GENERAL NOTES

1. *All electrical materials shall be new and listed by recognized electrical testing laboratory*
   Custom made equipment shall have complete test data submitted by the manufacturer attesting to its safety
2. *Outdoor equipment shall be NEMA 3R rated or equivalent*
3. *All metallic equipment shall be grounded*
4. *Contractor shall obtain electrical permits prior to installation and shall coordinate all inspections, testing commissioning and acceptance with the client,*
   utility co. and city inspectors as needed.
5. *The electrical contractor shall verify the exact locations of service points and service sizes with the serving utility company and comply with all utility companies requirements.*
6. *Drawings are diagrammatic only, routing of raceways shall be option of the contractor unless otherwise noted and shall be coordinated with other trades.*
7. *If the roof material or the roof structure not adequate for PV installation, call the engineer of record prior to installation. The contractor is responsible to verify that the roof is capable of withstanding the extra weight.*
8. *If the distances for cable runs are different than shown, the contractor shall notify the electrical engineer to validate the wire size. Final drawings will be red-lined and updated as appropriate.*
9. *Whenever a discrepancy in quality of equipment arises on the drawing or specifications, the contractor shall be responsible for providing and installing all materials and services required by the strictest conditions noted on the drawings or in the specifications to ensure complete compliance and longevity of the operable system required by the engineer of record.*

PHOTOVOLTAIC NOTES:

1. *Rooftop mounted photovoltaic panels and modules shall be tested, listed and identified by recognized testing laboratory*
2. *Solar system shall not cover any plumbing or mechanical vents*
3. *Modules and support structures shall be grounded unless racking has integrated ground.*
4. *Removal of an interactive inverter or other equipment shall not disconnect the bonding connection between the grounding electrode conductor and the photovoltaic source and/or output circuit grounded conductors.*
5. *All PV modules and associated equipment and wiring shall be protected from physical damage.*
6. *Live parts of PV source circuits and PV output circuits over 150v to ground shall not be accessible to other than qualified persons while energized.*
7. *Inverter is equipped with integrated DC disconnect, thus providing ground fault protection*
8. *All conductors shall be copper and 75 deg rated*
9. *A single conductor shall be permitted to be used to perform the multiple functions of dc grounding, AC grounding and bonding between AC and DC systems.*
10. *Non-current carrying metal parts of equipment shall be effectively bonded together. Bond both ends of raceways.*

SHEET INDEX

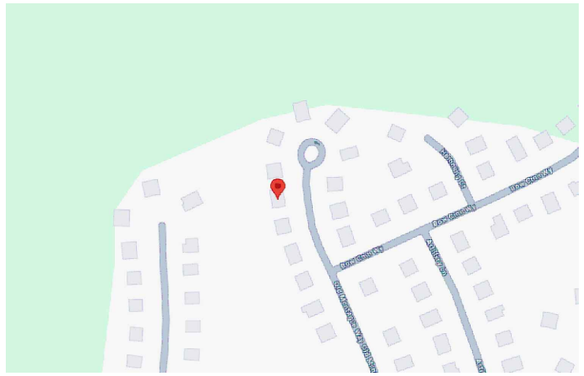
SYSTEM RATING

DC 9.600 KW STC
AC 6.960 KW STC

EQUIPMENT SUMMARY

24 HANWHA SOLAR 400 WATT MODULES
24 ENPHASE IQ8+ (290W) MICROINVERTERS

VICINITY MAP (SCALE: NTS)



GOVERNING CODES

THE INSTALLATION OF SOLAR ARRAYS AND PHOTOVOLTAIC POWER SYSTEMS SHALL COMPLY WITH THE FOLLOWING CODES:

- *2018 NEC with 2020 North Carolina adopted Amendments*
- *2018 International Residential Code*
- *2018 International Building Code*
- *2018 Mechanical Code*
- *2018 International Fire Code*
- *2018 International Energy Conservation Code*

AS ADOPTED BY THE STATE OF NORTH CAROLINA
ALL OTHER ORDINANCE ADOPTED BY THE LOCAL GOVERNING AGENCIES

ENGINEERINC
Engineerinc.io,
303 N Glenoaks Blvd #200
Burbank, CA 915020
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new@engineerinc.io

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of North Carolina. License No. PE# 027540 , Expiration Date: 12/31/2025

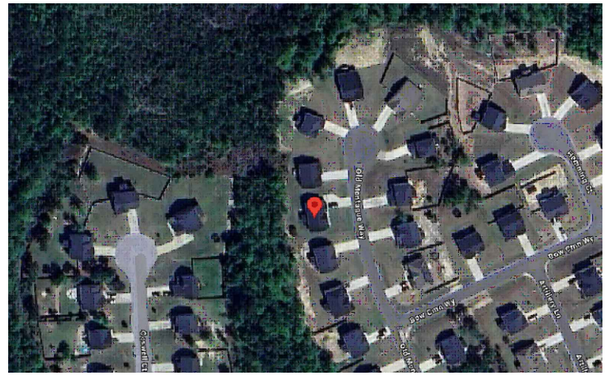
ELECTRICAL INFORMATION

EXISTING
MAIN SERVICE PANEL BUS SIZE:**200A**
MAIN SERVICE BREAKER SIZE:**200A**
MOUNTING SYSTEM: EVEREST CROSSRAIL 48-XL

BUILDING INFORMATION

CONSTRUCTION TYPE: V-B
OCCUPANCY: R3
ROOF: ASPHALT SHINGLE
Truss 2 x 4 @ 24" O.C.

SATELLITE VIEW (SCALE: NTS)



NOTICE TO CONTRACTOR
All construction must comply with current NC Building Codes and is subject to field inspection and verification.
APPROVED
Limited building only review
Permit holder responsible for full compliance with the code
06/26/2025
Harnett COUNTY NORTH CAROLINA

REV1

CONTRACTOR

Renewable Energy Design Group

Phone number: (877)-520-7652
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Lewisville, North Carolina 27023

RENEWABLE ENERGY DESIGN GROUP

NORTH CAROLINA PROFESSIONAL SEAL 027540 ENGINEER BARRETT C. CROOK
Barrett Crook

Exp. Date: 12/31/2025
Date Certified and Signed:06/10/2025

ENGINEERINC
Drawn by: New@engineerinc.io
Phone Number: (310) 928-0938
DATE: 06/05/2025

