SCOPE OF WORK

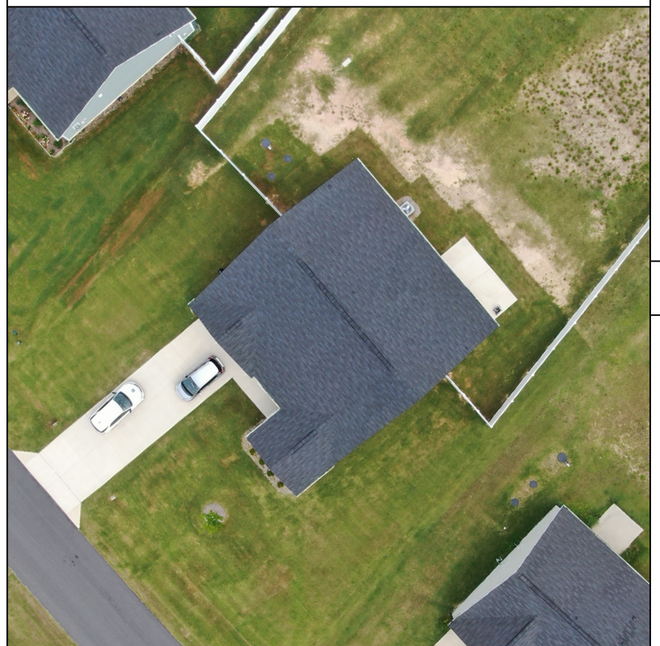
INSTALL A ROOF-MOUNTED PV SYSTEM :

- (17) REC315NP MODULES
- (17) ENPHASE IQ8PLUS-72-2-US (240V)
- (01) ENPHASE COMBINER 4
- (01) POWERCELL 2 SDS
- (01) POWERCELL 2 BATTERY CABINET
- (01) POWERCELL 2 INVERTER
- (02) AC DISCONNECT

TOTAL PV SIZE: 5.36KW DC, 4.930KW CEC AC

TABLE OF CONTENTS

AERIAL PHOTO



GOVERNING CODES

ALL WORK TO COMPLY WITH:

- 2018 INTERNATIONAL BUILDING CODE
- 2018 INTERNATIONAL RESIDENTIAL CODE
- 2017 NATIONAL ELECTRICAL CODE
- 2013 INTERNATIONAL FIRE CODE

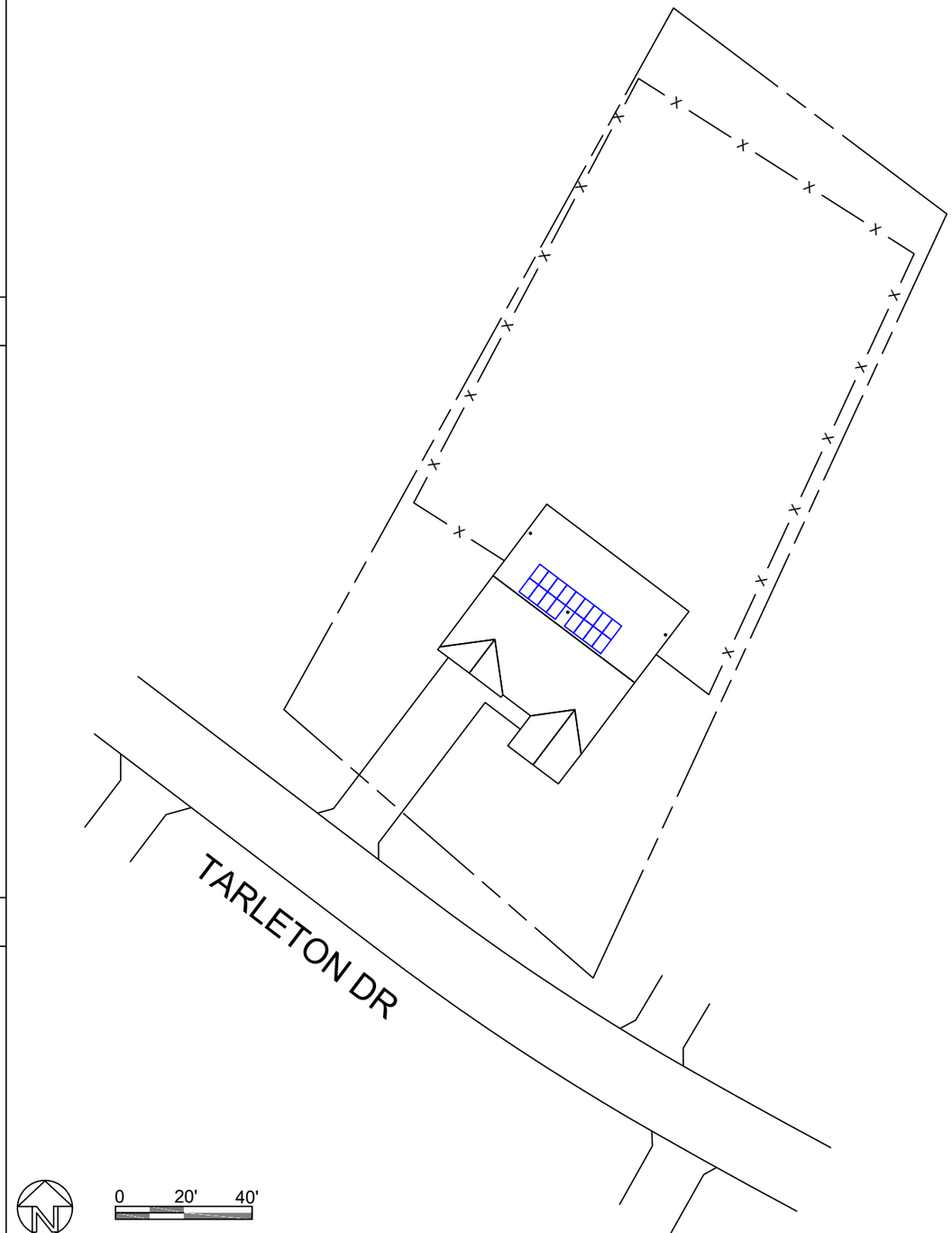
GENERAL NOTES

- ALL WORK SHALL CONFORM TO APPLICABLE BUILDING, ELECTRICAL CODE AND ANY LOCALLY ADOPTED ORDINANCES.
- DRAWINGS ARE DIAGRAMMATIC, SITE CONDITIONS SHALL PREVAIL. IF NO SCALE IS GIVEN, DRAWINGS ARE NOT TO SCALE. ALL DIMENSIONS SHALL BE VERIFIED BY THE CONTRACTOR IN THE FIELD UPON COMMENCEMENT OF CONSTRUCTION.
- ALL CONDUIT AND WIRE RUNS ARE DIAGRAMMATIC, SUBJECT TO FIELD CONDITIONS ROUTING OF RACEWAYS SHALL BE FINALIZED BY THE CONTRACTOR. IF THE DISTANCES FOR WIRE RUNS ARE DIFFERENT THAN AS SHOWN, THE CONTRACTOR SHALL NOTIFY THE DESIGN TEAM TO VALIDATE THE WIRE SIZE.
- ALL EQUIPMENT SHALL BE LISTED AND LABELED BY A RECOGNIZED TESTING LABORATORY AND INSTALLED PER THE LISTING AND MANUFACTURER'S REQUIREMENTS.
- ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH REQUIRED ACCESS AND WORKING CLEARANCES PER CEC ARTICLE 110.
- ALL NEW MAIN SERVICE PANELS AND SUBPANELS WILL HAVE APPROPRIATE FIELD IDENTIFICATION PER CEC 408.4.
- ALL EQUIPMENT WILL BE INSTALLED WHERE IT IS NOT EXPOSED TO PHYSICAL DAMAGE PER CEC110.27(B).

SITE DETAILS

ASHRAE MIN TEMP	-12°C
ASHRAE 2% HIGH TEMP	34°C
BUILDING OCCUPANCY	R-3
TYPE OF CONSTRUCTION	V-B
SPRINKLERS SYSTEM PER NFPA 13D	NO
# OF STORIES	1
WIND SPEED (ASCE 7-10)	115 MPH
WIND EXPOSURE	B
RISK CATEGORY	II
GROUND SNOW LOAD	15 LBS
SQUARE FOOTAGE	2115 SQ FT
UTILITY PROVIDER	DUKE ENERGY

SITE PLAN



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801 PRESSLEY ROAD, SUITE 100
CHARLOTTE, NORTH CAROLINA, 28217
704-525-6767 | RENUENERGYSOLUTIONS.COM

