bluenergy

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

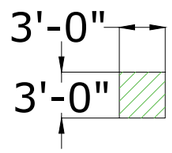
Property Owner Info:

GARY ZWERDLING
1534 NW FRONTIER DR
LAKE CITY, FL
32055

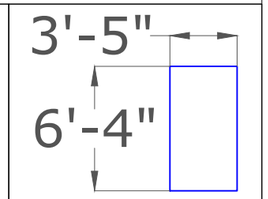
Legend:

- 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:

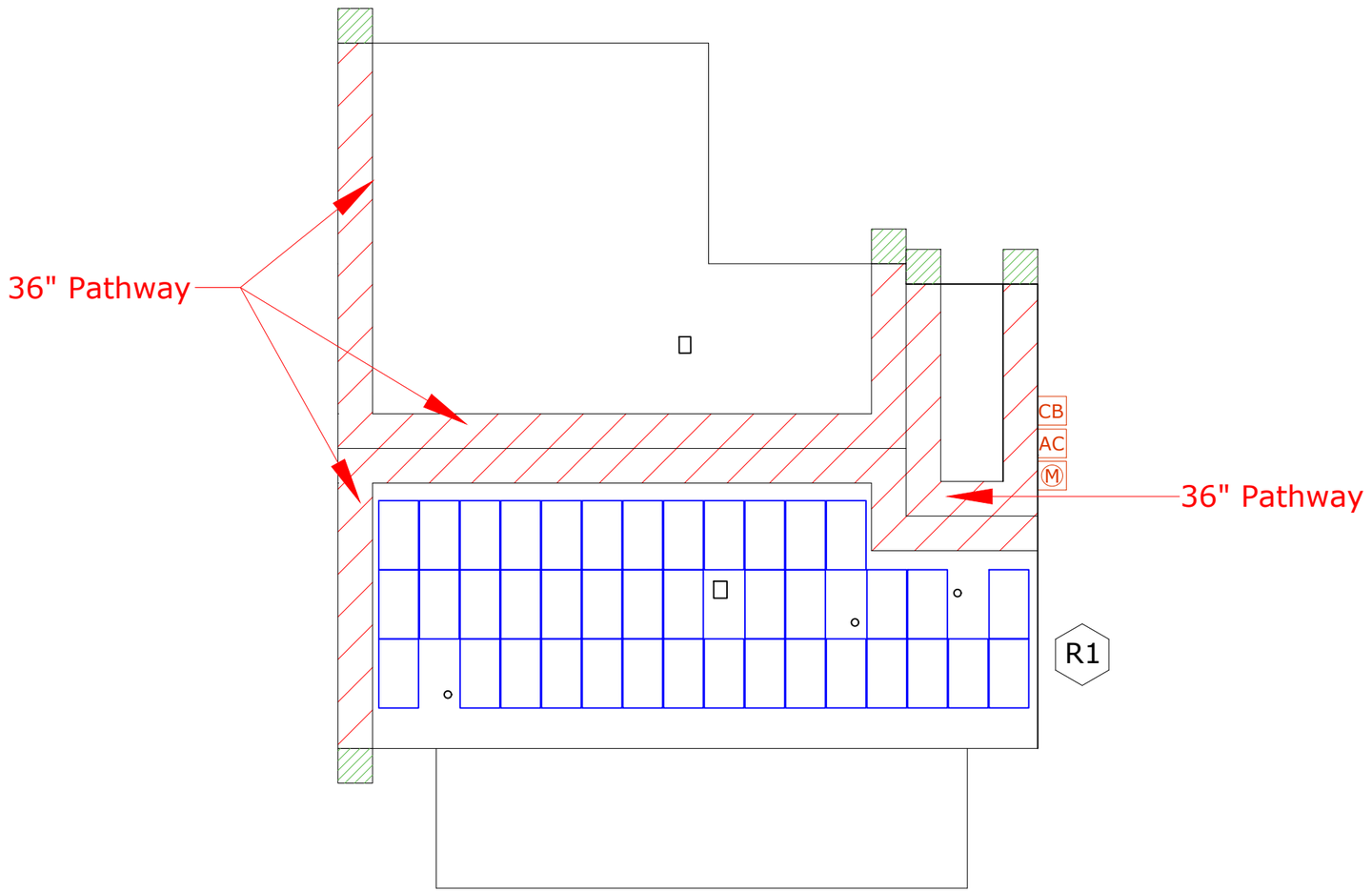
Inverter:	Enphase IQ8PLUS-72-2-US
PV Module:	(40) Canadian Solar CS3N-395MS
Rail:	Q-Rail Light
System Wattage:	15,800 W DC
Roof Material:	Composition Shingles
Wind Load:	21 to 27 Deg
Fastener(s):	(2) #14 x 3" Lags

Sheet Index:

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

Roof	# Modules	Pitch	Azimuth
R1	40	26°	193°

NW FRONTIER DR



Layout Subject to Change Based on Site Conditions

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

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.

