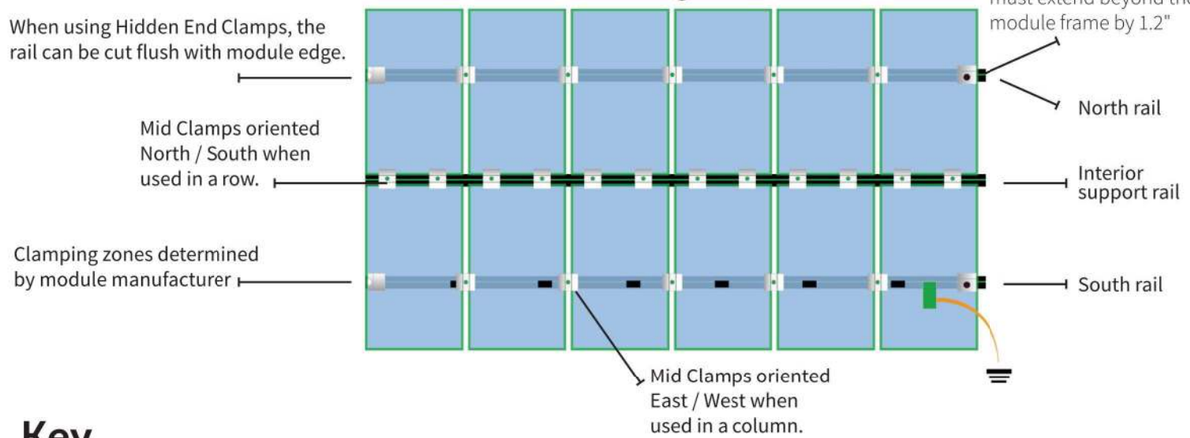
DO NOT SCALE DRAWING



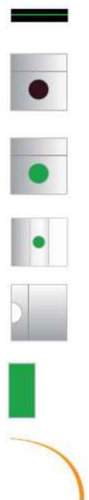
# Shared Rail Quick Start Guide - Designing Shared Rail Using QRail

In addition to 2-rail and 3-rail configurations, QRail Standard-size rail and components can be designed in shared-rail and modified shared-rail configurations. Designing in these configurations reduces rows of penetrations as well as rail, and provides a simplified grounding method. The use of Quick Mount PV's Shared Rail Composition Mount (QMSRC) assists with alignment of the rows of rail by providing 4.5 inches of north / south adjustability of the L-Foot. When working with modified shared-rail configurations, it is possible to use Hidden End Clamps or Standard non-bonded End Clamps. When working with shared-rail configurations, End Clamps must be bonded.
Interior rail can be cut in conformance with module manufacturer cantilever requirements.
NOTE: In addition to this Quick Start guide, refer to the QRail Installation Instructions, the Shared Rail Composition Mount Installation Instructions (QMSRC) and applicable Shared Rail Span Tables provided on the QRail Product Page. Shared Rail Span Tables are based on use of the Shared Rail Composition Mount (QMSRC).

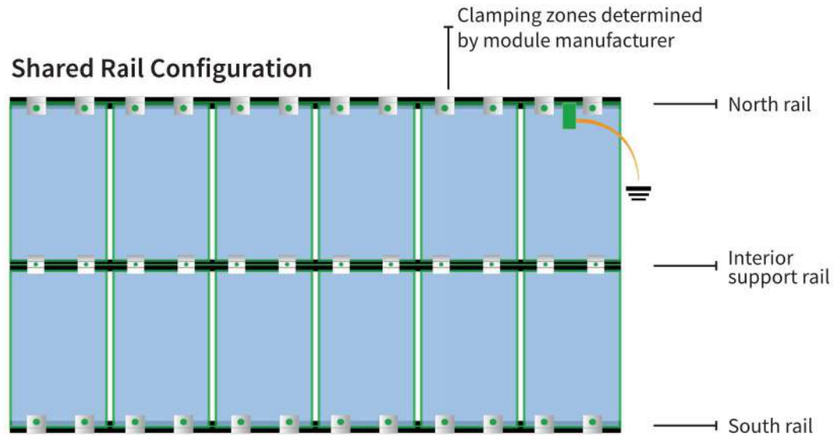
## Modified Shared Rail Configuration




## Key




## Shared Rail Configuration




Quick Mount PV
RESPECT THE ROOF

925-478-8269 | www.quickmountpv.com | info@quickmountpv.com
2700 Mitchell Dr. | Walnut Creek, CA 94598