NC GC #76615
NC ELE #U.34519

PREPARED BY:
RENU ENERGY SOLUTIONS
LEVI JOHNSON

SCALE: 1/40" = 1'-0"
SHEET SIZE: 11" x 17"
TEMPLATE V2.0

AHJ: HARNETT COUNTY
APN: 0652-05-6248.000
DATE: 09/08/2025

PATRICIA FULLER
40 TARLESTON DR
FUQUAY, NC 27526

PV-1
COVER SHEET

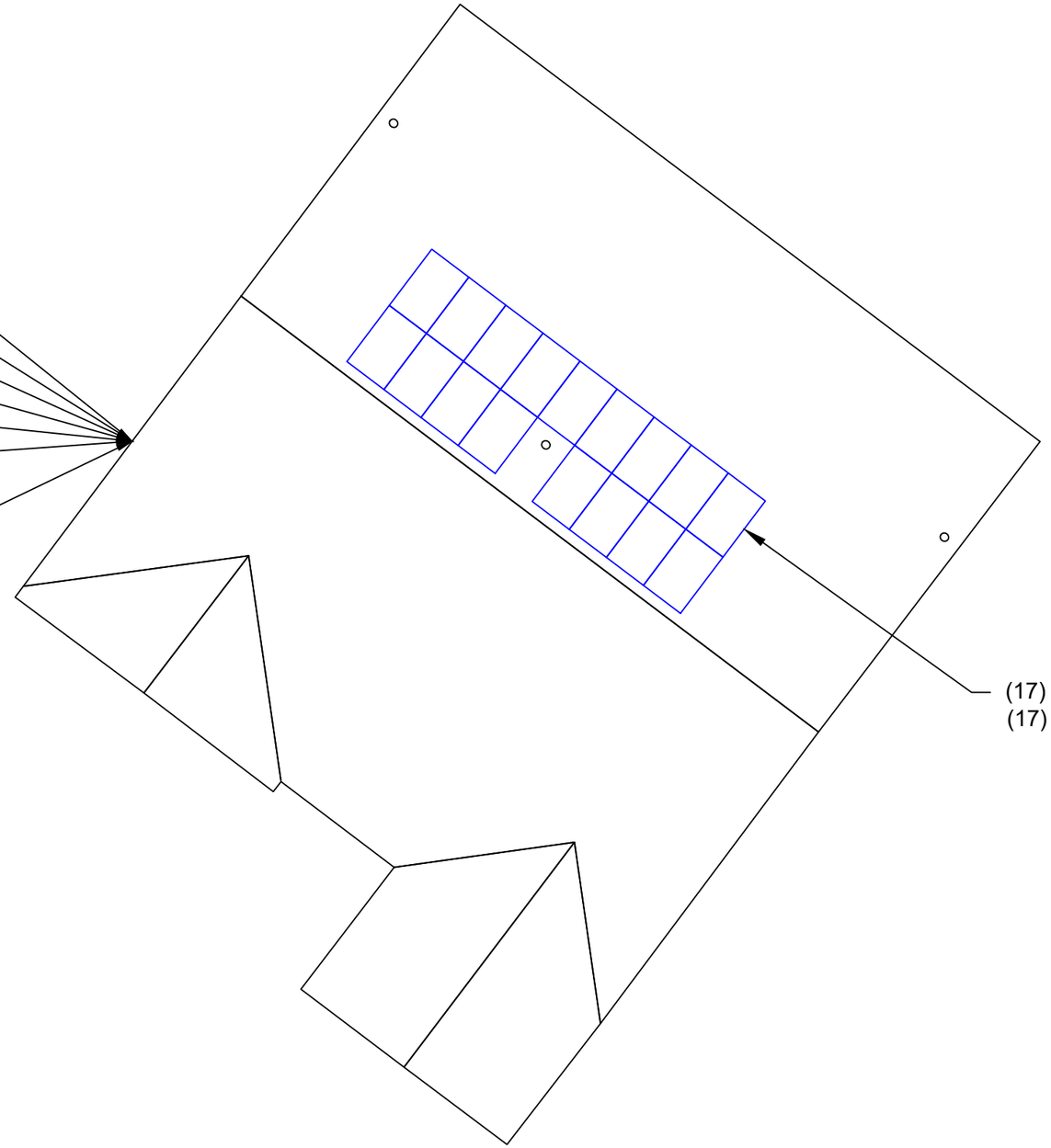
PV ROOF COVERAGE				
(E) PV AREA [SQ FT]	(N) PV AREA [SQ FT]	TOTAL PV AREA [SQ FT]	TOTAL ROOF AREA [SQ FT]	PERCENTAGE COVERED BY PV
0	314.74	314.74	3291	10%

LEGEND

○□ - ROOF OBSTRUCTION

EXTERIOR PV EQUIPMENT
(E)(1) UTILITY METER
(N)(2) AC DISCONNECT
(N)(1) AC LOAD CENTER
(N)(1) POWERCELL 2 SDS
(N)(1) POWERCELL 2 INVERTER
(N)(1) POWERCELL 2 BATTERY CABINET

INTERIOR PV EQUIPMENT
(E)(1) PROTECTED LOADS PANEL



(17) REC315NP MODULES WITH
(17) ENPHASE IQ8PLUS-72-2-US (240V)

0 5' 10'

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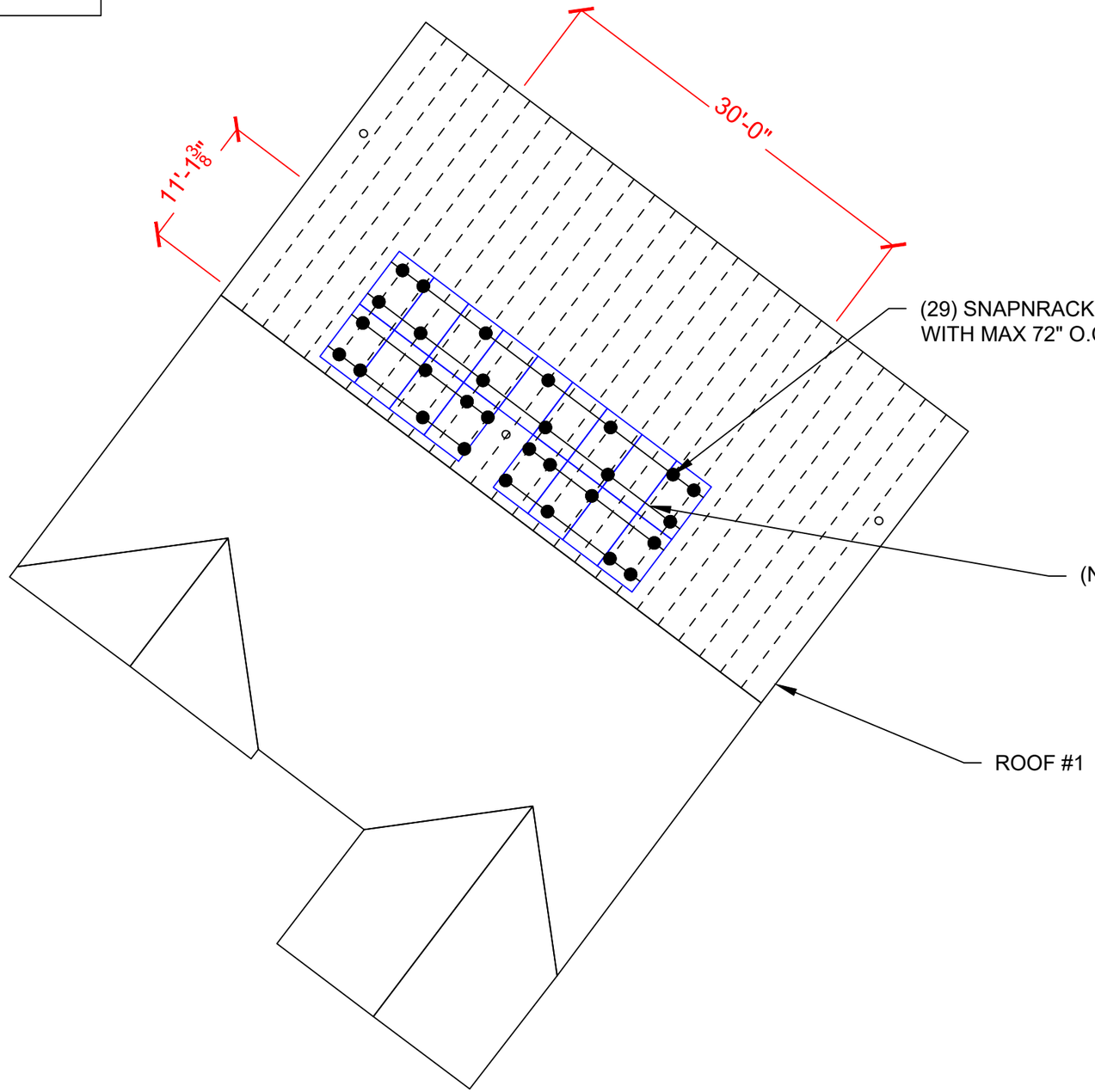
FUQUAY, NC 27526

PV-2
ROOF PLAN & MODULES

LEGEND

- - - - RAFTER OR TRUSS

● - ROOF ATTACHMENT



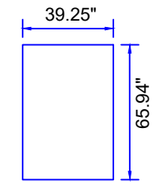
0 5' 10'

ROOF DESCRIPTION

ROOF	ROOF TILT	AZIMUTH	ROOF MATERIAL	TRUSS SIZE	TRUSS SPACING	MAX SPAN
#1	27°	37°	COMPOSITION SHINGLE	2" X 6"	24" O.C.	89"

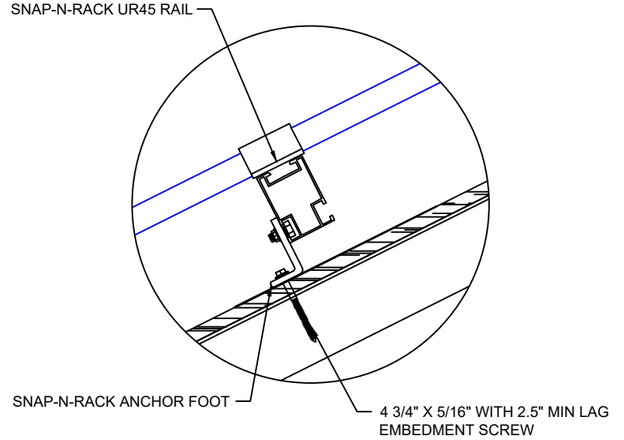
STRUCTURAL INFORMATION

NUMBER OF MODULES	17	--
MODULE WEIGHT	39.7	LBS
TOTAL MODULE (ARRAY) WEIGHT	674.90	LBS
NUMBER OF ATTACHMENT POINT	29	--
MOUNTING SYSTEM WEIGHT (PER MODULE)	0.55	LBS
MOUNTING SYSTEM WEIGHT	15.95	LBS
TOTAL SYSTEM WEIGHT	690.85	LBS
WEIGHT AT EACH ATTACHMENT POINT	23.27	LBS
MODULE AREA (65.94"X39.25")	17.97	SQFT
TOTAL ARRAY AREA	314.74	SQFT
DISTRIBUTED LOAD	2.19	PER SQFT