Columbia County Building Department — Plans Reviewed for Code Compliance — State of Florida

bluenergy

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

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

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

Date: 8/1/23
Drawn by: FL
Revised by: ----
Rev #: ----
Rev Date:----
Page: S-2

Chad E Widup Digitally signed by Chad E Widup
Date: 2023.08.03 12:09:02 -04'00'

CHAD WIDUP LICENSE No. 60302 STATE OF FLORIDA PROFESSIONAL ENGINEER

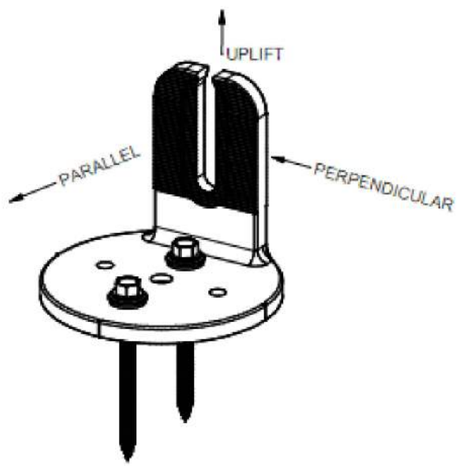
This item has been digitally signed and sealed by Chad Widup, PE on Aug 03, 2023 using a Digital Signature.

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

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

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.

bluenergy

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

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

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

Date: 8/1/23
Drawn by: FL
Revised by: ----
Rev #: ----
Rev Date:----
Page: S-3

Chad E Widup

Digitally signed by Chad E Widup
Date: 2023.08.03 12:09:42 -04'00'

CHAD WIDUP LICENSE No. 60302 STATE OF FLORIDA PROFESSIONAL ENGINEER

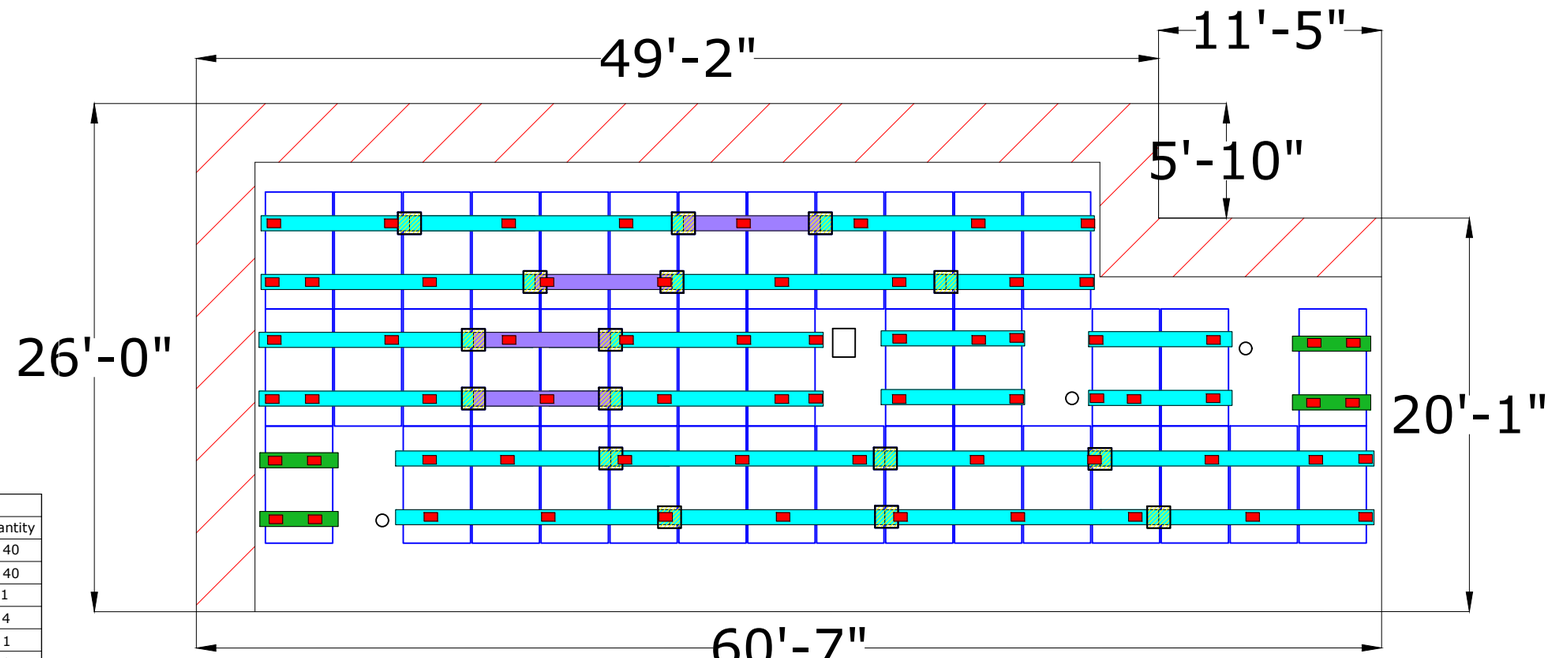
This item has been digitally signed and sealed by Chad Widup, PE on Aug 03, 2023 using a Digital Signature.