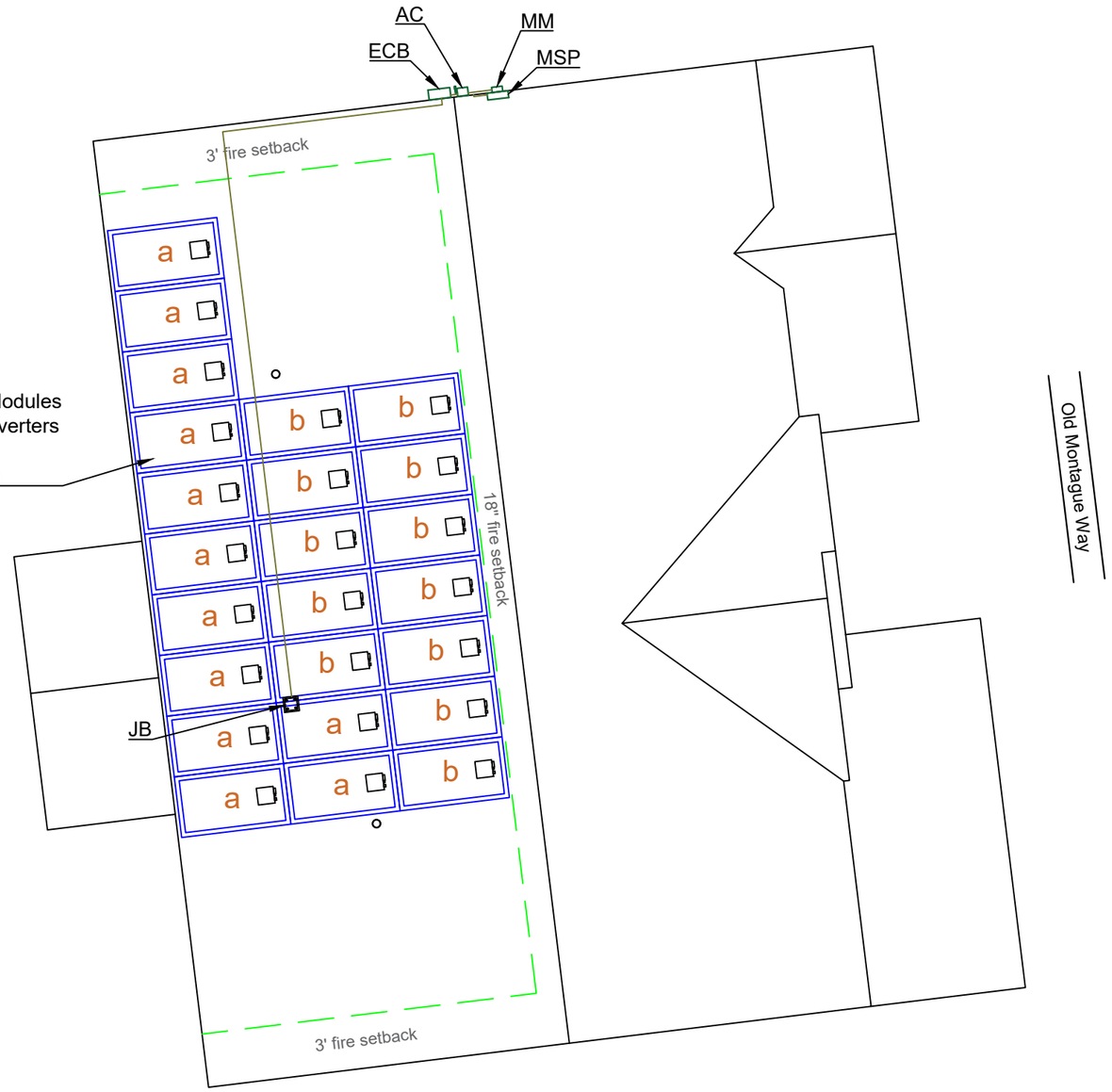
Project Name:
Eric Ross
Property Address:
265 Old Montague Way
Cameron, NC 28326

COVER PAGE

Project: PV SYSTEM
Scale: AS INDICATED

CP 0.0

SCALE: 1/8" = 1'-0"



Solar PV Array
24 - Hanwha Solar 400W Modules
24 - Enphase IQ8+ Microinverters
Pitch: 37 Deg
Orientation: 242 Deg

INDEX

MM .....(E) Main Meter
MSP (E) **200A** Main Service Panel
ECB....(N) Enphase Combiner Box
AC.....(N) 60A AC Disconnect
JB.....(N) Junction Box
.....(N) Microinverter
.....(N) Solar Module
.....EMT Type Conduit
.....Fire Setback Line

TOTAL ROOF AREA: 2173
TOTAL MODULE AREA: 507.36
23.34% OF COVERAGE

SOLAR MODULES

24 Hanwha Solar 400 Watt
Model #Q.PEAK DUO BLK ML-G10+

INVERTER

INVERTER TYPE: Micro:
24 Enphase IQ8+
Model # IQ8PLUS-72-2-US(240V)
(290W)

CONTRACTOR

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RENEWABLE ENERGY DESIGN GROUP

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Eric Ross

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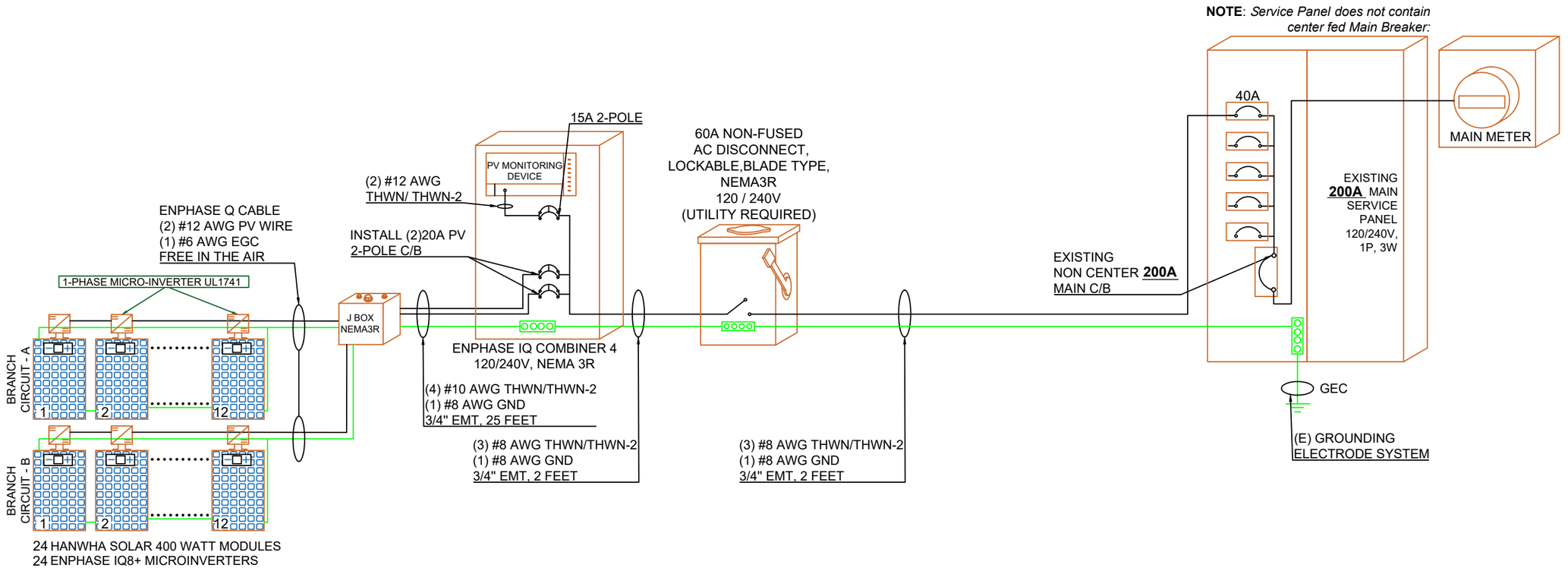
SITE MAP & PV LAYOUT