MODULE : REC315NP (315W)

ROOF ATTACHMENT DETAIL



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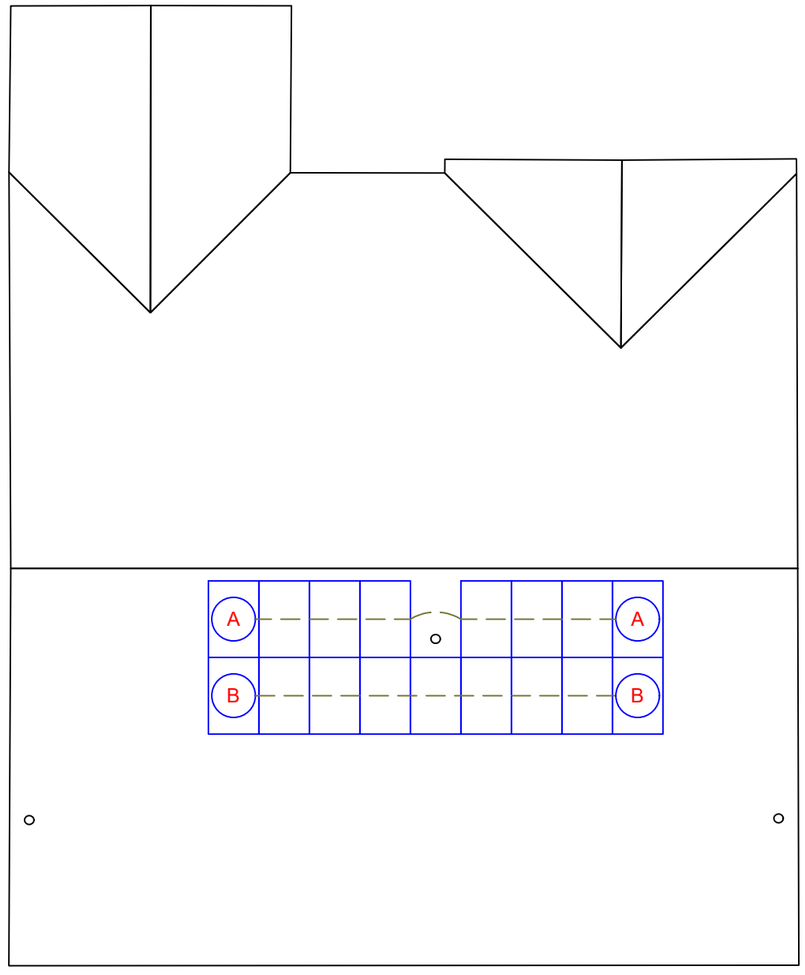
PV-2A
ROOF, MODULES & ATTACHMENT DETAILS



0 5' 10'

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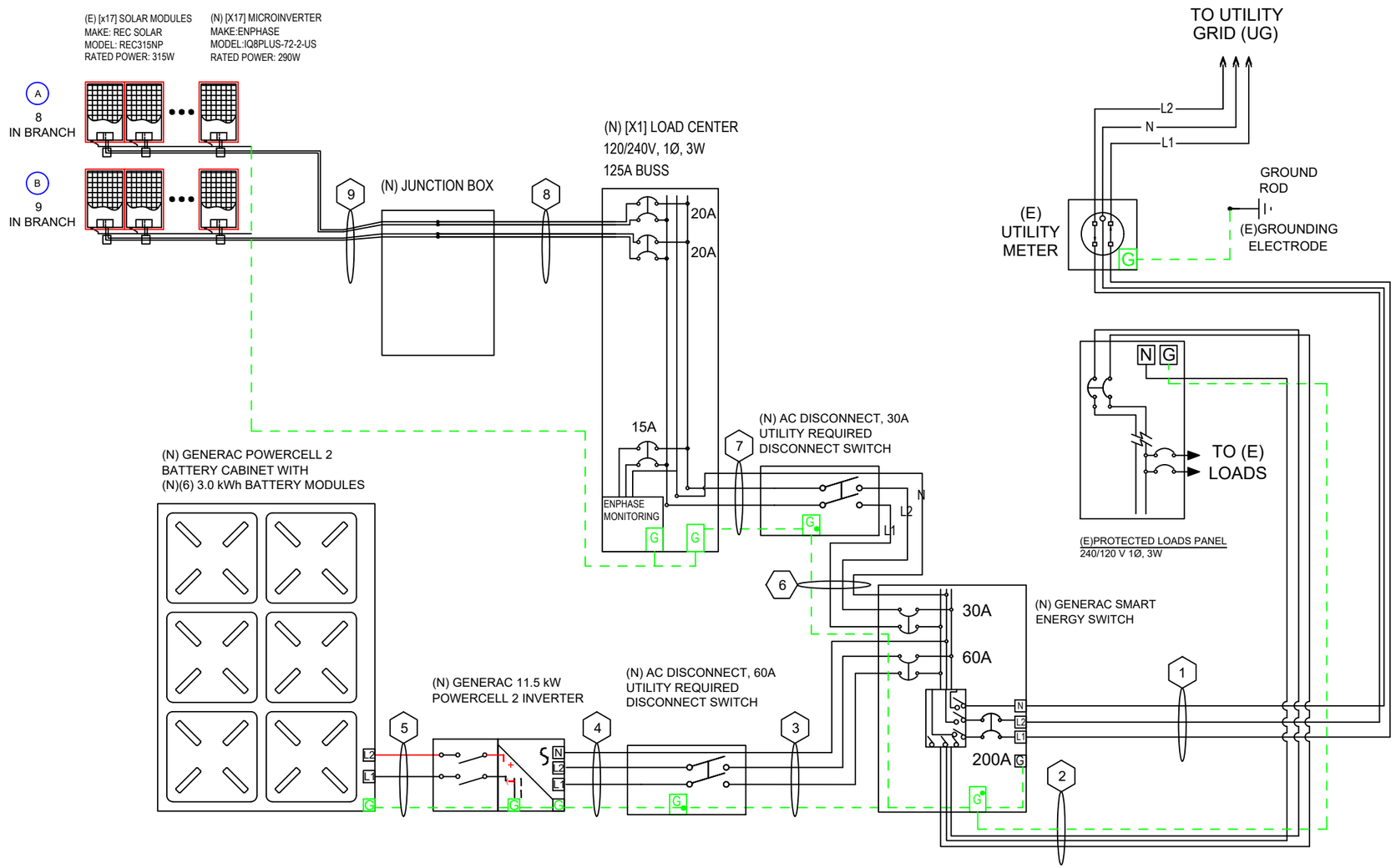
FUQUAY, NC 27526

PV-3A
STRINGING PAGE

ID	TYPICAL	CONDUCTOR	NEUTRAL	EGC	CONDUIT	CURRENT-CARRYING CONDUCTORS IN CONDUIT	OCPD	TEMP. CORR. FACTOR	CONDUIT FILL FACTOR	CONT. CURRENT	MAX CURRENT (125%)	BASE AMP.	DERATED AMP.	TERM TEMP. RATING	AMP. @ TERMINAL
1	1	4/0 AWG XHHW, ALUMINUM	4/0 AWG XHHW, ALUMINUM	N/A	2" DIA	2	200A	0.96 (35°C)	1	-	200.0A	205A	196.8A	75°C	180A
2	1	4/0 AWG XHHW, ALUMINUM	4/0 AWG XHHW, ALUMINUM	4 AWG BARE, ALUMINUM	2" DIA	2	N/A	0.96 (35°C)	1	-	200.0A	205A	196.8A	75°C	180A
3	1	6 AWG THHN, COPPER	6 AWG THHN, COPPER	10 AWG THHN, COPPER	1" DIA	2	60A	0.96 (35°C)	1	48.0A	60A	75A	72A	75°C	65A
4	1	6 AWG THHN, COPPER	6 AWG THHN, COPPER	10 AWG THHN, COPPER	1" DIA	2	N/A	0.96 (35°C)	1	48.0A	60A	75A	72A	75°C	65A
5	1	8 AWG THHN, COPPER	8 AWG THHN, COPPER	10 AWG THHN, COPPER	0.75" DIA	2	N/A	0.96 (35°C)	1	28.30A	35.34A	55A	52.8A	75°C	50A
6	1	10 AWG THHN, COPPER	10 AWG THHN, COPPER	10 AWG THHN, COPPER	0.75" DIA	2	30A	0.96 (35°C)	1	20.57A	25.71A	40A	38.4A	75°C	35A
7	1	10 AWG THHN, COPPER	10 AWG THHN, COPPER	10 AWG THHN, COPPER	0.75" DIA	2	N/A	0.96 (35°C)	1	20.57A	25.71A	40A	38.4A	75°C	35A
8	1	10 AWG THHN, COPPER	N/A	10 AWG THHN, COPPER	0.75" DIA	4	20A	0.96 (35°C)	0.8	10.89A	13.61A	40A	30.72A	75°C	35A
9	1	12 AWG PV WIRE, COPPER	N/A	6 AWG BARE, COPPER	FREE AIR	2	N/A	0.96 (35°C)	1	10.89A	13.61A	30A	28.8A	75°C	25A