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

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

- 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"

bluenergy

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

Property Owner Info:

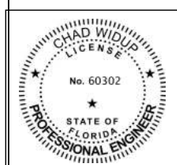
GARY ZWERDLING
1534 NW FRONTIER DR
LAKE CITY, FL
32055

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.

Date: 8/1/23
Drawn by: FL
Revised by: ----
Rev #: ----
Rev Date:----
Page: E-1

Chad E Widup
Digitally signed by Chad E Widup
Date: 2023.08.03 12:10:01 -04'00'



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

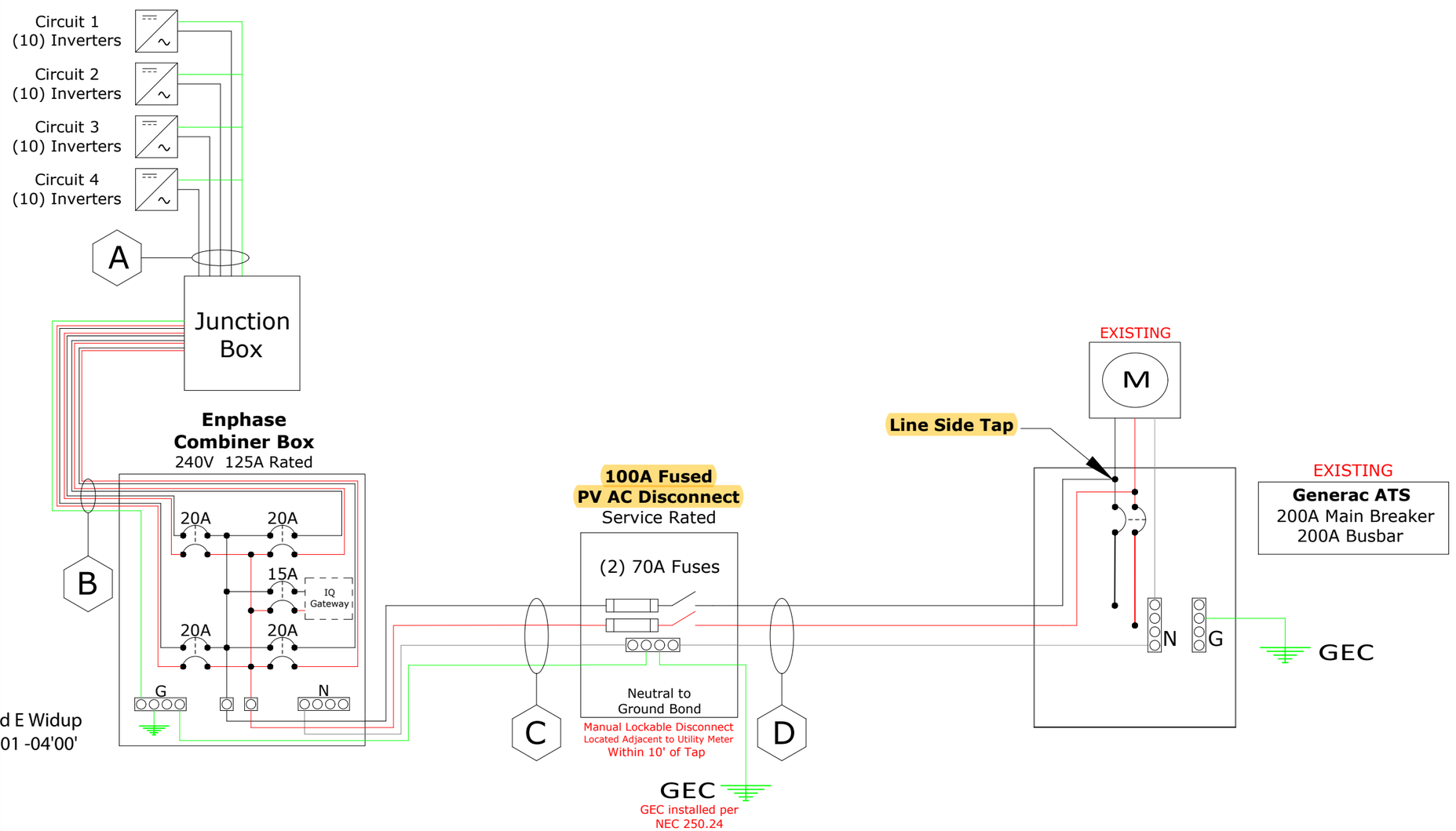
Chad Widup, P.E. NO. 60302
39905 Grays Airport Road
Lady Lake, FL 32159

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

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"

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

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



bluenergy

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

Property Owner Info:

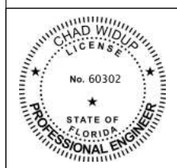
GARY ZWERDLING
1534 NW FRONTIER DR
LAKE CITY, FL
32055

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.