Nov-2019 Rev 1

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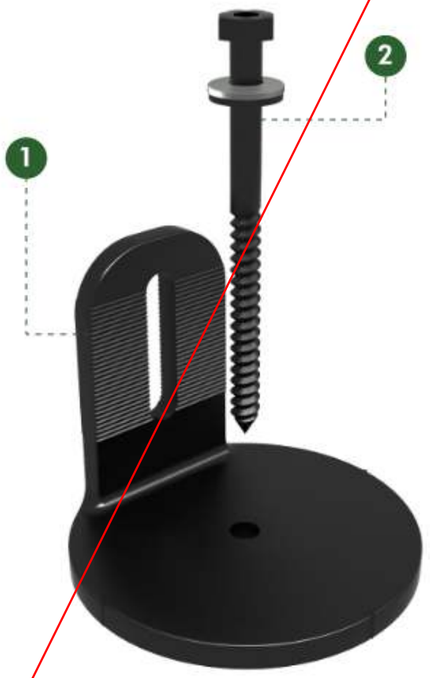
## NanoMount™ (Rafter)

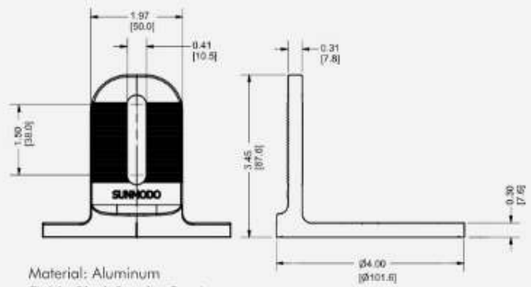



### Part Description: Nano Rafter Mount, Black
### Part No.: K50044-BK1

| Item No. | Description | Qty in Kit |
|---|---|---|
| 1 | Nano Rafter Mount Assembly<br>• Nano Rafter Mount<br>• Nano Gasket | 1 |
| 2 | Lat Bolt Assembly<br>• Hex Lag Bolt M8X115, DIN 571, 304S<br>• Sealing Washer .33 ID X .75 X .157 | 1 |

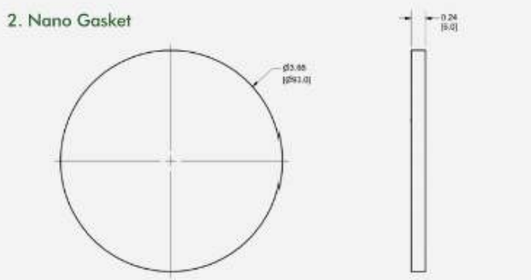
## Cut Sheet

### 1. Nano Mount



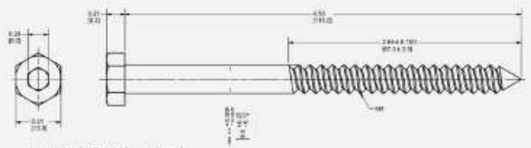

Material: Aluminum
Finish: Black Powder Coating

### 2. Nano Gasket



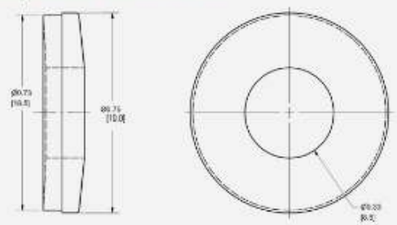

Material: USWR Silicone Foam Gasket with Adhesive

### 3. Hex Lag Bolt M8X115, DIN 571, 304SS



Material: Stainless Steel
Finish: Clear

### 4. Sealing Washer .33ID X.75X.157




Material: EPDM + Stainless Steel

D10213-V001
Dimensions shown are inches (and millimeters)
Details are subject to change without notice