Project:
PV SYSTEM

Scale:
AS INDICATED

PV 1.0

NOTE:AC DISCONNECT
VISIBLE AND LOCKABLE



24 HANWHA SOLAR 400 WATT MODULES
24 ENPHASE IQ8+ MICROINVERTERS

PV ARRAY RATING							WIRE SIZE CALCULATION	
BRANCH CIRCUIT - A							BRANCH CIRCUIT - A	
Number Modules	12		Q.PEAK DUO BLK ML-G10+		Hanwha 400 Watt		Number OF Microinverters in Circuit	12
Number MicroInverters	12		Enphase IQ8+ Microinverters		IQ8Plus-72-2-US(240V)(290W)		Microinverter Maximum Output Current (A)	1.21
Total DC Wattage (Watts)	Watts STC, (Watts/Module) 12 * 400 = 4800						Branch Circuit Total Current (A)	12 * 1.21 * 1.25 = 18.15
Array Currents	I-SC	11.14	A	I-MP	10.77	A	Breaker Size Per Branch Circuit (A)	20
Module Voltage	V-OC	45.3	V	V-MP	37.13	V		
BRANCH CIRCUIT - B							BRANCH CIRCUIT - B	
Number Modules	12		Q.PEAK DUO BLK ML-G10+		Hanwha 400 Watt		Number OF Microinverters in Circuit	12
Number MicroInverters	12		Enphase IQ8+ Microinverters		IQ8Plus-72-2-US(240V)(290W)		Microinverter Maximum Output Current (A)	1.21
Total DC Wattage (Watts)	Watts STC, (Watts/Module) 12 * 400 = 4800						Branch Circuit Total Current (A)	12 * 1.21 * 1.25 = 18.15
Array Currents	I-SC	11.14	A	I-MP	10.77	A	Breaker Size Per Branch Circuit (A)	20
Module Voltage	V-OC	45.3	V	V-MP	37.13	V		
FROM JBOX TO ENPHASE COMBINER BOX								
Maximum Continuous Current (A)	18.15	More Than 3 CCC Adjustment Factor			0.8		Adjusted Conductor Ampacity(A)	18.15 / 0.8 = 22.69
Raceway Height From Roof (Temp 39+22=61C)		3 1/2"	# of wire(# BC *2)		4		Ambient Temp Factor Per NEC Table 310.15(b)(2)(a)	0.71
Temp. Derate Factor (max. Continuous current divided ambient tem. Factor (A)					22.69 / 0.71 = 31.95		Wire Size from NEC Table 310.15(b)16	10 AWG
FROM ENPHASE COMBINER BOX TO MAIN PANEL								
Total Number Of Microinverters	24	Total Amps From All Microinverters (A)			24 * 1.21 = 29.04		Consider Continuous (A)	29.04 * 1.25 = 36.3
Temp. Derate Factor(0.91 at wall of the Building) (A)					36.3 / 0.91 = 39.89		Wire Size from NEC Table 310.15(b)16	8 AWG
Ambient Temp Factor Per NEC Table 310.15(b)(2)(a)					0.91			
MAIN PANEL								
PV Backfeed Breaker Size (A)	40	Main Breaker (A)	200	Main Bus Rating (A)	200		Total Amps On Bus (120%)	40 + 200 = 240 <= 240 (A)

CONTRACTOR

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RENEWABLE ENERGY DESIGN GROUP

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Phone Number: (310) 928-0938
DATE: 06/05/2025

Project Name:
Eric Ross

Property Address:
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Cameron, NC 28326

ELECTRICAL ONE LINE DIAGRAM

Project:
PV SYSTEM

Scale:
AS INDICATED

PV 2.0

LABEL 1

CAUTION
AUTHORIZED SOLAR PERSONNAL ONLY!

LABEL 2

CAUTION
SOLAR DC CURRENT PRESENT DURING DAYLIGHT HOURS

(STICKER TO BE LOCATED ON CONDUIT WITH DC CURRENT EVERY 4' HORIZONTALLY OR 10' VERTICALLY AND 1' FROM EACH SIDE OF A BEND)

LABEL 3

WARNING!
ELECTRIC SHOCK HAZARD. IF GROUND FAULT IS INDICATED, NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED.

LABEL 4

WARNING!
ELECTRIC SHOCK HAZARD. DO NOT TOUCH THE TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.

LABEL 5

PV SUB-PANEL ONLY

(TO BE LOCATED ON SUB-PANEL ONLY WHEN SUB-PANEL IS DEDICATED FOR PV ONLY)

LABEL 6

AC DISCONNECT
AC PHOTOVOLTAIC POWER SOURCE
RATED AC OUTPUT CURRENT: 36.3 A MAX
NOMINAL AC OPERATING VOLTAGE: 240 Vac

LABEL 7

THIS PANEL FED BY MULTIPLE SOURCES (UTILITY & SOLAR)

LABEL 8

SOLAR

(STICKER LOCATED INSIDE PANEL NEXT TO SOLAR BREAKER)

LABEL 9

WARNING!
INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE

(STICKER LOCATED INSIDE PANEL BELOW PV BREAKER)

LABEL 10

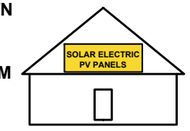
PV LOAD CENTER SIZED FOR PV BREAKERS ONLY OR RENDERED UNABLE TO ACCEPT ANY ADDITIONAL LOADS.

(STICKER LOCATED ON THE PV SUB PANEL)

LABEL 11

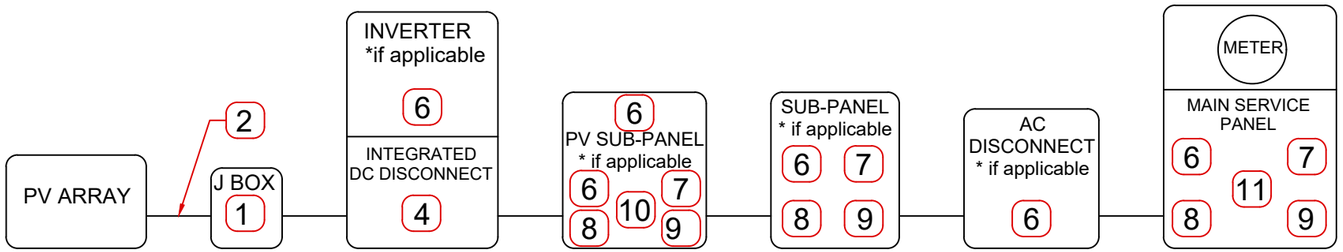
SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



DIRECTORY

Permanent directory or plaque providing location of service disconnecting means and photovoltaic system disconnecting means, if not located at the same location. (Plaques shall be metal or plastic, with engraved or machine printed letters, or electro-photo plating, in a contrasting color to the plaque. Plaques shall be permanently attached to the equipmenq or in the required location using an approved method that is suitable to withstand the environment to which it is exposed. Plaques and signage shall meet legibility, defacemet, exposure and adhesion requirements of Underwriters Laboratories marking and labeling system 969(UL969).



MARKINGS, LABELS AND WIRING SIGNS

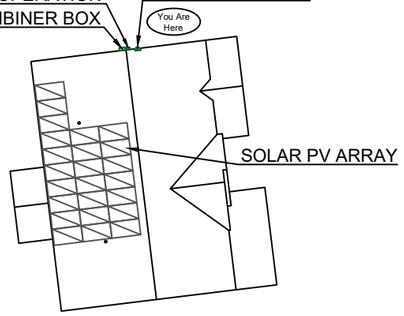
A. Purpose: Provide emergency responders with appropriate warning and guidance with respect to isolating solar electric system.
This can facilitate identifying energized electrical lines that connect solar panels to the inverter, as these should not be cut when venting for smoke removal
B. Main Service Disconnect.
1. Residential buildings - The marking main be placed within the main service disconnect. The marking shall be placed outside cover if the main service disconnect is operable with the service panel closed.
2. Commercial buildings - Tha marking shall be placed adjacent to the main service disconnect clearly visible from the location where the level is operated
3. Markings: Verbiage, Format and Type of Material.
a. Verbiage: CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED
b. Format: White lettering on a red background. Minimum 3/8 inches letter height. All letters shall be capitalized. Arial or similar font, non bold.
c. Material: Reflective, weather resistant material suitable for the environment (use UL - 969 as standard for weather rating). Durable adhesive materials meet this requirement.
C.Marking Requirements on DC conduit, raceways, enclosures, cable assemblies, DC combiners and junction boxes:
1. Markings: Verbiage, Format and Type of Material.
a. Placement : Markings shall be placed every 10 feet on all interior and exterior DC conduits, raceways, enclosures, and cable assemblies, at turns, above and for below penetrations, all DC combiners and junction boxes
b. Verbiage: CAUTION: SOLAR CIRCUIT Note: The format and type of material shall adhere to "V. V-3b, c" of this requirement.
c. Inverters are not required to have caution markings
1.Marking is required on all interior and exterior DC conduit raceways,enclosures,cable assemblies,and junction boxes,combiner boxes and disconnects.
2.The materials used for marking shall be reflective,weather resistant material suitable for the environment.
Minimum 3/8 "letter height; all upper case letters Arial or similar font; Red background with white lettering.
3.Marcking shall contain the words: **WARNING : PHOTOVOLTAIC POWER SOURCE**.
4.Marking shall be placed adjacent to the main service disconnect in a location clearly visible from the location where the disconnect is operated