NEW SOLAR PROJECT
5.36 KW DC, 4.93 KW AC



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PATRICIA FULLER
40 TARLESTON DR
FUQUAY, NC 27526

PV-4
SINGLE-LINE DIAGRAM

MODULES										
REF.	QTY.	MAKE AND MODEL	PMAX	PTC	ISC	IMP	VOC	VMP	TEMP. COFF. OF VOC	FUSE RATING
(N) PV MODULES	17	REC SOLAR REC315NP BLACK	315W	294	10.17A	9.31A	40.0V	33.9V	-0.27%/°C	20A

DISCONNECTS					
REF.	QTY.	MAKE AND MODEL	FUSES	RATED CURRENT	MAX RATED VOLATGE
(N) DISCONNECT	1	EATON OR EQUIVALENT	N/A	30A	240 V
(N) DISCONNECT	1	EATON OR EQUIVALENT	N/A	60A	240 V

DESIGN TEMPERATURES	
ASHRAE EXTREME LOW	-12°C (10.4°F), SOURCE: RALEIGH DURHAM INTERNATIONAL
ASHRAE 2% HIGH	34°C (93.2°F), SOURCE: RALEIGH DURHAM INTERNATIONAL

INVERTERS									
REF.	QTY.	MAKE AND MODEL	AC VOLTAGE	GROUND	OCPD RATING	RATED POWER	MAX OUTPUT CURRENT	MAX INPUT CURRENT	MAX INPUT VOLTAGE	CEC WEIGHTED EFFICIENCY
(N) MICROINVERTERS	17	ENPHASE IQ8PLUS-72-2-US	240V	FLOATING	20A	290W	1.21A	15A	60V	97.0%

INVERTER OUTPUT CALCULATIONS & 705.12 COMPLIANCE

INVERTER OUTPUT CIRCUIT	INVERTER OR ESS	# OF INVERTERS / ESS	CONTINUOUS OUTPUT	125% SAFETY FACTOR	TOTAL BACKFEED	MINIMUM BREAKER SIZE
#1	ENPHASE IQ8PLUS	1	20.57A	125%	25.71A	30A
TOTAL					25.71A	30A

VOC CALCULATION PER NEC 690.7(A)(1)

MODULE	REC315NP
# OF MODULES LARGEST STRING	9
ASHRAE MIN TEMP [°C]	-12
VOC [V]	40.0
TEMP COEF VOC [%/°C]	-0.27
TEMP ADJ VOC [V]	43.99
VOLTAGE OF LARGEST STRING [V]	395.96

ELECTRICAL NOTES (APPLICABILITY BASED ON SCOPE OF WORK)

AS-BUILT CHANGES TO THE ABOVE WIRING ARE PERMISSIBLE AS LONG AS SUBSITUTIONS ARE CODE COMPLIANT. FOR EXAMPLE, APPROPRIATELY SIZED NM-B MAY BE USED FOR MICROINVERTER OUTPUT CIRCUITS IF INSTALLED IN ACCORDANCE WITH NEC ARTICLE 334, OR MC CABLE MAY BE USED FOR DC SOLAR STRINGS IF INSTALLED IN ACCORDANCE WITH NEC ARTICLE 330.

ALL OUTDOOR EQUIPMENT SHALL BE RAINTIGHT & HOLD A MINIMUM NEMA 3R RATING, INCLUDING ALL ROOF MOUNTED TRANSITION BOXES AND SWITCHES. CONDUCTORS EXPOSED TO WET CONDITIONS SHALL BE SUITABLE FOR USE IN WET CONDITIONS PER NEC 310.10(C).

ALL TERMINAL TEMPERATURES OF EQUIPMENT WILL BE VERIFIED TO BE RATED FOR 75°C, OR THE WIRE WILL NEED TO BE RESIZED USING THE 60°C TERMINAL TEMPERATURE RATINGS FOR 100A OR LESS.

ALL NM-B SHALL BE INSTALLED AND PROTECTED PER NEC 334, AND ALL SER CABLE SHALL BE INSTALLED AND PROTECTED PER NEC 338.

ALL ROOFTOP RACEWAYS AND CABLES EXPOSED TO DIRECT SUNLIGHT WILL BE INSTALLED >7/8" ABOVE THE ROOF.

ALL EQUIPMENT SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH NEC ARTICLE 250. A SUPPLEMENTAL GROUND ROD WILL BE DRIVEN IN ACCORDANCE WITH NEC 250.53(A)(3) IF THE EXISTING GROUND ROD HAS A RESISTANCE TO EARTH THAT IS GREATER THAN 25 OHMS.

IF ANY EXISTING LOAD CONDUCTORS ARE EXTENDED BY MORE THAN 6', AFCI PROTECTION WILL BE PROVIDED PER NEC 210.12(D).

PER NEC 690.47(A) PV SYSTEMS THAT ARE NOT SOLIDLY GROUNDED, THE EQUIPMENT GROUNDING CONDUCTOR FOR THE OUTPUT OF THE PV SYSTEMS SHALL BE PERMITTED TO BE THE CONNECTION TO GROUND FOR GROUND-FAULT PROTECTION AND EQUIPMENT GROUNDING OF THE PV ARRAY.

THE ESS CIRCUIT BREAKER SHALL BE SECURED IN PLACE BY AN ADDITIONAL FASTENER PER NEC 408.36(D).

NO SINGLE BACK-UP LOAD WILL BE LARGER THAN THE MAXIMUM CONTINUOUS OUTPUT OF THE ESS PER NEC 710.15(A).

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PREPARED BY:
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LEVI JOHNSON

SCALE: NTS
SHEET SIZE: 11" x 17"
TEMPLATE V2.0

AHJ: HARNETT COUNTY
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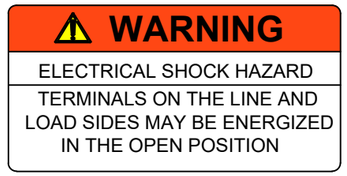
PATRICIA FULLER
40 TARLESTON DR
FUQUAY, NC 27526

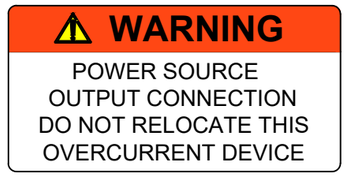
PV-4A
DESIGN TABLES

LABELING NOTES
1.1 LABELING REQUIREMENTS BASED ON THE 2017 NATIONAL ELECTRICAL CODE, INTERNATIONAL FIRE CODE 605.11, OSHA STANDARD 1910.145, ANSI Z535
1.2 MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
1.3 LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
1.4 LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8" AND PERMANENTLY AFFIXED.
1.5 ALERTING WORDS TO BE COLOR CODED. "DANGER" WILL HAVE RED BACKGROUND; "WARNING" WILL HAVE ORANGE BACKGROUND; "CAUTION" WILL HAVE YELLOW BACKGROUND. [ANSI Z535]

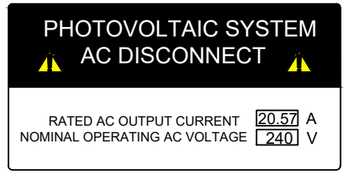


LABEL 1
AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT (2" X 4"). [NEC 690.13].

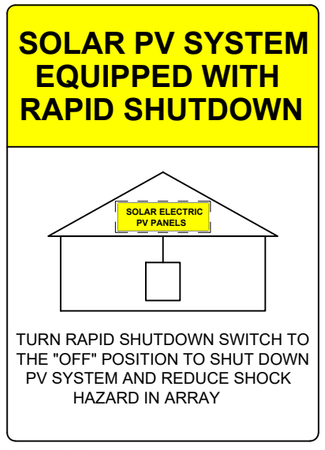
LABEL 5
AT RAPID SHUTDOWN DISCONNECT SWITCH (5 1/4" X 2"). [NEC 690.56(C)(3)].



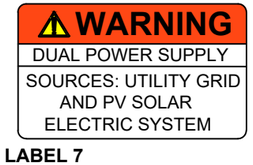
LABEL 2
AT POINT OF INTERCONNECTION OVERCURRENT DEVICE (2" X 4"). [NEC 705.12(B)(2)(3)(B)].



LABEL 3
AT POINT OF INTERCONNECTION, MARKED AT DISCONNECTING MEANS (4" X 2"). [NEC 690.54]



LABEL 6
AT RAPID SHUTDOWN SYSTEM (3 3/4" X 5 1/4"). [NEC 690.56(C)(1)(A)].