Date: 8/1/23
Drawn by: FL
Revised by: ----
Rev #: ----
Rev Date:----
Page: E-2

Chad E Widup
Digitally signed by Chad E Widup
Date: 2023.08.03 12:10:16 -04'00'



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.

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

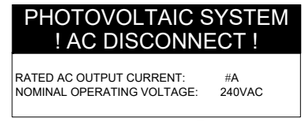
Conductor Temp Rating (°C)	75
OCPD Size	70A
Conductor Size	4AWG
Conductor Allowable Ampacity	85A

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.

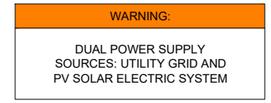
Line Side Tap will be done inside Generac ATS Panel adjacent to Utility Meter

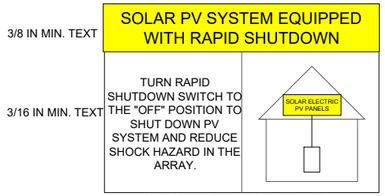
Combiner box in compliance
Per Code NEC 705.12
4* 20A < 125A
*No other loads to be added

NEC 690.56(C)(3)

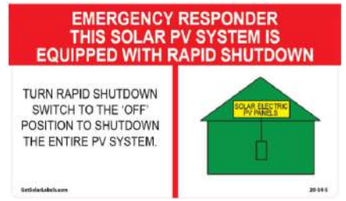


NEC 690.54

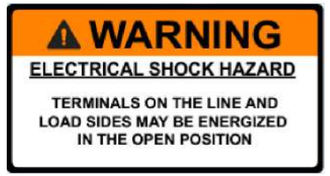




NEC 690.56(C)(1)



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.

bluenergy

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

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

Date: 8/1/23
Drawn by: FL
Revised by: ----
Rev #: ----
Rev Date:----
Page: N-1

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

Chad E Widup
Digitally signed by Chad E Widup
Date: 2023.08.03 12:10:31 -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

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

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.

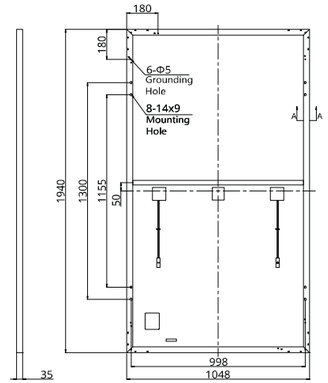
CSI SOLAR (USA) CO., LTD. is committed to providing high quality solar photovoltaic modules, solar energy and battery storage solutions to customers. The company was recognized as the No. 1 module supplier for quality and performance/price ratio in the IHS Module Customer Insight Survey. Over the past 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

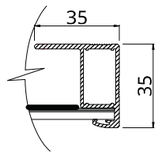
ENGINEERING DRAWING (mm)

Rear View

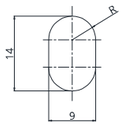


Frame Cross Section

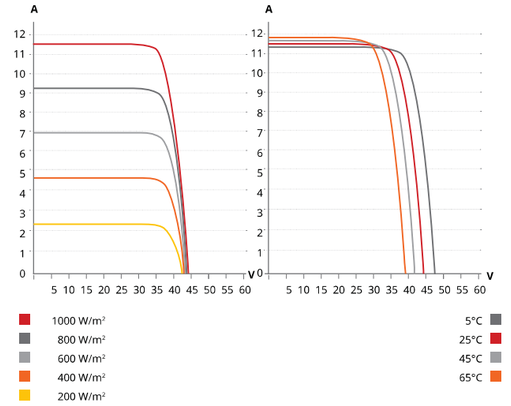
A - A



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.

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.

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.

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

Digitally signed by Chad E Widup
Date: 2023.08.03 12:10:55 -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

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

* 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.

Chad E Widup Digitally signed by Chad E Widup
Date: 2023.08.03 12:11:31 -04'00'

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.

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 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'

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.

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

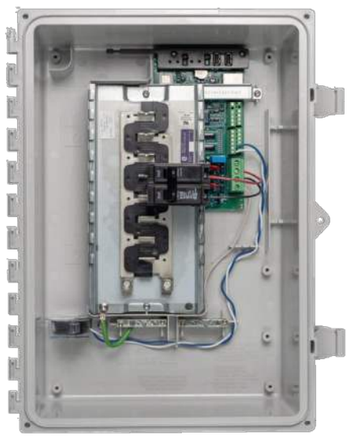
Passthrough and combiner kits are available for either AC or DC applications.