CAUTION

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

PV SYSTEM DISCONNECT FOR UTILITY OPERATION
ENPHASE COMBINER BOX

SERVICE POINT & UTILITY METERING



CONTRACTOR

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RENEWABLE ENERGY DESIGN GROUP

ENGINEERINC
Drawn by: New@engineerinc.io
Phone Number: (310) 928-0938
DATE: 06/05/2025

Project Name:
Eric Ross

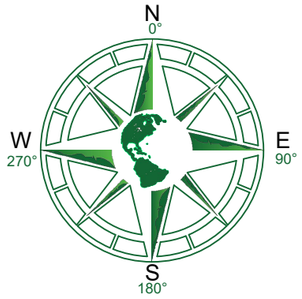
Property Address:
265 Old Montague Way
Cameron, NC 28326

SYSTEM LABELING DETAILS

Project:
PV SYSTEM

Scale:
AS INDICATED

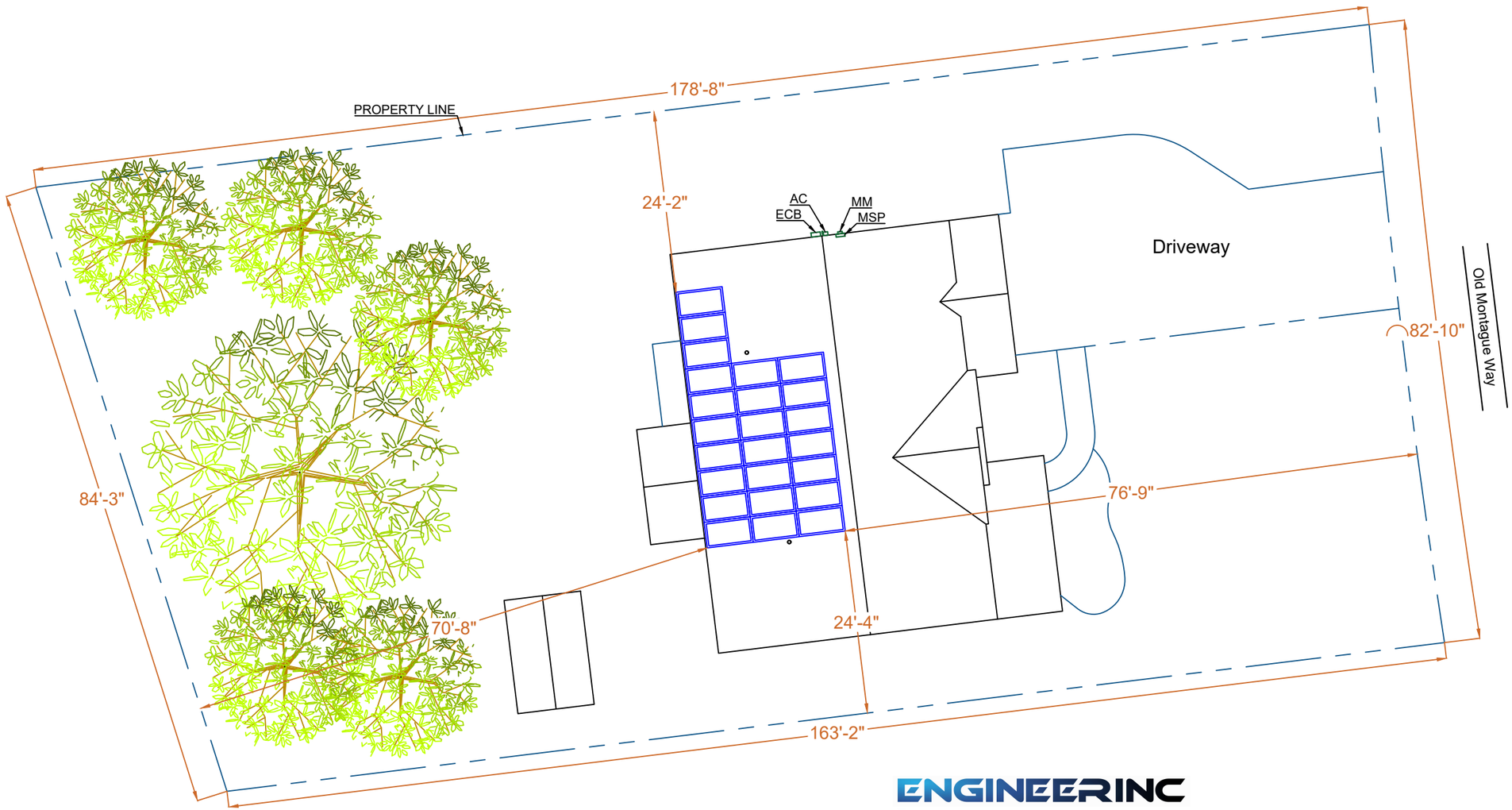
PV 3.0



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

INDEX

MM .....Main Meter
MSP..... Main Service Panel
ECB.....Enphase Combiner Box
AC..... AC Disconnect



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new@engineerinc.io

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of North Carolina. License No. PE# 027540 , Expiration Date: 12/31/2025

CONTRACTOR

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Phone number: (877)-520-7652
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RENEWABLE ENERGY DESIGN GROUP

NORTH CAROLINA PROFESSIONAL SEAL 027540 Barrett Crook ENGINEER BARRETT C. CROOK

Exp. Date: 12/31/2025
Date Certified and Signed:06/10/2025

ENGINEERINC
Drawn by: New@engineerinc.io
Phone Number: (310) 928-0938
DATE: 06/05/2025

Project Name:
Eric Ross

Property Address:
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Cameron, NC 28326

