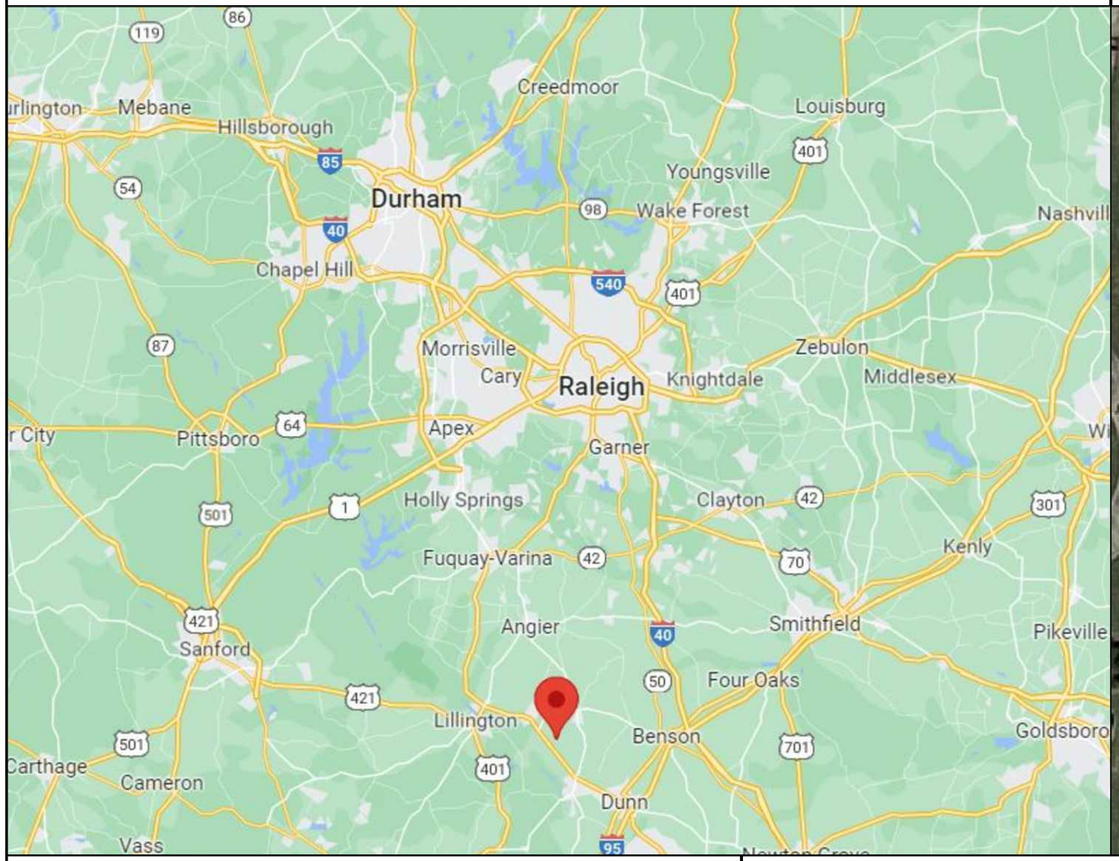
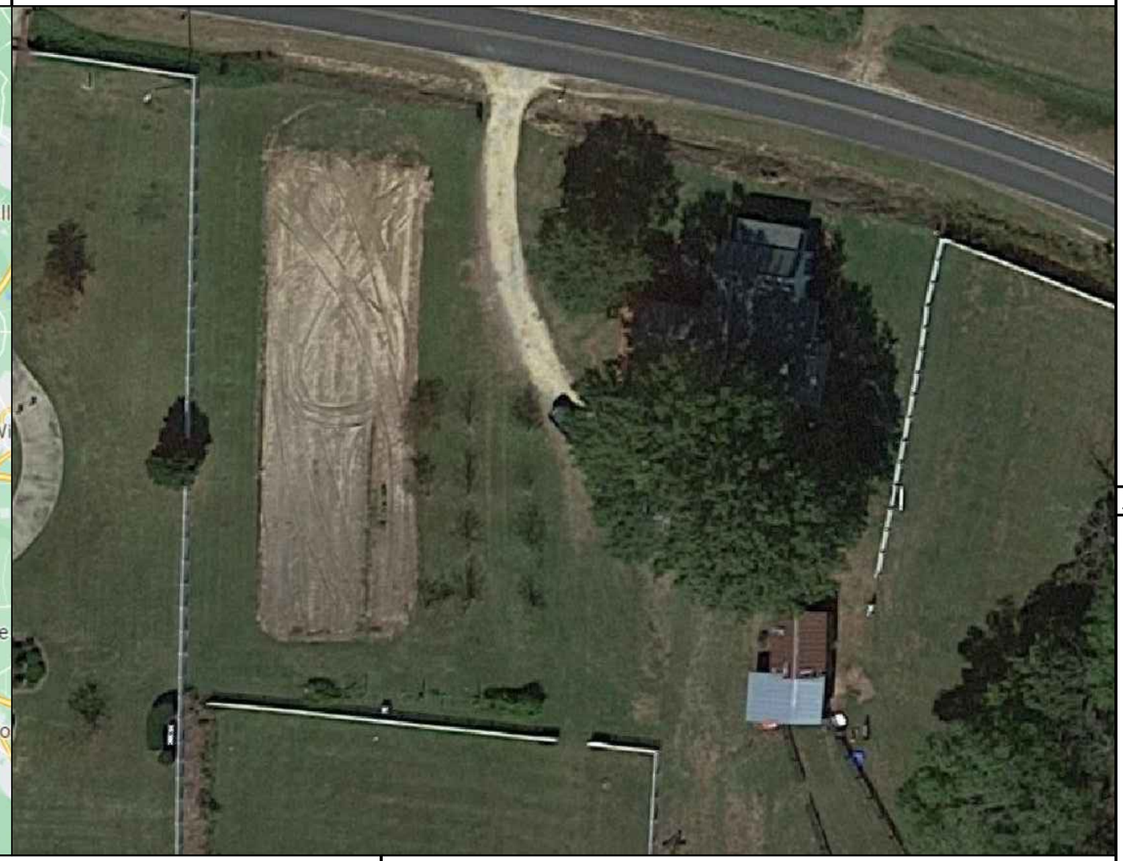
VICINITY MAP