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™ CELLMODEM-03 (4G / 12-year data plan) CELLMODEM-01 (3G / 5-year data plan) 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 CT-200-SPLIT	Split core current transformers enable whole home consumption metering (+/- 2.5%).
Circuit Breakers BRK-10A-2-240 BRK-15A-2-240 BRK-20A-2P-240	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 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 • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors 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 CAN/CSA C22.2 No. 107.1 47 CFR, Part 15, Class B, ICES 003 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

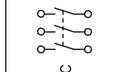
Category	00106 - Safety Switch, General Duty, 30 - 200 Amp, NEMA3R
Discount Schedule	DE1A
GTIN	00785901460701
Package Quantity	1
Weight	15.46 lbs.
Availability Code	Stock Item: This item is normally stocked in our distribution facility.
Returnability	Y
Country of Origin	US

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

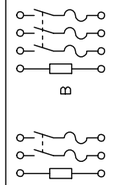
Generated: 12/19/2012 18:53:48

WIRING DIAGRAMS

NOT FUSIBLE



FUSIBLE



TERMINAL LUGS ‡

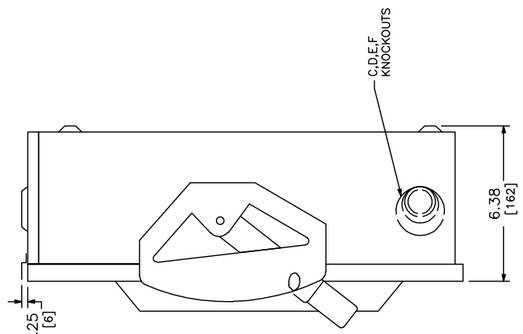
AMPERES	MAX. WIRE	MIN. WIRE	TYPE
100	1/0 AWG	#12 AWG	AL
	1/0 AWG	#14 AWG	CU

KNOCKOUTS

SYMBOL	CONDUIT SIZE IN	CONDUIT SIZE MM	DIAMETER IN	DIAMETER MM
A	.50	13	.88	22
B	.75	19	1.13	29
C	1.00	25	1.38	35
D	1.25	32	1.75	45
E	1.50	38	2.00	51
F	2.00	51	2.50	64

DUAL DIMENSIONS: INCHES MILLIMETERS

CATALOG NUMBER	VOLTAGE RATINGS	WIRING DIAG.	HORSEPOWER RATINGS 240VAC STD. 1Ø	STD. 3Ø	MAX. 1Ø	MAX. 3Ø
D223NRB	240VAC	A	7 1/2	15 *	15	30 *
D323NRB	240VAC	B	7 1/2	15	15	30
DU323RB ■	240VAC	C	–	–	15	30