LABEL 7
AT POINT OF INTERCONNECTION (2 3/4" X 1 5/8"). [NEC 705.12(B)(3)]

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PV-5
LABELS & PLACARDS

SOLAR'S MOST TRUSTED

REC

REC N-PEAK BLACK SERIES

PREMIUM FULL BLACK MONO N-TYPE SOLAR PANELS WITH SUPERIOR PERFORMANCE

MONO N-TYPE: THE MOST EFFICIENT C-SI TECHNOLOGY

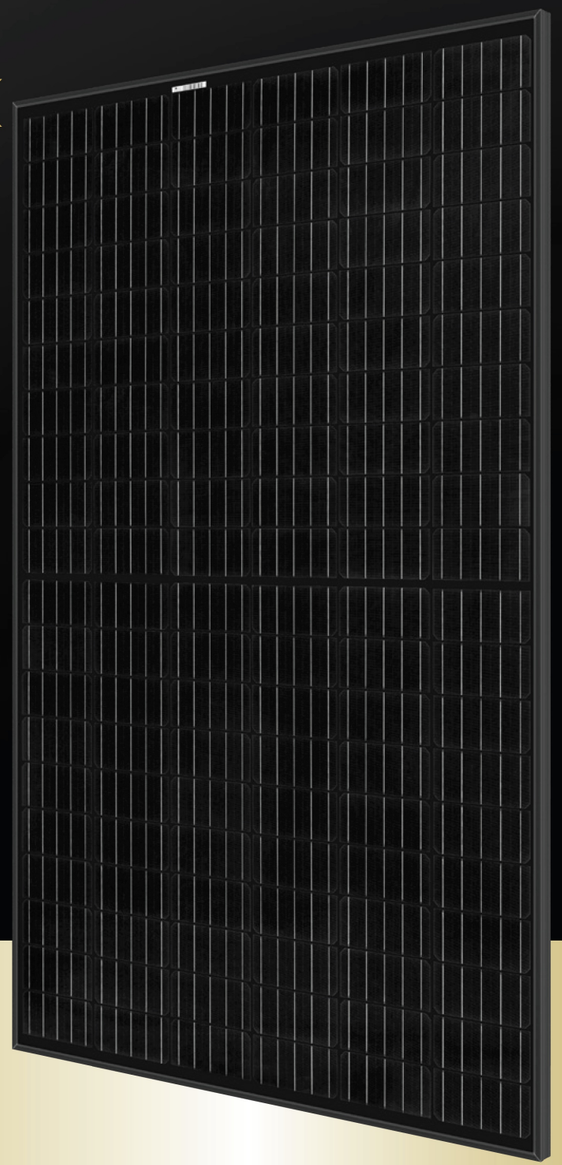
NO LIGHT INDUCED DEGRADATION

SUPER-STRONG FRAME UP TO 7000 PA SNOW LOAD

FLEXIBLE INSTALLATION OPTIONS

IMPROVED PERFORMANCE IN SHADED CONDITIONS

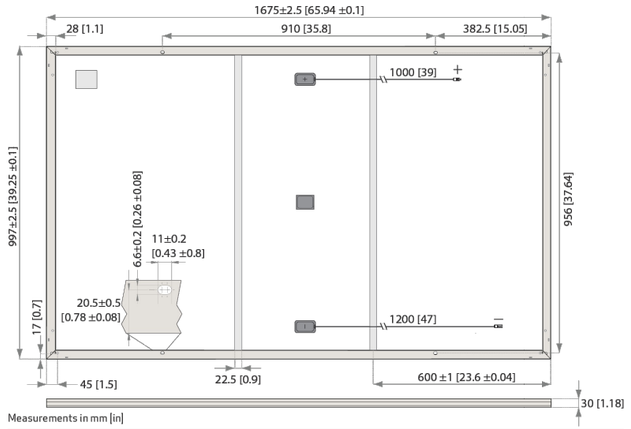
GUARANTEED HIGH POWER OVER LIFETIME



325 WP POWER

ELIGIBLE FOR

REC N-PEAK BLACK SERIES



Measurements in mm [in]

ELECTRICAL DATA @ STC	Product code*: RECxxxNP Black				
Nominal Power - P_{MAX} (Wp)	305	310	315	320	325
Watt Class Sorting - (W)	0/+5	0/+5	0/+5	0/+5	0/+5
Nominal Power Voltage - V_{MPP} (V)	33.3	33.6	33.9	34.2	34.4
Nominal Power Current - I_{MPP} (A)	9.17	9.24	9.31	9.37	9.46
Open Circuit Voltage - V_{OC} (V)	39.3	39.7	40.0	40.3	40.7
Short Circuit Current - I_{SC} (A)	10.06	10.12	10.17	10.22	10.28
Panel Efficiency (%)	18.3	18.6	18.9	19.2	19.5

Values at standard test conditions (STC: air mass AM 1.5, irradiance 1000 W/m², temperature 25°C), based on a production spread with a tolerance of P_{MAX}, V_{OC} & I_{SC} ±3% within one watt class. * Where xxx indicates the nominal power class (P_{MAX}) at STC above.

ELECTRICAL DATA @ NOCT	Product code*: RECxxxNP Black				
Nominal Power - P_{MAX} (Wp)	214	217	221	224	228
Nominal Power Voltage - V_{MPP} (V)	31.1	31.4	31.7	32.0	32.2
Nominal Power Current - I_{MPP} (A)	6.86	6.91	6.97	7.01	7.08
Open Circuit Voltage - V_{OC} (V)	36.7	37.1	37.4	37.7	38.0
Short Circuit Current - I_{SC} (A)	7.53	7.57	7.61	7.65	7.69

Nominal operating cell temperature (NOCT: air mass AM 1.5, irradiance 800 W/m², temperature 20°C, windspeed 1 m/s).
* Where xxx indicates the nominal power class (P_{MAX}) at STC above.

CERTIFICATIONS

IEC 61215, IEC 61730 & UL 1703; UL 61730, MCS 005, IEC 62804, IEC 61701, IEC 62716, IEC 62782
ISO 9001: 2015, ISO 14001: 2004, OHSAS 18001: 2007

WARRANTY

	Standard	REC ProTrust	
Installed by an REC Certified Solar Professional	No	Yes	Yes
System Size	Any	<25 kW	25-500 kW
Product Warranty (yrs)	20	25	25
Power Warranty (yrs)	25	25	25
Labor Warranty (yrs)	0	25	10
Power in Year 1	98%	98%	98%
Annual Degradation	0.5%	0.5%	0.5%
Power in Year 25	86%	86%	86%

See warranty documents for details. Some conditions apply.

GENERAL DATA

Cell type:	120 half-cut n-type mono c-Si cells 6 strings of 20 cells in series
Glass:	0.13" (3.2 mm) solar glass with anti-reflection surface treatment
Backsheet:	Highly reflective and resistant polymeric construction (black)
Frame:	Anodized aluminum (black)
Junction box:	3-part, 3 bypass diodes, IP67 rated in accordance with IEC 62790
Cable:	12 AWG (4 mm²) PV wire, 39 + 47" (1 m + 1.2 m) in accordance with EN 50618
Connectors:	Stäubli MC4 PV-KBT4/KST4, 12 AWG(4 mm²) in accordance with IEC 62852 IP68 only when connected
Origin:	Made in Singapore

MECHANICAL DATA

Dimensions:	65.9 x 39.25 x 1.1" (1675 x 997 x 30 mm)
Area:	17.98 ft² (1.67 m²)
Weight:	39.7 lbs (18 kg)

MAXIMUM RATINGS

Operational temperature:	-40 ... +85°C
Maximum system voltage:	1000 V
Design load (+): snow Maximum test load (+):	4666 Pa (97.5 lbs/ft²)* 7000 Pa (146 lbs/ft²)*
Design load (-): wind Maximum test load (-):	1600 Pa (33.4 lbs/ft²)* 2400 Pa (50 lbs/ft²)*
Max series fuse rating:	20 A
Max reverse current:	20 A

* Calculated using a safety factor of 1.5
* See installation manual for mounting instructions

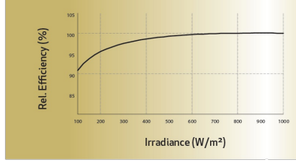
TEMPERATURE RATINGS *

Nominal Operating Cell Temperature:	44°C (±2°C)
Temperature coefficient of P_{MAX}:	-0.35 %/°C
Temperature coefficient of V_{OC}:	-0.27 %/°C
Temperature coefficient of I_{SC}:	0.04 %/°C

*The temperature coefficients stated are linear values

LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC.



Specifications subject to change without notice.
Ref: PM-05-11-03-Rev- D 01.20

Founded in Norway in 1996, REC is a leading vertically integrated solar energy company. Through integrated manufacturing from silicon to wafers, cells, high-quality panels and extending to solar solutions, REC provides the world with a reliable source of clean energy. REC's renowned product quality is supported by the lowest warranty claims rate in the industry. REC is a Bluestar Elkem company with headquarters in Norway and operational headquarters in Singapore. REC employs around 2,000 people worldwide, producing 1.5 GW of solar panels annually.

REC
www.recgroup.com

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PREPARED BY:
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LEVI JOHNSON

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SHEET SIZE: 11" x 17"	APN: 0652-05-6248.000
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PATRICIA FULLER
40 TARLESTON DR
FUQUAY, NC 27526

PV-6
EQUIPMENT DATASHEET

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

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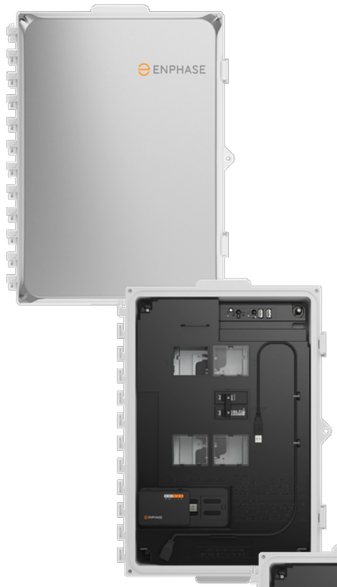
FUQUAY, NC 27526

PV-7
EQUIPMENT DATASHEET

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

UL 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

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

ENPHASE.