PROPERTY MAP



SCOPE OF WORK

(27) REC REC405AA PURE BLACK
(27) ENPHASE IQ8M-72-2-US
SUNMODO GROUND MOUNT

SITE CONDITION

ASCE 7-10 WIND SPEED - 119 MPH
EXPOSURE CATEGORY - B
RISK CATEGORY - II
SNOW LOAD - 15 LBS/SQFT

SHEET INDEX

INTERCONNECTIONS TYPE

SUPPLY SIDE TAP

CODE REFERENCES

2017 NATIONAL ELECTRIC CODE
2018 NORTH CAROLINA FIRE CODE
2018 NORTH CAROLINA BUILDING CODE
2018 NORTH CAROLINA RESIDENTIAL CODE

UTILITY COMPANY

DUKE ENERGY PROGRESS

LEGEND

- DISCONNECT SWITCH
- FUSE
- CIRCUIT BREAKER
- GND — EQUIP. GROUND

ENGINEER:

NORTH CAROLINA PROFESSIONAL SEAL 035609 ENGINEER ANDREW W. KING 04/26/23

MODEL ENERGY
300 FAYETTEVILLE ST.
#1430
RALEIGH, NC 27602
919-274-9905
MODELENERGY.COM
P-1194

JOB TITLE:

NEW SOLAR PV SYSTEM

10.935 kW DC INPUT
8.910 kW AC EXPORT

Leigh Matthews

620 Harvell Rd
Coats, NC 27521

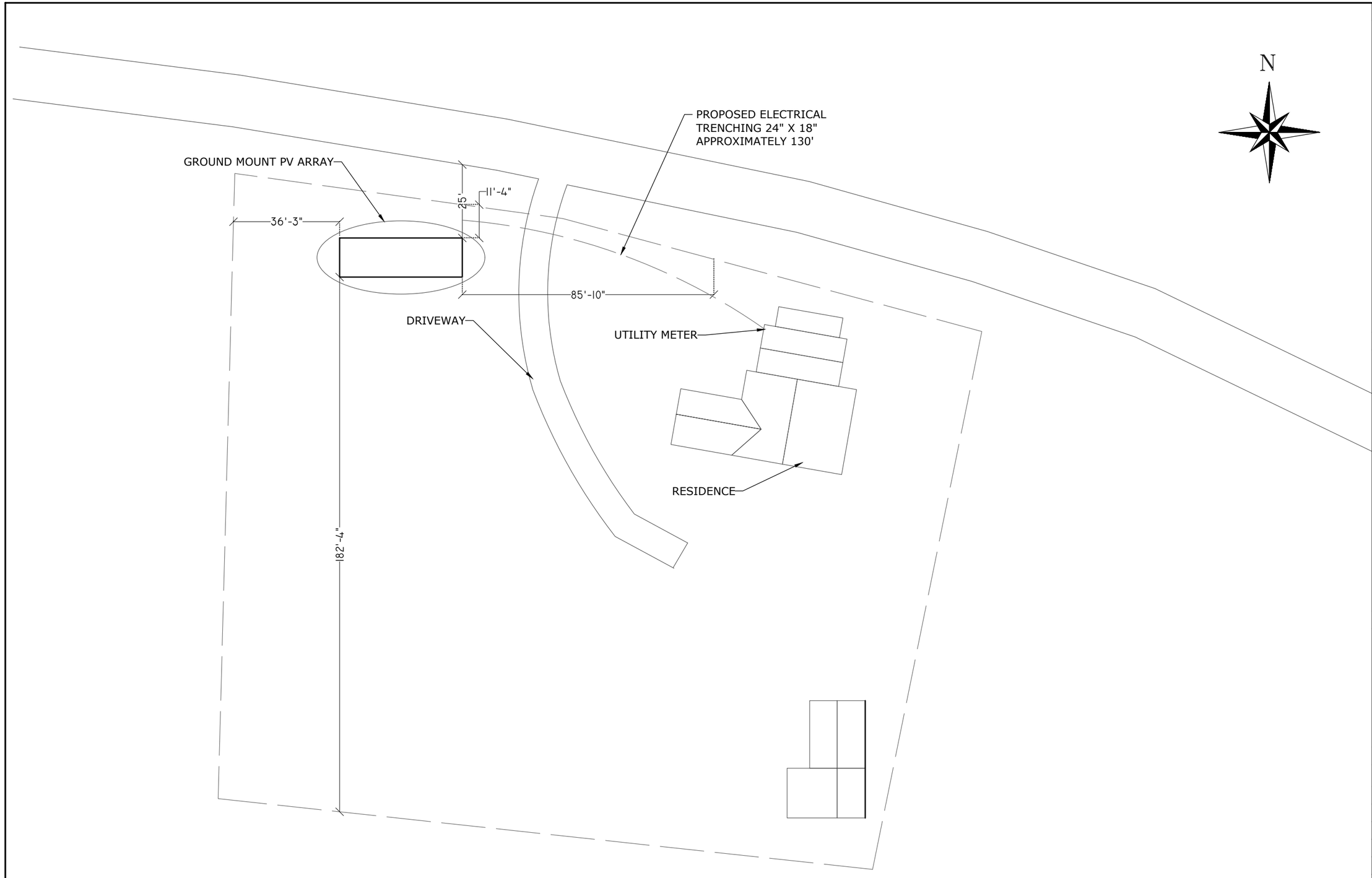
CLIENT:

SMARTSUN

ISSUED FOR:	DATE:
CONSTRUCTION	04/26/23

PROJECT INFORMATION

PV1.1



1 SITE PLAN
SCALE: 1/32" = 1' -0"

ENGINEER:

NORTH CAROLINA PROFESSIONAL SEAL 035699 ENGINEER ANDREW W. KING 04/26/23

MODEL ENERGY
300 FAYETTEVILLE ST.
#1430
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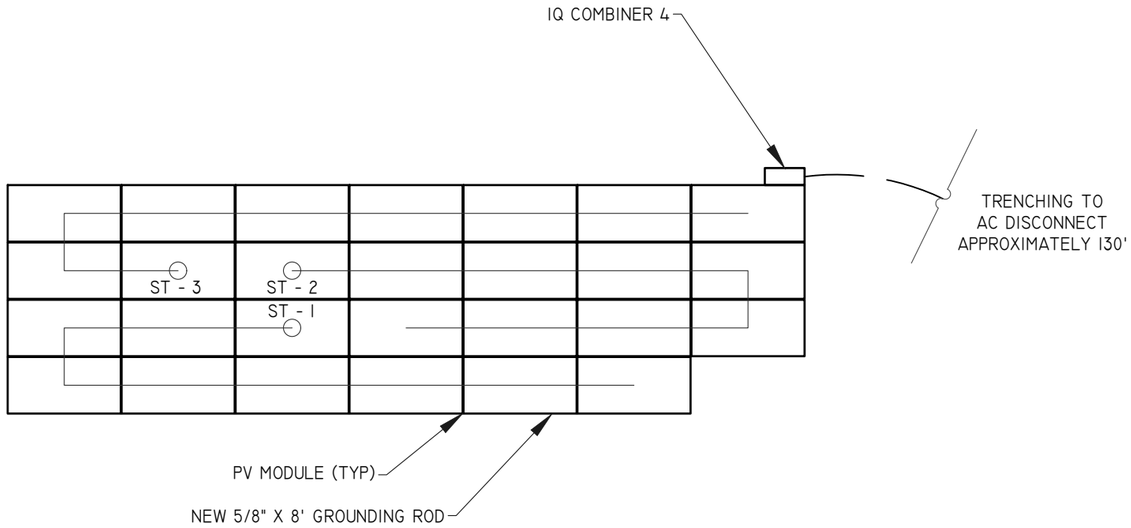
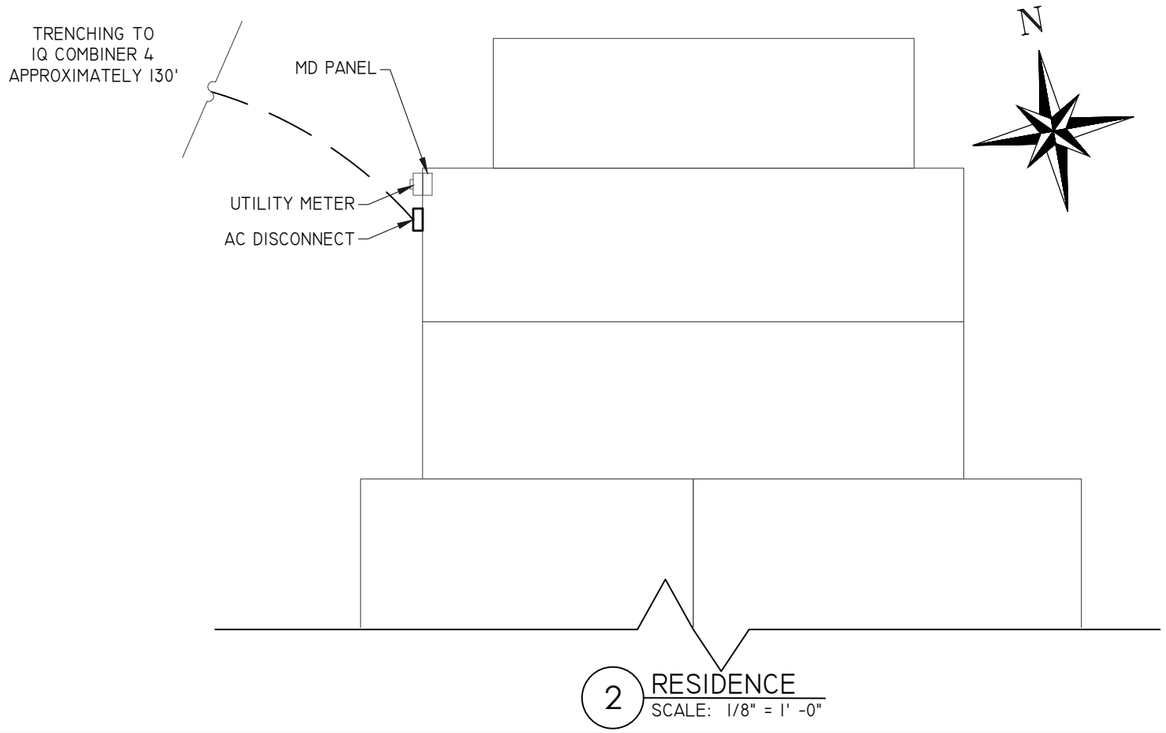
SITE INFORMATION

PV2.1



2 GROUND MOUNT PV ARRAY
SCALE: NTS



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

ENGINEER:

NORTH CAROLINA PROFESSIONAL SEAL 035699 ENGINEER ANDREW W. KING 04/26/23