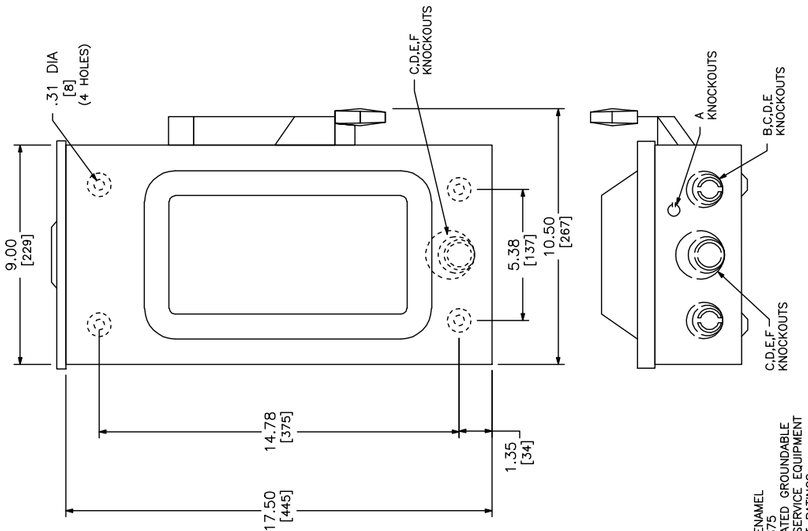
NEMA TYPE 3R ILLUSTRATED ◀

GENERAL DUTY SAFETY SWITCHES
VISIBLE BLADE TYPE
100 AMPERE
ENCLOSURE – NEMA TYPE 3R RAINPROOF

by Schneider Electric

DWG# NO. 1865

REF DWG #1865



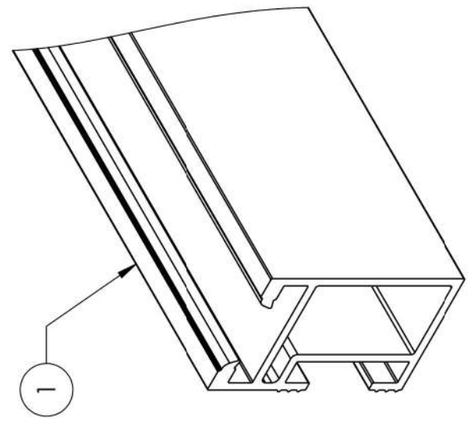
NOTES:
FINISH – GRAY BAKED ENAMEL
UL LISTED – FILE E-2875
ALL NEUTRALS – INSULATED GROUNDABLE
SUITABLE FOR USE AS SERVICE EQUIPMENT
SHORT CIRCUIT CURRENT RATINGS:
10,000 AMPERES WITH CLASS H OR K FUSES
100,000 AMPERES WITH CLASS R FUSES HAVING CLASS R REJECTION KITS INSTALLED.
WHEN MOUNTING THESE SWITCHES, ALLOW 4.00/[102] MIN. CLEARANCE
BETWEEN ENCLOSURES FOR OPENING OF SIDE HINGED DOOR.
◀ TOP OF NEMA TYPE 3R DEVICES HAVE PROVISIONS FOR MAXIMUM 2.50/[64] BOLT-ON HUB.
FOR CORNER GROUNDED DELTA SYSTEMS ONLY.
* ■ REQUIRES FIELD INSTALLATION OF EQUIPMENT GROUNDING KIT GTK0610 WHEN
USED AS SERVICE EQUIPMENT.
‡ LUGS SUITABLE FOR 60°C OR 75°C CONDUCTORS.

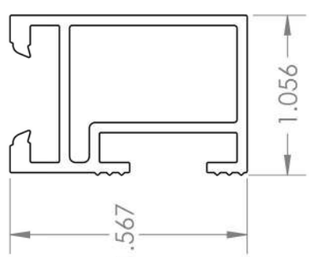
APRIL 2012

Chad E Widup

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

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





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

Quick Mount PV®

TITLE: QMR-RL: QRAIL LIGHT

REV	SIZE	DRAWN BY:	SCALE: 1:1	WEIGHT: 0.50	SHEET 1 OF 1
4	A	RAD			
		DATE: 10/7/2019			

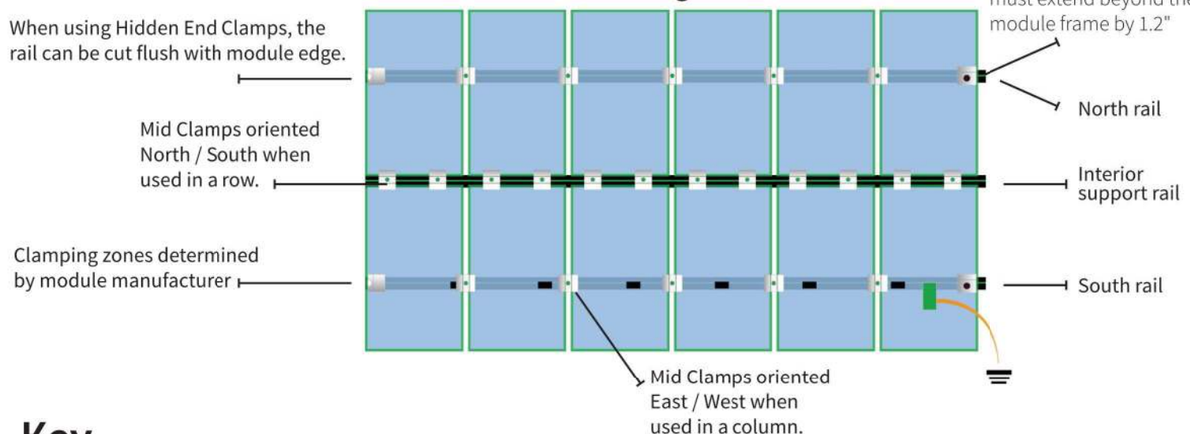
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/8
TWO PLACE DECIMAL ± .19
THREE PLACE DECIMAL ± .094

DO NOT SCALE DRAWING

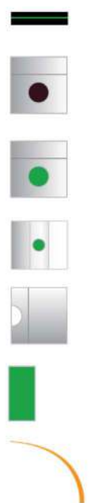
Shared Rail Quick Start Guide - Designing Shared Rail Using QRail

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).