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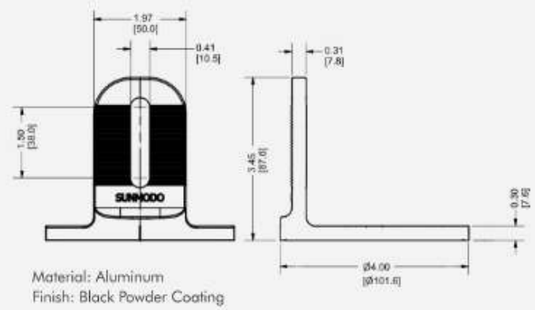
## NanoMount™ (Decking)


### Part Description: Nano Deck Mount, Black
### Part No.: K50044-BK2

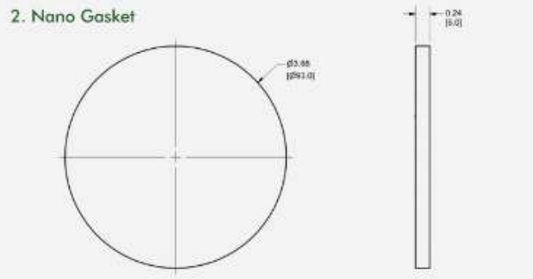
| Item No. | Description | Qty in Kit |
|---|---|---|
| 1 | Nano Deck Mount Assembly<br>• Nano Deck Mount<br>• Nano Gasket | 1 |
| 2 | Decking Screw Assembly<br>• Self-Drilling Screw, #6.3 X 76<br>• Sealing Washer .26ID X .50X .125 | 4 |

### 1. Nano Mount



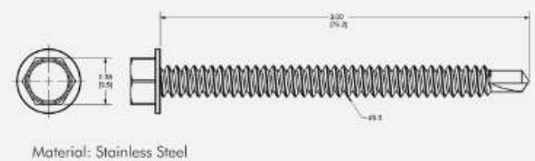

Material: Aluminum
Finish: Black Powder Coating

### 2. Nano Gasket



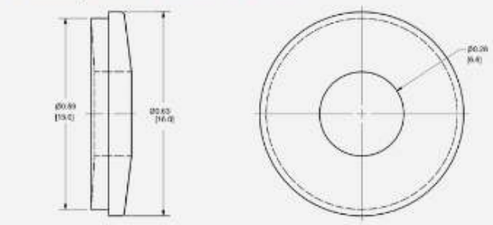

Material: USWR Silicone Foam Gasket with Adhesive

### 3. Self-Drilling Screw, #6.3 X 76



Material: Stainless Steel
Finish: Clear

### 4. Sealing Washer .26ID X .50X .125




Material: EPDM + Stainless Steel

D10214-V001
Dimensions shown are inches (and millimeters)
Details are subject to change without notice

Chad E Widup
Digitally signed by Chad E Widup
Date: 2023.08.03 12:14:11 -04'00'

CHAD WIDUP LICENSE No. 60302 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Chad Widup, PE on Aug 03, 2023 using a Digital Signature.

Chad Widup, P.E. NO. 60302
39905 Grays Airport Road
Lady Lake, FL 32159

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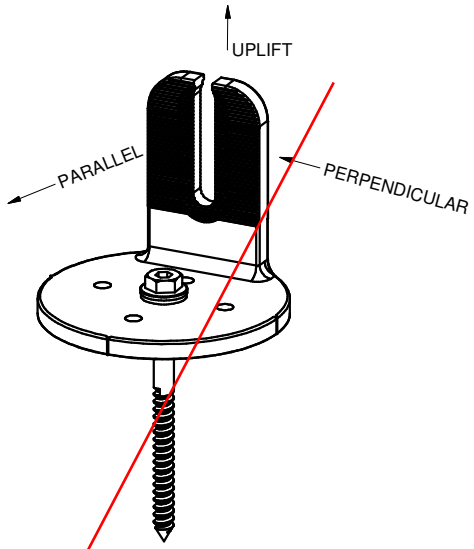
Chad E Widup Digitally signed by Chad E Widup
Date: 2023.08.03 12:14:39 -04'00'