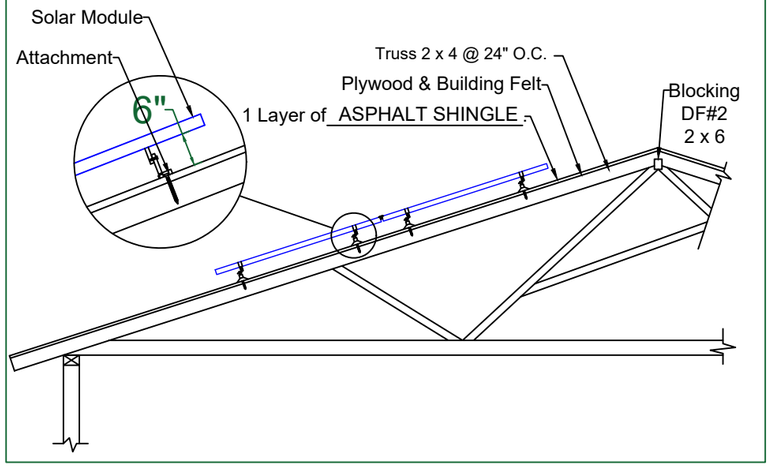
PROPERTY PLAN

Project:
PV SYSTEM

Scale:
AS INDICATED

PV 4.0

ROOF SECTION DETAIL



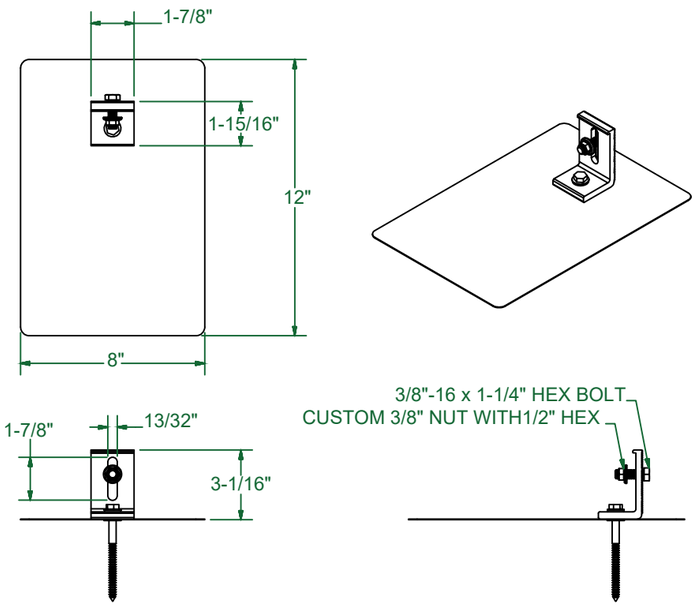
ATTACHMENT

RAIL

Truss 2 x 4 @ 24" O.C.

UNIRAC FLASHKIT PRO ATTACHMENT DETAILS

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN SPECIFICATIONS AND INSTALLATION INSTRUCTIONS.
2. PACKAGING: KITS OF 10

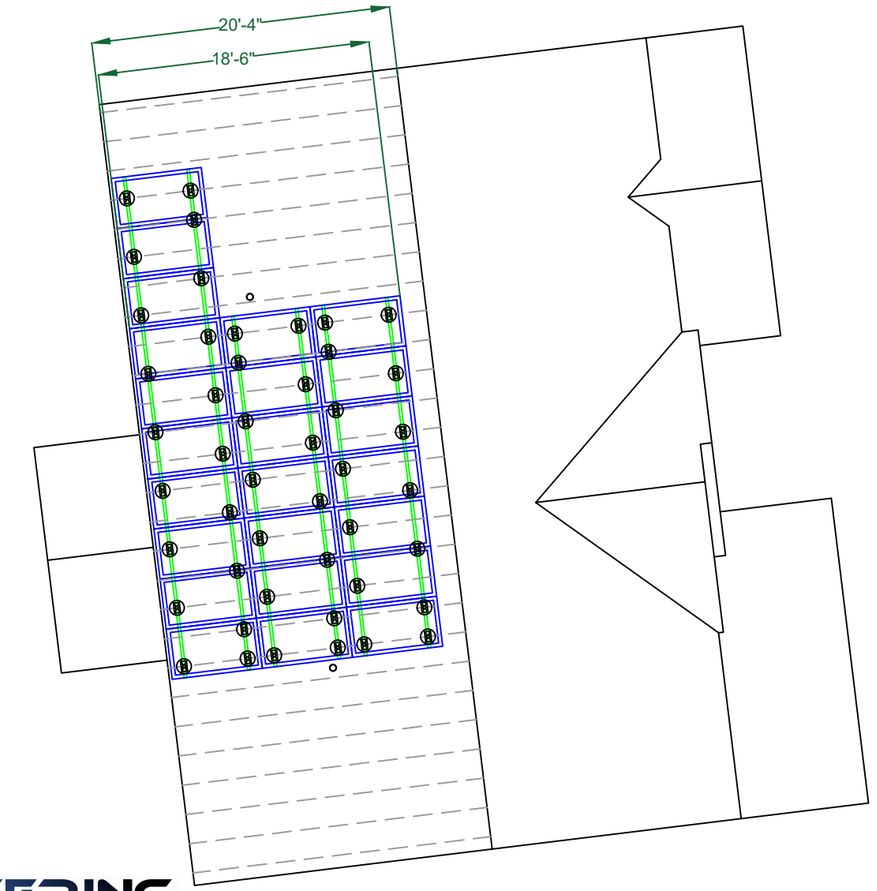


PART TABLE	
PN	DESCRIPTION
004050M	FLASHKIT PRO MILL
004050D	FLASHKIT PRO DRK

DESIGN CRITERIA

Modules: 24
Max Distributed Load: 3 PSF

POINT LOAD CALCULATION PER ARRAY	
Module Weight (lbs)	48.5
# Of Modules	24
Total Module Weight (lbs)	1164
Rack Weight (lbs)	232.8
MicroInverters Weight (lbs)	57.12
Total System Weight (lbs)	1453.92
# Of Standoffs	47
Max Span Between Standoffs (in)	48
Loading Per Standoff (lbs)	30.93
Total Area (sq.ft.)	507.36
Loading (PSF)	2.86



Prior to the commencement of work, the contractor shall verify the existing roof and framing conditions. Notify New@engineerinc.io of any Discrepancies prior to starting construction. Prior to the commencement of work, the contractor shall inspect framing for any damage such as water damage, cracked framing, etc. and These Plans are stamped for structural code compliance of the roof framing supporting the proposed PV installation reference only. These plans are not stamped for water leakage. PV modules, racking, and attachment components must follow manufacturer guidelines and requirements. Attachments to be installed in a staggered orientation to properly distribute loads.

CONTRACTOR

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RENEWABLE ENERGY DESIGN GROUP

NORTH CAROLINA PROFESSIONAL SEAL 027540 ENGINEER BARRETT C. CROOK

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Exp. Date: 12/31/2025
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new@engineerinc.io

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of North Carolina. License No. PE# 027540, Expiration Date: 12/31/2025

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Drawn by: New@engineerinc.io
Phone Number: (310) 928-0938
DATE: 06/05/2025

Project Name:
Eric Ross

Property Address:
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Cameron, NC 28326

ATTACHMENT LAYOUT

Project:
PV SYSTEM

Scale:
AS INDICATED

PV 5.0

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

IQ8SE-DS-0001-01-EN-US-2022-03-17

* Only when installed with IQ System Controller 2, meets UL 1741. IQ8H-208V operates only in grid-tied mode.
** IQ8 Series Microinverters supports split phase, 240V. IQ8H-208 supports split phase, 208V only.

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, 66-cell/132 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[1]
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					
AC short circuit fault current over 3 cycles	Arms	2					4.4
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
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.

IQ8SE-DS-0001-01-EN-US-2022-03-17

CONTRACTOR

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RENEWABLE ENERGY DESIGN GROUP

ENGINEERINC

Drawn by: New@engineerinc.io
Phone Number: (310) 928-0938
DATE: 06/05/2025

Project Name:
Eric Ross

Property Address:
265 Old Montague Way
Cameron, NC 28326

INVERTER DATA SHEET

Project:
PV SYSTEM

Scale:
AS INDICATED

D 6.0

Enphase® Energy // Rapid Shutdown

Rapid shutdown is built-in

The 2014 edition of the National Electrical Code (NEC 2014) added new rapid shutdown requirements for PV systems installed on buildings. Enphase Microinverters fully meet rapid shutdown requirements in the new code without the need to install any additional electrical equipment.