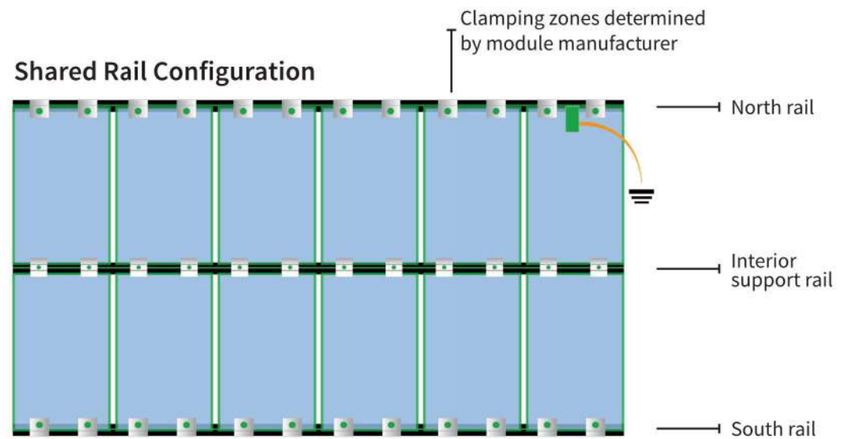
Modified Shared Rail Configuration



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

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

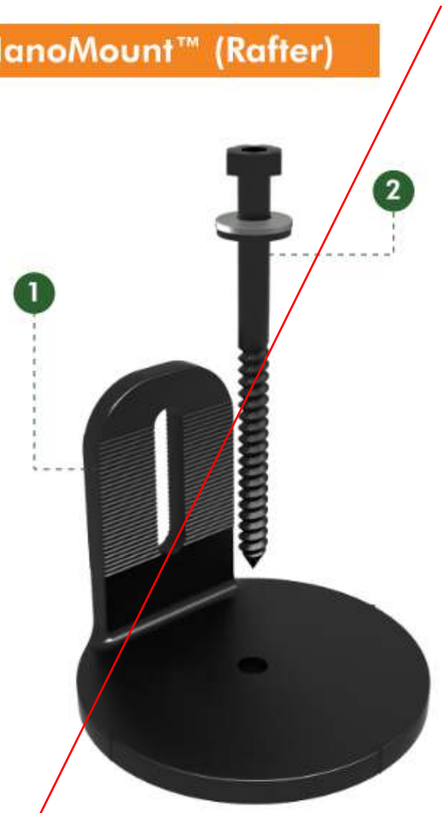
This item has been digitally signed and sealed by Chad Widup, PE on Aug 03, 2023 using a Digital Signature.

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

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

SUNMODO
We've Got Your Rack!

NanoMount™ (Rafter)

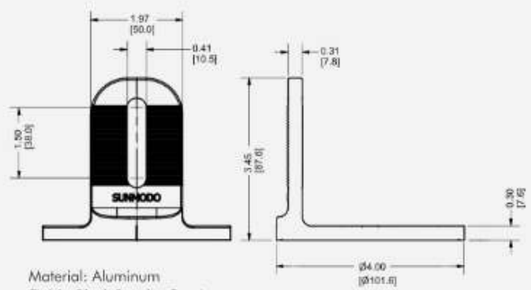


Part Description: Nano Rafter Mount, Black
Part No.: K50044-BK1

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

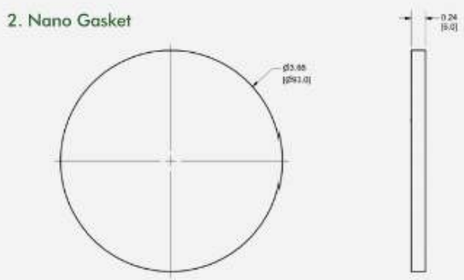
Cut Sheet

1. Nano Mount



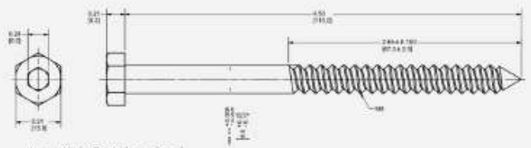
Material: Aluminum
Finish: Black Powder Coating

2. Nano Gasket



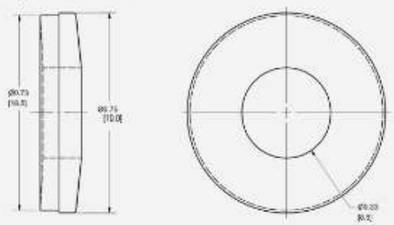
Material: USWR Silicone Foam Gasket with Adhesive

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

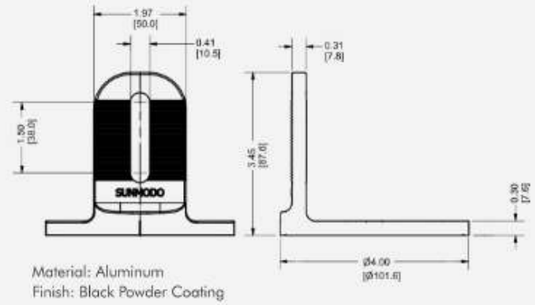
SUNMODO
We've Got Your Rack!

NanoMount™ (Decking)

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

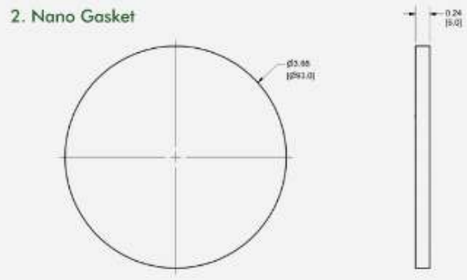
Item No.	Description	Qty in Kit
1	Nano Deck Mount Assembly • Nano Deck Mount • Nano Gasket	1
2	Decking Screw Assembly • Self-Drilling Screw, #6.3 X 76 • Sealing Washer .26ID X .50X .125	4

1. Nano Mount



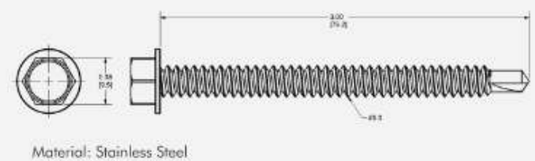
Material: Aluminum
Finish: Black Powder Coating