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NC GC #76615
NC ELE #U.34519

PREPARED BY:
RENU ENERGY SOLUTIONS
LEVI JOHNSON

SCALE: NTS	AHJ: HARNETT COUNTY
SHEET SIZE: 11" x 17"	APN: 0652-05-6248.000
TEMPLATE V2.0	DATE: 09/08/2025

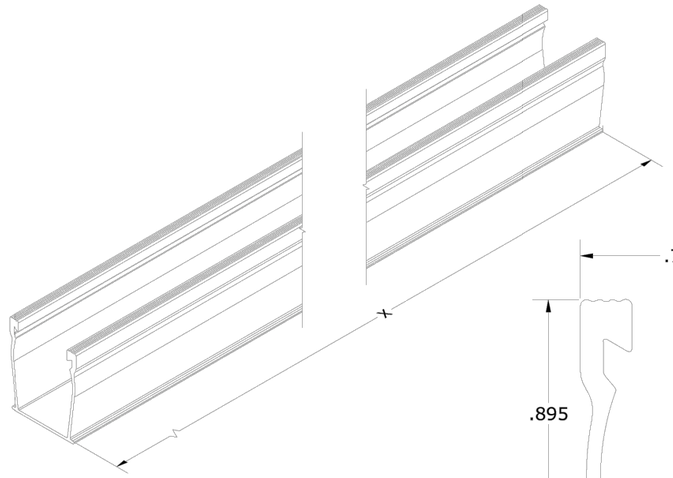
PATRICIA FULLER
40 TARLESTON DR
FUQUAY, NC 27526

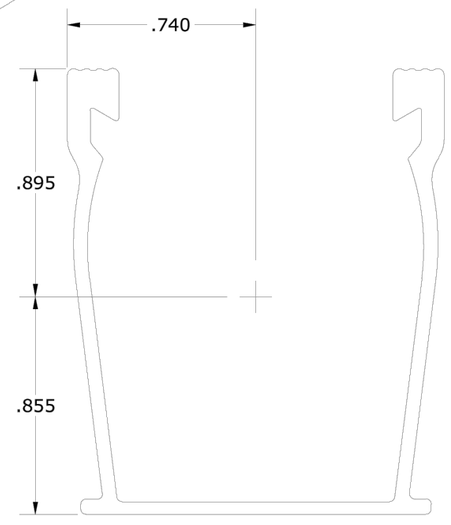
PV-8
EQUIPMENT DATASHEET

DESCRIPTION:	DOC NUMBER:	
SNAPNRACK, TDS, UR-45 RAIL	SNR-DC-01420	SnapNrack®
PART NUMBER(S):	DRAWN BY:	SUNRUN INSTALLATION SERVICES INC.
232-10095, 232-10096, 232-10097, 232-10098,	H.WULFEKOETTER	225 BUSH STREET, SUITE 1400 • SAN FRANCISCO, CA 94104 USA PHONE (877) 732-2860 • CONTACT@SNAPNRACK.COM
UNITS: IN, LB, DEG [MM, KG, DEG] / SHEET: 1:1	REV: A / DATE: 3/6/2024	

UR-45 RAIL PROPERTIES

SKU	FINISH	RAIL LENGTH	WEIGHT (lb)
232-10095	MILL	172 in	5.55
232-10096	BLACK	172 in	5.55
232-10097	MILL	94 in	3.03
232-10098	BLACK	94 in	3.03





SECTION PROPERTIES

A	0.319 in²
Ixx	0.134 in⁴
Iyy	0.121 in⁴
Sx (TOP)	0.152 in³
Sx (BOT)	0.156 in³
Sy (LEFT)	0.164 in³
Sy (RIGHT)	0.164 in³

MATERIALS:	6005-T5 ALUMINUM
DESIGN LOAD (LBS):	N/A
ULTIMATE LOAD (LBS):	N/A
TORQUE SPECIFICATION:	N/A FT-LBS
CERTIFICATION:	UL 2703, FILE E359313
WEIGHT (LBS):	5.48 - 5.62 (172 in), 2.96 - 3.10 (94 in)

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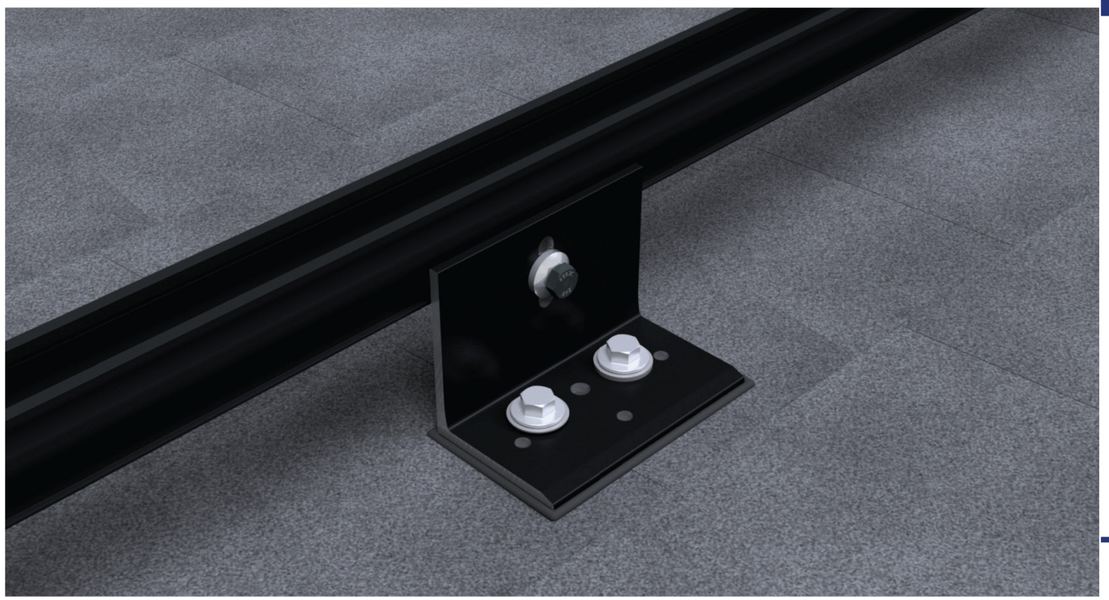
PV-9
EQUIPMENT DATASHEET

SnapNrack®

Ultra Rail

AnchorFoot™



Deck Mounting, *re-imagined.*

- Flexible direct to deck mounting & rafter mounting options
- Pre-installed butyl for easy worry-free sealing
- Compatible with proprietary DeckAnchor™ fasteners cutting the number of deck fasteners in half, from 4 to 2
- Single Tool installation & snap-in features as with all SnapNrack products

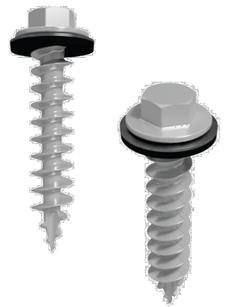
Start Installing AnchorFoot™ Today!

SnapNrack AnchorFoot™ & DeckAnchor™

are the latest innovation designed to reduce the number of roof fasteners when mounting direct to deck and provide maximum flexibility to mount anywhere on the roof. Engineered with butyl, now installers do not have to add sealant to the bottom of the mount, simplifying the installation process and further protecting the roof.

AnchorFoot™

- Pre-installed butyl for easy peel & stick installation allows for no disruption to composition shingles
- Industry-leading .200” thick butyl allows installation over shingles without cutting pieces
- Flexible direct to deck mounting options with (2) DeckAnchors or (4) #14 wood screws
- Flexible rafter mounting options with (1) 5/16” lag or (2) #14 wood screws
- Ships pre-assembled with Ultra Rail Mounting Clamp for easy rail attachment
- Rated for UL2703 Bonding & Grounding with TAS 100A Wind Driven Rain Testing for waterproof certification



DeckAnchor

- Proprietary fastening technology to reduce the number of screws for direct to deck mounting
- Familiar ½” hex head to maintain the SnapNrack tradition of a single tool install
- Wide threads securely grip the wood deck and significantly reduces the potential for over-tightening
- TAS 100A Wind Driven Rain Testing + ASTM D1761 Screw Capacities

Quality. Performance. Innovation.

SnapNrack solutions are focused on simplifying the installation experience through intuitive products and the best wire management in the industry.

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PV-10
EQUIPMENT DATASHEET

PWRcell 2 Battery Cabinet

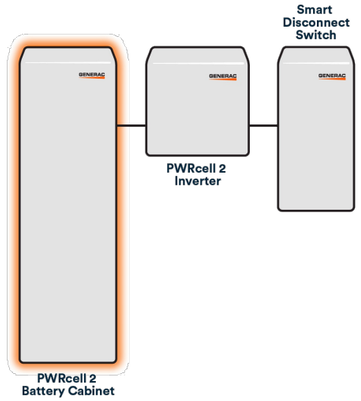
MODEL NUMBERS
Battery Enclosure Only: APKE00076
3.0kWh PWRcell 2 DCB Battery Module: G0080040

The PWRcell 2 Battery Cabinet is a smart battery enclosure that allows for a range of storage configurations to suit any need. The PWRcell 2 Battery Cabinet has a modular design, allowing homeowners to scale from 9 kWh to 18 kWh capacity by installing additional DCB battery modules.