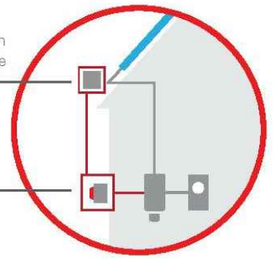
What's new in NEC 2014?
NEC 2014, Section 690.12 applies to PV conductors over 10 feet from the PV array and requires that the conductors power down to 30 volts and 240 volt-amperes within 10 seconds of rapid shutdown initiation.

String inverters require work arounds for rapid shutdown

Work around.
Specialized Rapid Shutdown electrical box installed on the roof within 10 feet of array.

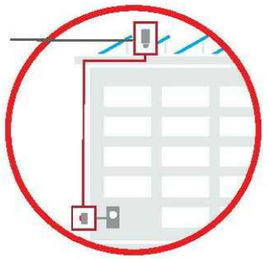
Work around.
Shutoff switch that is easily accessible to first responders on the ground.

Work around.
Extra conduit in installation.



Residential String Inverter

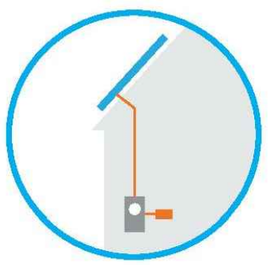
Work around.
String inverter installed on roof, a hostile environment that string inverters are not built to live in.



Commercial String Inverter

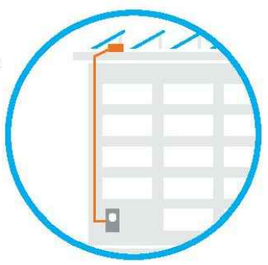
Enphase comes standard with rapid shutdown capability

All Enphase microinverters, even those that were previously installed, inherently meet rapid shutdown requirements, no additional equipment or workarounds needed



Residential Microinverter

Enphase microinverters can safely shut down automatically, leaving only low-voltage DC electricity isolated to the PV module



Commercial Microinverter

To learn more, visit enphase.com

[e] enphase ENERGY

QUICK **INSTALL** GUIDE

ENPHASE.

Install the **Enphase IQ8 Series** Microinverter

To install Enphase IQ8 Series Microinverters, read and follow all warnings and instructions in this guide and in the *Enphase IQ8 Series Microinverter Installation and Operation Manual* at enphase.com/support. Safety warnings are listed on the back page of this guide.

The Enphase Microinverter models listed in this guide do not require grounding electrode conductors (GEC), equipment grounding conductors (EGC), or grounded conductor (neutral). The microinverter has a Class II double-insulated rating, which includes ground fault protection (GFP). To support GFP, use only PV modules equipped with DC cables labeled ***PV Wire*** or ***PV Cable***.

IMPORTANT: Enphase IQ8 Series Microinverters require the IQ Cable. An IQ Gateway is required to monitor performance of the IQ Microinverters. The Q Accessories work only with Enphase IQ8 Series Microinverters.

Note: After you log in to your Enphase Installer Platform account from Enphase Installer app, Scan the microinverter QR code and connect to the Enphase IQ Gateway to track the system installation progress.

PREPARATION

A) Download the Enphase Installer App and open it to log in to your Enphase Installer Platform account. With this app, **scan the microinverter QR code** and connect to the Enphase IQ Gateway to track system installation progress. To download, go to enphase.com/toolkit or scan the QR code at right.

B) Refer to the following table and check PV module electrical compatibility at: enphase.com/en-us/support/module-compatibility.

Model	DC connector	Typical PV module* cell count
IQ8-60-2-US	MC-4 locking type	Pair with 60 cell /120-half-cell modules
IQ8PLUS-72-2-US IQ8M-72-2-US IQ8A-72-2-US	MC-4 locking type	Pair with 60 cell / 120-half-cell, 66 cell, or 72 cell / 144-half-cell
IQ8H-240-72-2-US IQ8H-208-72-2-US	MC-4 locking type	Pair with 60 cell /120-half-cell, 66 cell, or 72 cell / 144-half-cell

* Enphase IQ8 Series Microinverters are compatible with bi-facial PV modules if the temperature adjusted electrical parameters (maximum power, voltage and current) of the modules, considering the front side electrical parameters (i.e., 0% back side gain), are within the allowable microinverter input parameters range.

C) In addition to the Enphase Microinverters, PV modules and racking, you will need these **Enphase IQ8 Series Microinverters**:

- Enphase IQ Gateway (model ENV-IQ-AM1-240) communications gateway or Enphase IQ Combiner (check enphase.com for models): is required to monitor solar production.
- Tie wraps or cable clips (Q-CLIP-100)
- Enphase Sealing Caps (Q-SEAL-10): for any unused connectors on the Enphase IQ Cable
- Enphase Terminator (Q-TERM-10): one needed at the end of each AC cable segment
- Enphase Disconnect Tool (Q-DISC-10)
- Enphase IQ Cable:

Cable model	Connector spacing*	PV module orientation	Connectors per box
Q-12-10-240	1.3m	Portrait (all)	240
Q-12-17-240	2.0m	Landscape (60- and 66-cell)	240
Q-12-20-200	2.3m	Landscape (72-cell)	200

*Allows for 30cm of cable slack

D) Check that you have these other items:
- AC junction box.
- Tools: screwdrivers, wire cutter, voltmeter, torque wrench, sockets, and wrenches for mounting hardware

E) Protect your system with lightning and/or surge suppression devices. It is also important to have insurance that protects against lightning and electrical surges.

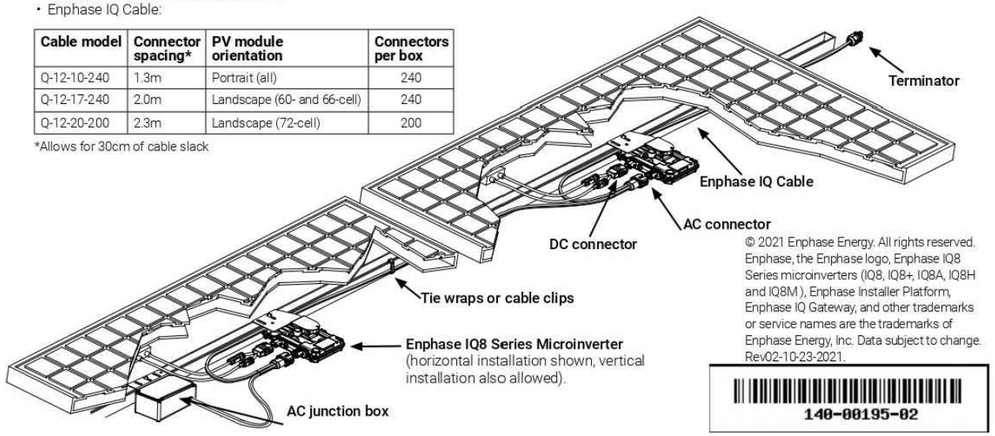
F) Plan your AC branch circuits to meet the following limits for maximum number of microinverters per branch when protected with a 20-amp over-current protection device (OCPD).

Maximum* IQ8 Series Microinverters per AC branch circuit (single-phase)		
IQ8 (240V)	IQ8+ (240V)	IQ8M (240V)
16	**13**	**11**
IQ8A (240V)	IQ8H (240V)	IQ8H (208V)
11	**10**	**9**

* Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

G) Size the AC wire gauge to account for voltage rise. Select the correct wire size based on the distance from the beginning of the Enphase IQ Cable to the breaker in the load center. Design for a voltage rise total of less than 2% for these sections. Refer to the Voltage Rise Technical Brief at enphase.com/support for more information.