2. Nano Gasket



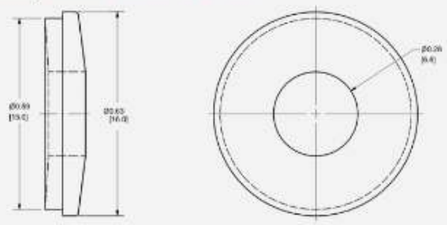
Material: USWR Silicone Foam Gasket with Adhesive

3. Self-Drilling Screw, #6.3 X 76



Material: Stainless Steel
Finish: Clear

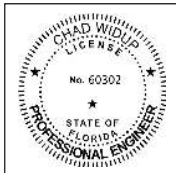
4. Sealing Washer .26ID X .50X .125



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 12:14:39 -04'00'



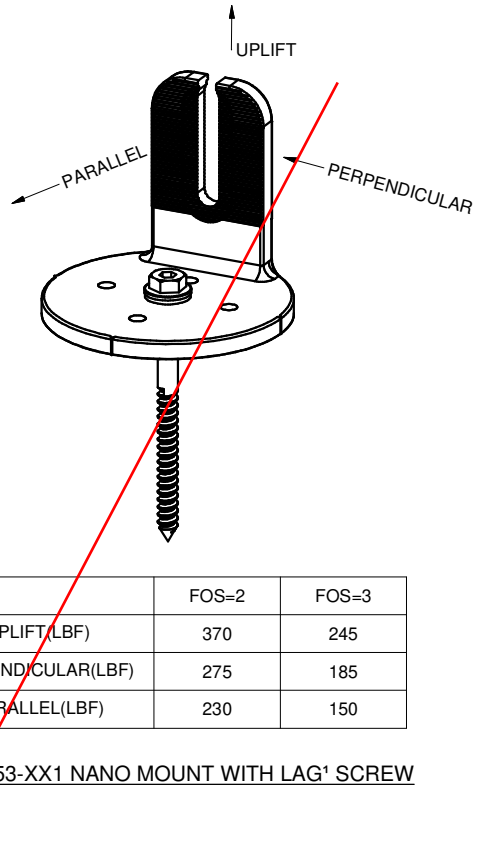
This item has been digitally signed and sealed by Chad Widup, PE on Aug 03, 2023 using a Digital Signature.

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.

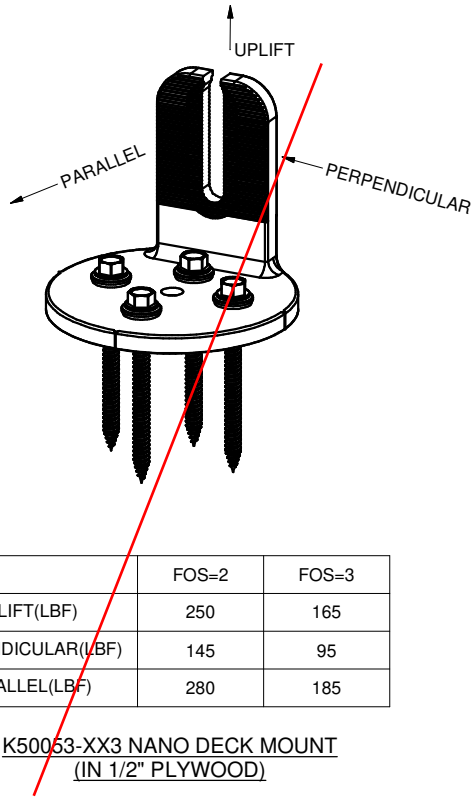
NOTES

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



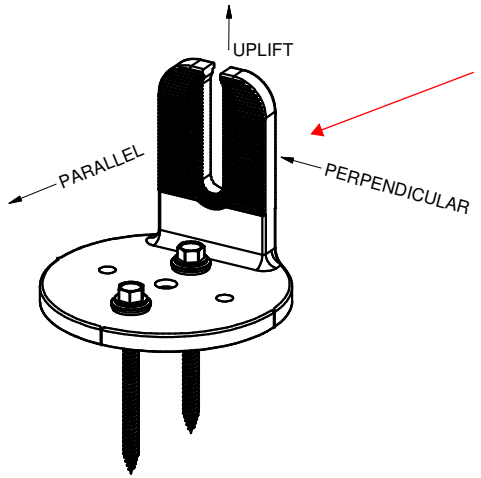
	FOS=2	FOS=3
UPLIFT(LBF)	370	245
PERPENDICULAR(LBF)	275	185
PARALLEL(LBF)	230	150

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 All Dimensions in inches [millimeters] Tolerances X.XXX ±0.01 [0.25mm] X.XX ±0.02 [0.50mm] X.X ±0.039 [1.0mm] Unless otherwise spec'd	Break all sharp edges .010-.020 unless 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