GENERAC
PWRcell 2
HOME ENERGY STORAGE SYSTEM

Features & Benefits

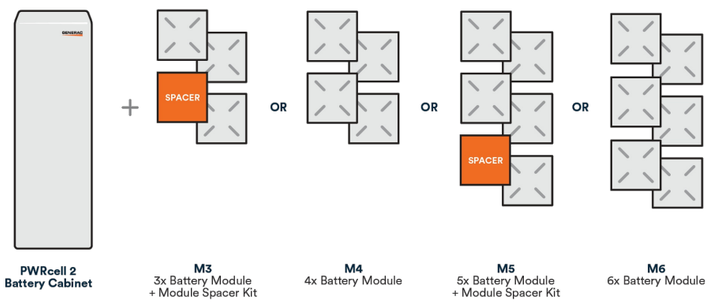
- For easy installation, heaviest component is only 85 lbs
- Modular design that incorporates anywhere between 3 and 6 battery modules
- Stack two battery cabinets on one inverter for up to 36 kWh of storage capacity



CONFIGURATION
Single Cabinet

The Battery Cabinet is an integral component of the PWRcell 2 Home Energy Storage System.

CONFIGURATION
Battery Guide



PWRcell 2 Battery Cabinet
M3 — 3x Battery Module + Module Spacer Kit
M4 — 4x Battery Module
M5 — 5x Battery Module + Module Spacer Kit
M6 — 6x Battery Module

Specifications

PWRcell 2™ BATTERY CONFIGURATIONS	M3	M4	M5	M6
PERFORMANCE				
Stored Energy	9.5 kWh	12.6 kWh	15.8 kWh	19.0 kWh
Useable Battery Energy	9 kWh	12 kWh	15 kWh	18 kWh
Useable Output Power	5.1 kW	6.9 kW	8.6 kW	10.5 kW
ELECTRICAL				
Voltage Range (Input/Output)	360 - 420 VDC			
Maximum Continuous Current	14.2 A	19.2 A	23.9 A	28.3 A
ENVIRONMENTAL				
Operating Temperature Range (Charging)	23 to 122 °F (-5 to 50 °C)			
Operating Temperature Range (Discharging)	-4 to 122 °F (-20 to 50 °C)			
Full Performance Temperature Range (Charging)	50 to 92 °F (10 to 33 °C)			
Full Performance Temperature Range (Discharging)	32 to 122 °F (0 to 50 °C)			
Operating Humidity - % RH	0 to 100, non-condensing			
Maximum Elevation - ft (m)	6560 (2000)			
Enclosure Rating	Type 3R			
MECHANICAL				
Dimensions (DxWxH) - in (cm)	10.75 x 23 x 70.19 (27.1 x 58.2 x 178.3)			
Total Weight of Cabinet - lb (kg)	113 (51.3)			
Total Weight of Installed Unit - lb (kg)	278 (126.1)	333 (151)	388 (176)	443 (200.9)
Maximum Lift Weight of Cabinet - lb (kg)	62.6 (28.4)			
Mounting	Wall or floor			
COMPLIANCE				
Safety	UL 9540, UL 1973, UL 9540A, UL 1998			
Environmental	IEEE 693 [High], FCC Part 15 Class B			
Evaluated Functions/Protection	Battery overcharge, battery over discharge, battery short-circuit, system overcurrent, battery temperature, cabinet switch (disconnect)			

Generac Power Systems, Inc., S45 W29290
Hwy. 59, Waukesha, WI 53189
www.Generac.com | 888-GENERAC (436-3722)
REV A 02/2025

GENERAC

RENU ENERGY SOLUTIONS, LLC
801 PRESSLEY ROAD, SUITE 100
CHARLOTTE, NORTH CAROLINA, 28217
704-525-6767 | RENUENERGYSOLUTIONS.COM

NC GC #76615
NC ELE #U.34519

PREPARED BY:
RENU ENERGY SOLUTIONS
LEVI JOHNSON

SCALE: NTS	AHJ: HARNETT COUNTY
SHEET SIZE: 11" x 17"	APN: 0652-05-6248.000
TEMPLATE V2.0	DATE: 09/08/2025

PATRICIA FULLER
40 TARLESTON DR
FUQUAY, NC 27526

PV-11
EQUIPMENT DATASHEET

3.0 kWh DCB Battery Module

MODEL NUMBER: G0080040

Build a modular backup system using the Generac DCB Battery Module for PWRcell 2 with as few as three and as many as six modules in a single battery cabinet.

GENERAC

PWRcell 2

HOME ENERGY STORAGE SYSTEM

Features & Benefits

- **Environment:** Suitable for indoor and outdoor cabinets
- **Scalable:** Add more modules, over time, as customer needs evolve
- **Easy to Install:** At just 55 lbs, installers won't need special equipment to move and install these batteries

Intertek

Specifications

ELECTRICAL	
Nominal Voltage	46.8 VDC
Useable Capacity at Typical Voltage	3 kWh
Minimum Allowed Modules per Cabinet	3
Maximum Allowed Modules per Cabinet	6
ENVIRONMENTAL	
Full Performance Temperature Range (Charging)	59 to 104 °F (15 to 40 °C)
Full Performance Temperature Range (Discharging)	41 to 122 °F (5 to 50 °C)
Operating Temperature Range (Charging)	41 to 122 °F (5 to 50 °C)
Operating Temperature Range (Discharging)	14 to 122 °F (-10 to 50 °C)
Maximum Storage Temperature (< 1 mo)	122 °F (50 °C)
MECHANICAL	
Dimensions (LxWxH) - in (mm)	17.3 x 17.7 x 3.3 (440 x 450 x 84)
Weight - lb (kg)	55 (25)
Battery Chemistry	Lithium Nickel Manganese Cobalt (NMC)
COMPLIANCE	
Safety	UL 1973
WARRANTY	
Evaluated Functions/Protection	10 years or 7.56 MWh throughput (per module)

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PV-12
EQUIPMENT DATASHEET

11.5 kW PWRcell 2 Inverter

MODEL NUMBER : APKE00075

GENERAC
PWRcell 2
HOME ENERGY STORAGE SYSTEM

This 11.5 kW max continuous power inverter moves power from the battery to the home or the AC connected solar PV array into the battery and has enough power to start up to a 5-ton air conditioner without a soft starter.

Features & Benefits

- Up to 236 LRA when configured with two battery cabinets to start multiple air conditioners
- Can be configured with up to 2 inverters and 4 battery cabinets for 72 kWh of capacity and 23 kW continuous power
- Works with PWRcell 2 – an AC coupled system

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Specifications

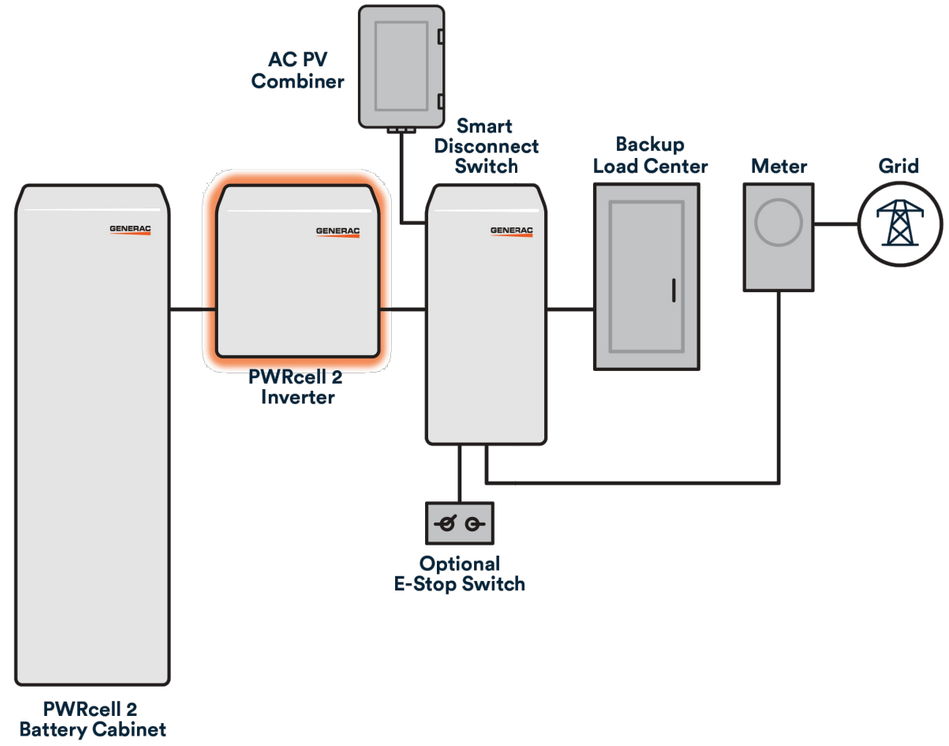
AC OUTPUT	
Maximum Continuous AC Power	11.5 kW
Maximum DC Power	12 kW
Maximum Continuous AC Current	48 A
Overcurrent Protection	60 A
Operating AC Voltage Range	105 - 132 VAC (120 nominal)
Nominal Power Factor	0-1
LRA	236
Maximum AC Fault Current	175 A
DC INPUT	
Nominal Input Voltage	400 VDC
DC Input Voltage Range	360 to 420 VDC
Maximum DC Input Current	34 A
PERFORMANCE	
Operating Frequency	60 Hz
CEC Efficiency	98.50%
Warranty	10 years
MECHANICAL	
Dimensions - in (cm)	22.8 x 8.1 x 24.1 (57.91 x 20.57 x 61.21)
Weight - lbs (kg)	61 (27.67)
Mounting Options	Wall

ENVIRONMENTAL	
Operating Temperature	-4 to 122 °F (-20 to 50 °C)
Operating Humidity	Up to 100% condensing
Maximum Elevation - ft (m)	6562 (2000)
Environment	Indoor and outdoor rated
Enclosure Rating	Type 3R
Operating Noise @ 1 m - db(a)	< 40 @ 30 °C
COMPLIANCE	
Grid Certifications	UL 1741, UL 1741 SA, UL 1741 SB, IEEE 1547, Rule 21, Rule 14H (HECO SRD V2.0), CSIP
Safety Certifications	UL 1741, UL 1998
Emissions	FCC Part 15 Class B

CONFIGURATION

Whole Home Backup

The PWRcell 2 Inverter is an integral component of the PWRcell 2 Home Energy Storage System.