Best practice: Center-feed the branch circuit to minimize voltage rise in a fully-populated branch.



140-00195-02

CONTRACTOR

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RENEWABLE ENERGY DESIGN GROUP

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Project Name:
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265 Old Montague Way
Cameron, NC 28326

ENPHASE RAPID SHUTDOWN

Project:
PV SYSTEM

Scale:
AS INDICATED

D 7.0

powered by Q.ANTUM DUO Z

Q.PEAK DUO BLK ML-G10+

385-405

ENDURING HIGH PERFORMANCE

Quality Controlled PV
TÜVRheinland CERTIFIED
www.tuv.com ID 1111232615

ASSEMBLED IN THE USA

25 YR Warranty Product & Performance

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2021

Q CELLS Yield Security

BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.

THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty[2].

6 BUSBAR CELL TECHNOLOGY

12 BUSBAR CELL TECHNOLOGY

[1] APT test conditions according to IEC / TS 62804-1:2015, method A (−1500 V, 96h)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

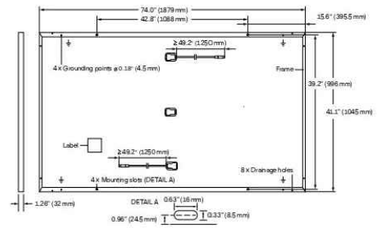
Rooftop arrays on residential buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
Weight	48.5 lbs (22.0 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥49.2 in (1250 mm), (−) ≥49.2 in (1250 mm)
Connector	Stäubli MC4; IP68

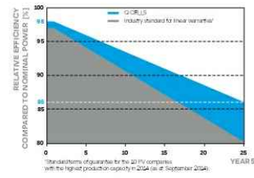


ELECTRICAL CHARACTERISTICS

POWER CLASS				385	390	395	400	405
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / −0 W)								
Minimum	Power at MPP[1]	P_{MPP}	[W]	385	390	395	400	405
Minimum	Short Circuit Current[1]	I_{SC}	[A]	11.04	11.07	11.10	11.14	11.17
Minimum	Open Circuit Voltage[1]	V_{OC}	[V]	45.19	45.23	45.27	45.30	45.34
Minimum	Current at MPP	I_{MPP}	[A]	10.59	10.65	10.71	10.77	10.83
Minimum	Voltage at MPP	V_{MPP}	[V]	36.36	36.62	36.88	37.13	37.39
Minimum	Efficiency[1]	η	[%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]								
Minimum	Power at MPP	P_{MPP}	[W]	288.8	292.6	296.3	300.1	303.8
Minimum	Short Circuit Current	I_{SC}	[A]	8.90	8.92	8.95	8.97	9.00
Minimum	Open Circuit Voltage	V_{OC}	[V]	42.62	42.65	42.69	42.72	42.76
Minimum	Current at MPP	I_{MPP}	[A]	8.35	8.41	8.46	8.51	8.57
Minimum	Voltage at MPP	V_{MPP}	[V]	34.59	34.81	35.03	35.25	35.46

[1] Measurement tolerances P_{MPP} ±3%; I_{SC}; V_{OC} ±5% at STC: 1000 W/m², 25 ± 2 °C, AM 1.5 according to IEC 60904-3 • [2] 800 W/m², NMOT, spectrum AM 1.5

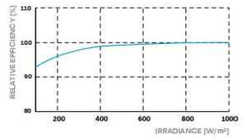
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	−0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	−0.34	Nominal Module Operating Temperature	NMOT	[°F]	109 ± 5.4 (43 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull[3]	[lbs/ft²]	75 (3600 Pa) / 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	−40 °F up to +185 °F (−40 °C up to +85 °C)
Max. Test Load, Push / Pull[3]	[lbs/ft²]	113 (5400 Pa) / 84 (4000 Pa)		

[3] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, Quality Controlled PV - TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells).

PACKAGING INFORMATION

Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	48.0 in 1220 mm	1656 lbs 751 kg	24 pallets	24 pallets	32 modules

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

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RENEWABLE ENERGY DESIGN GROUP

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Drawn by: New@engineerinc.io
Phone Number: (310) 928-0938
DATE: 06/05/2025

Project Name:
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Property Address:
265 Old Montague Way
Cameron, NC 28326

MODULE DATA SHEET

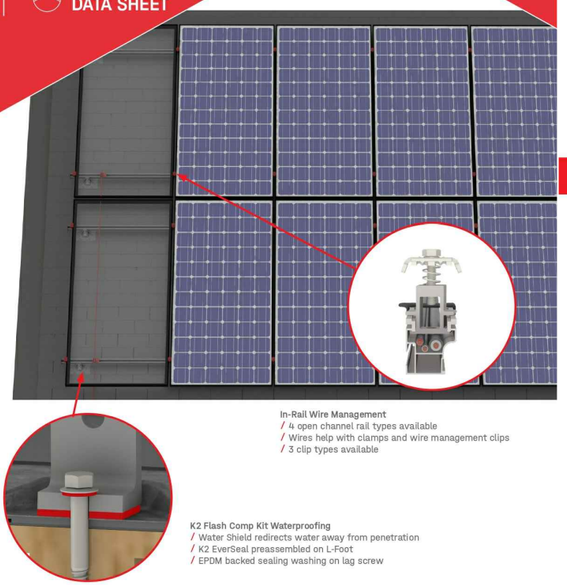
Project:
PV SYSTEM

Scale:
AS INDICATED

D 8.0

CrossRail System

DATA SHEET



In-Rail Wire Management
/ 4 open channel rail types available
/ Wires help with clamps and wire management clips
/ 3 clip types available

K2 Flash Comp Kit Waterproofing
/ Water Shield redirects water away from penetration
/ K2 EverSeal preassembled on L-Foot
/ EPDM backed sealing washing on lag screw

PRODUCT FEATURES

/ High quality, German-engineered system for residential and commercial installations

/ 4 rail sizes available to suit all structural conditions

/ Universal components for all rail types

/ Use 2 innovative components to turn this system into Shared Rail or Tilt Up

/ MK3 technology provides highest rail engagement

/ Roof attachments for all roof types

/ 100% code compliant, structural validation for all solar states

/ Fast installation with minimal component count result in low total installed cost

TECHNICAL DATA

	CrossRail System
Roof Type	Composition shingle, tile, standing seam, corrugated metal, trapezoidal metal
Material	High corrosion resistance stainless steel and high grade aluminum
Flexibility	Modular construction, suitable for any system size, height adjustable
PV Modules	For all common module types
Module Orientation	Portrait and landscape
Roof Connection	Rafter or deck connection depending on selected roof attachment
Structural Validity	IBC compliant, stamped engineering letters available for all solar states
Certifications	UL 2703, ASCE 7-16, Class A Fire Rating
Warranty	25 years

Components

CrossRail 44-X

Part Number	Description
4000019	CrossRail 44-X, 166", Mill
4000020	CrossRail 44-X, 166", Dark
4000021	CrossRail 44-X, 180", Mill
4000022	CrossRail 44-X, 180", Dark

CrossRail 48-X

Part Number	Description
4000662	CrossRail 48-X, 166", Mill
4000663	CrossRail 48-X, 166", Dark

CrossRail 48-XL

Part Number	Description
4000695	CrossRail 48-XL, 166', Mill
4000705	CrossRail 48-XL, 166', Dark