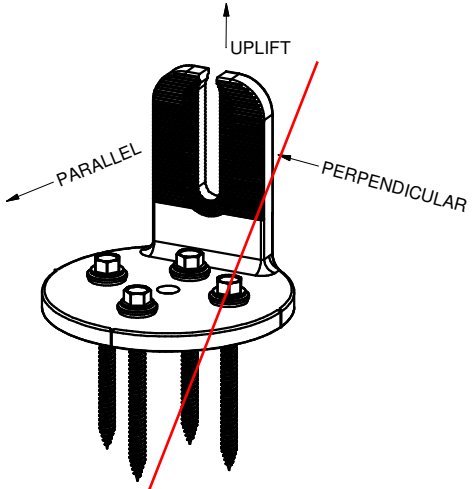


NOTES
1. 5/16 Lag in 2X4 Lumber.
2. Values valid only when product is used in accordance with SunModo installation and other technical documentation.



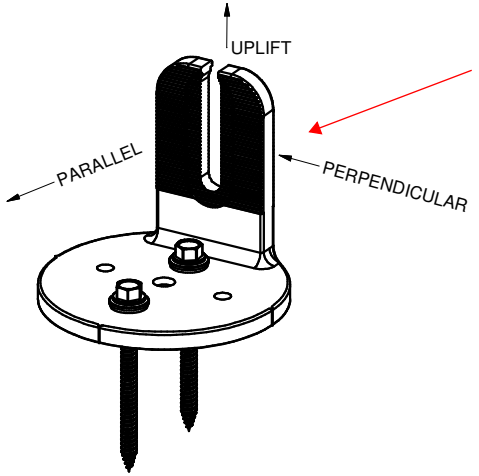

| | FOS=2 | FOS=3 |
|---|---|---|
| UPLIFT(LBF) | 370 | 245 |
| PERPENDICULAR(LBF) | 275 | 185 |
| PARALLEL(LBF) | 230 | 150 |

K50053-XX1 NANO MOUNT WITH LAG¹ SCREW




| | FOS=2 | FOS=3 |
|---|---|---|
| UPLIFT(LBF) | 250 | 165 |
| PERPENDICULAR(LBF) | 145 | 95 |
| PARALLEL(LBF) | 280 | 185 |

K50053-XX3 NANO DECK MOUNT (IN 1/2" PLYWOOD)




| | FOS=2 | FOS=3 |
|---|---|---|
| UPLIFT(LBF) | 640 | 425 |
| PERPENDICULAR(LBF) | 205 | 135 |
| PARALLEL(LBF) | 275 | 185 |

K50053-XX3 NANO DECK MOUNT (IN RAFTER)

| | |
|---|---|
| MATERIAL | SEE NOTES |
| Third Angle Projection: | |
| GENERAL SPECIFICATIONS<br>All Dimensions in inches [millimeters]<br>Tolerances<br>X.XXX ±0.01 [0.25mm]<br>X.XX ±0.02 [0.50mm]<br>X.X ±0.039 [1.0mm]<br>Unless otherwise spec'd | Break all sharp edges<br>.010-.020 unless<br>otherwise specified. |
| DRAWN BY: LWF | DATE: 01/22/2021 |
| CHECKED BY | |
| APPROVALS | |

**SunModo Corp.**
14800 NE 65TH STREET, VANCOUVER WA 98682

TITLE: NANO MOUNT LOAD CAPACITIES

B | DRAWING NUMBER: K50053-XXX STRUCTURE

SCALE: | SHEET 1 of 1