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Smart Disconnect Switch (SDS)

MODEL NUMBER : APKE00067

The Smart Disconnect Switch is a versatile and powerful addition to the PWRcell 2 system that aggregates all power generation sources into one hub - supporting AC PV, battery backup (OR storage) and generator. It is rated for both service entrance and non service entrance lending flexibility of installation. SDS also has incorporated PCS (power control systems) functionality, allowing for future increase in solar and storage without upgrading the main service panel.

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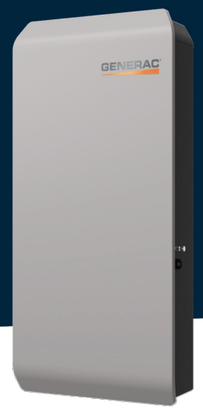
PWRcell 2
HOME ENERGY STORAGE SYSTEM



Features & Benefits

- Expandable up to 19.2 kW PV, up to 23 kW battery backup, 26 kW home stand-by generator
- Seamless home standby generator integration for exceptional resiliency
- Wi-Fi, LTE connectivity
- Supports both partial and whole home backup

Specifications

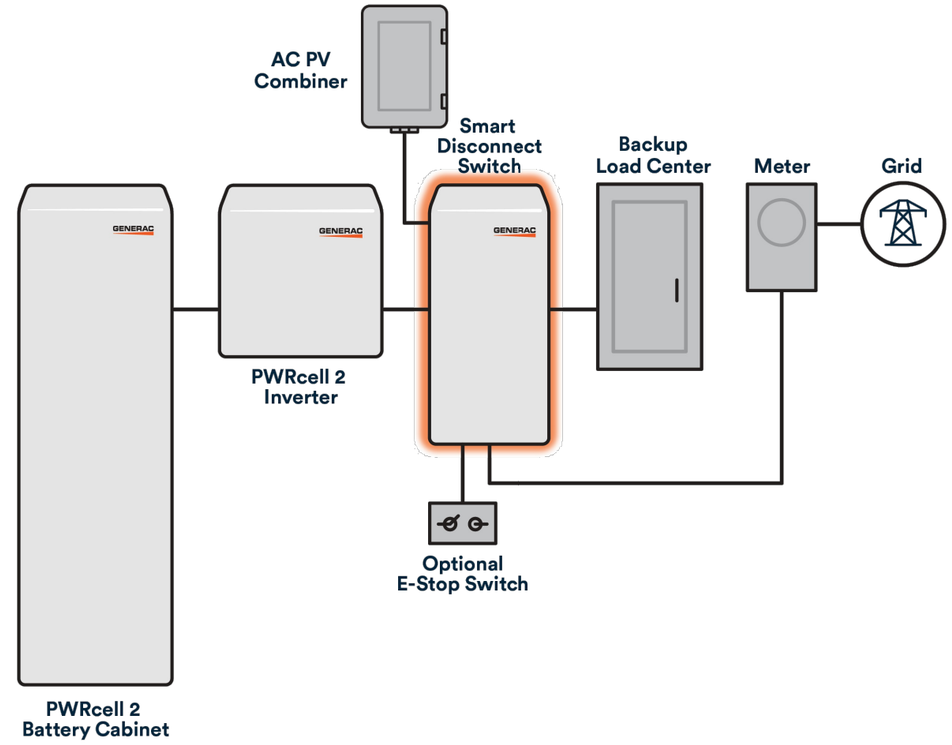
PERFORMANCE	
AC Voltage (Nominal)	120/240
Feed-In Type	Split phase
Grid Frequency	60
Current Rating	200
Maximum Input Short Circuit Current	22
Automatic Transfer Time	< 50
Overcurrent Protection Device	Main breaker (EATON 2-pole series only): CSR2100N (100A), CSR2125N (125A), CSR2150N (150A), CSR2200N (200A)
Overvoltage Category	IV
Meter Accuracy	ANSI C-12.20-2015 Class 0.5 (±0.5%) OR C-12.1-2022 Class 0.5 (±0.5%)
Primary Connectivity	Wi-Fi
Secondary Connectivity	Cellular (LTE CAT-M1), ethernet
System Control Method	CAN
Warranty	10 years
MECHANICAL	
Dimensions (L x W x H) - in (cm)	17 x 7.1 x 36.4 (43.18 x 18.03 x 92.45)
Weight - lbs (kg)	59 (26.76)
Mounting Options	Wall

ENVIRONMENTAL	
Operating Temperature	-4 to 122 °F (-20 to 50 °C)
Operating Humidity	Up to 100% condensing
Maximum Elevation - ft (m)	9,842 (3000)
Environment	Indoor and outdoor rated
Enclosure Type	Type 3R
COMPLIANCE	
Certifications	UL 1741, UL 1741 SA, UL 1741 SB, UL 1741 PCS CRD, UL 869A, UL 67, IEEE 2030.5, CSIP
Emissions	FCC Part 15 Class B
INTERCONNECTION	
Maximum Back Up Load Panel	200 A
Maximum Non-Back Up Load Panel	100 A
Generac Generator	Up to 26 kW
AC PV	100 A
ESS 2	60 A
ESS 1	60 A

CONFIGURATION

Whole Home Backup

The SDS is an integral component of the PWRcell 2 Home Energy Storage System.



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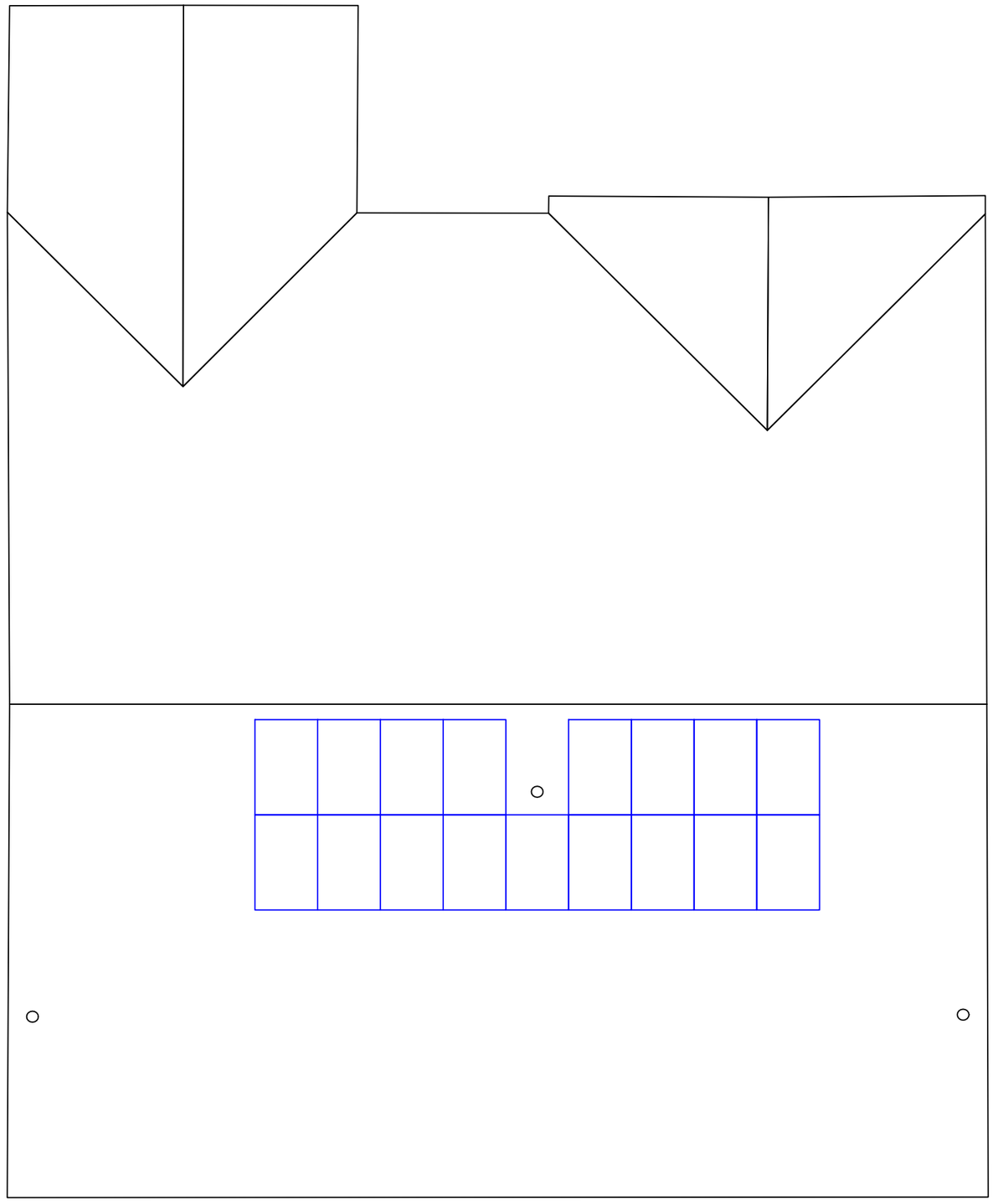

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PV-15
MAPPING SHEET