CrossRail 80

Part Number	Description
4000508	CrossRail 80 166" Rail Mill

L-Foot & T-Foot

Part Number	Description
4000630	L-Foot Slotted Set, Mill
4000631	L-Foot Slotted Set, Dark
4000080	T-Foot X 6" Kit, Mill
4000218	Big Foot 6" w/3" + Chem Link Clip Kit

K2 Metal Flashings

Part Number	Description
4000156	K2 Flash Comp Kit, Mill
4000157	K2 Flash Comp Kit, Dark

Splice Foot X & XL

Part Number	Description
4000131	Splice Foot X, Set, Mill
4000162	Splice Foot XL, Set, Mill
4000115	Splice Foot Screw, m5×60

EverSeal Tile Hooks

Part Number	Description
4000140-B	USH, 9", Base Kit, w/Butyl
4000141-B	Flat Tile Hook X Kit, w/Butyl
4000142-B	USH +2, 5.5" Base Kit, w/Butyl

Standard Tile Hooks

Part Number	Description
4000036	Flat Tile Hook Set, w/Lag
4001294	Tile Hook 2G Wide Base w/Hardware
4000140	Universal Standard Hook 9" Base Kit
4000141	Flat Tile Hook X, Kit
4000142	Universal Standard Hook +2, 5.5" Base, Kit

Standing Seam PowerClamps

Part Number	Description
4000316	Standing Seam PowerClamp, Mini, Set
4000317	Standing Seam PowerClamp, Standard, Set

Corrugated Power Clamp, Kit

Part Number	Description
4000307	Corrugated PowerClamp, Kit

Trapezoidal Power Clamp, Kit

Part Number	Description
4000308	Trapezoidal PowerClamp, Kit

Yeti Clamp

Part Number	Description
4000950-H	Yeti Hidden EC for CR, 13mm Hex Set

K2 Mid Clamp

Part Number	Description
4000229	K2 Mid Clamp Set, MB+40, Dark
4000230	K2 Mid Clamp Set, MB+40, Mill

K2 End Clamp

Part Number	Description
4000197	K2 End Clamp Set, Mill
4000233	K2 End Clamp Set, Dark

Bonding & Grounding

Part Number	Description
4000829-H	CR Microinverter & Opt., 13mm Hex Kit
4000006-H	Everest Ground Lug, 13mm Hex
4000083	MLPE, Module Frame Mount, Kit

CrossRail Rail Connector

Part Number	Description
4000351	Rail Connector CR 44-X, Set, Mill
4000352	Rail Connector CR 44-X, Set, Dark
4000385	RailConn CR48-X, 48-XL Struct Set, Mill
4000386	RailConn CR48-X, 48-XL Struct Set, Dark
4001196	Rail Connector UL 2703 Set, CR80, Mill

End Caps

Part Number	Description
4000176	EndCap 44-X, K2
4000431	CrossRail Flat EndCap, CR 48-X, 48-XL
4001221	EndCap, Black, CR80

Wire Management

Part Number	Description
4000069	Wire Management Clip, TC
4000382	HEYClip SunRunner Cable Slip SS, S6404
4005394	Wire Mangement Clip, Omega, Black

CR 48-X/48-XL Sleeve

Part Number	Description
4000177	Sleeve CR 44-X
4000583	CrossRail 3" Black Sleeve 48-X, 48-XL

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Project Name:
Eric Ross

Property Address:
265 Old Montague Way
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RACKING DATA SHEET

Project:
PV SYSTEM

Scale:
AS INDICATED

D 9.0

FLASHKIT PRO

INSTALLATION GUIDE

UNIRAC FEATURING EcoFasten Solar® TECHNOLOGY

FLASHKIT PRO IS THE COMPLETE FLASHING AND ATTACHMENT SOLUTION FOR COMPOSITION ROOFS.

INSTALL **FLASH**KIT PRO FLASHING

INSTALL L-FOOT

ATTACH L-FOOT TO RAIL

PRE-INSTALL SYSTEM LAYOUT

- Locate rafters and snap horizontal and vertical lines to mark the installation position for each flashing.
- Drill a pilot hole (1/4" diameter) for the lag bolt. Backfill with sealant.

STEP 1 INSTALL **FLASH**KIT PRO FLASHING

- Insert the flashing so the top part is under the next row of shingles and pushed far enough upslope to prevent water infiltration through vertical joint in shingles.
- The leading edge of flashing must butt against upper row of nails to prevent turning when torqued.

QUICK TIP:

- For vertical adjustment when leading edge of flashing hits nails in upper shingle courses, slide flashing up under shingles until leading edge engages nails. Measure remaining distance to adjust upslope.
- Remove flashing and cut a "V" notch at marks where nail shafts engaged leading edge of flashing the distance desired in Step 1. Notch depth not to exceed 2" in length by 1/2" in width.
- Re-install flashing with notched area upslope, and position notched leading edge underneath nail heads.

STEP 2 INSTALL L-FOOT

- Line up pilot hole with **FLASH**KIT PRO fastener hole.
- Insert the lag bolt through the EPDM washer, the top L-101-3 compression bracket, and the gasketed hole in the flashing and into the rafter.
- Torque to 100-140 torque inch-pounds depending on the type of wood and time of year. The visual indicator for proper torque is when the EPDM on the underside of the bonded washer begins to push out the sides as the washer compresses. If using an impact wrench to install the fasteners be careful not to over torque the fastener. You may need to stop and use a ratchet to finish the install.

STEP 3 ATTACH L-FOOT TO RAIL

- Slide the 3/8"-16 racking hardware into rail slot, spacing bolts to match the spacing of the attachments.
- Torque 3/8" nut to 30ft-lbs. Use anti-seize to prevent galling.
- If attaching L-Foot to light rail, ensure the L-Foot does not protrude above the top edge of the rail.

FASTER INSTALLATION. 25-YEAR WARRANTY.

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

FLASHKIT PRO

UNIRAC FEATURING EcoFasten Solar® TECHNOLOGY

FLASHKIT PRO is the complete attachment solution for composition shingle roofs. Unirac partnered with EcoFasten Solar to bring best-in-class design and performance together in one package. Kitted in 10 packs for maximum convenience, flashings and hardware are available in Mill or Dark finishes. With **FLASH**KIT PRO, you have everything you need for a quick, professional installation.

UNIRAC 25 YEAR FULL-SYSTEM WARRANTY

TRUSTED WATER SEAL FLASHINGS

FEATURING EcoFasten Solar® TECHNOLOGY

YOUR COMPLETE SOLUTION

Flashings, lags, continuous slot L-Feet and hardware

CONVENIENT 10 PACKS

Packaged for speed and ease of handling

THE COMPLETE ROOF ATTACHMENT SOLUTION

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

CONTRACTOR

Renewable Energy Design Group

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RENEWABLE ENERGY DESIGN GROUP

ENGINEERINC
Drawn by: New@engineerinc.io
Phone Number: (310) 928-0938
DATE: 06/05/2025

Project Name:
Eric Ross

Property Address:
265 Old Montague Way
Cameron, NC 28326

ATTACHMENT DATA SHEET

Project:
PV SYSTEM

Scale:
AS INDICATED

D 10.0

Data Sheet
Enphase Networking

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C

X-IQ-AM1-240-4C

X-IQ-AM1-240-4

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters 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 Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

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

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed

LISTED

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

ENPHASE

Enphase IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem 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.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	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 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 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. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" 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
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ 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) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

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ENPHASE AC COMBINER BOX DATA SHEET

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PV SYSTEM

Scale:
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