MODEL ENERGY
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Coats, NC 27521

CLIENT:

SMARTSUN

ISSUED FOR:	DATE:
CONSTRUCTION	04/26/23

SITE INFORMATION

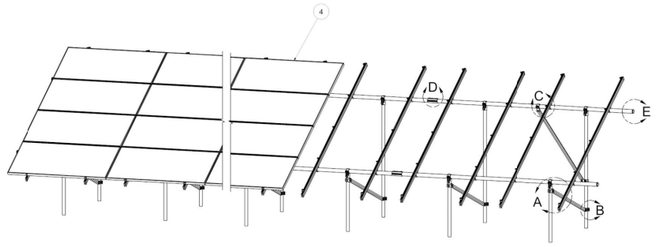
PV2.2

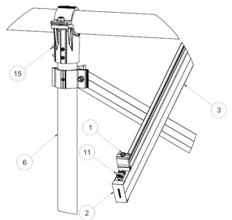
NOTES: UNLESS OTHERWISE SPECIFIED

1. THIS DRAWING IS NOT FOR CONSTRUCTION UNTIL ENGINEERING HAS REVIEWED AND STAMPED THIS DOCUMENT.
2. DIMENSIONS SHOWN ARE INCHES.
3. THE SELF-BONDING SYSTEM AND SINGLE GROUND LUG IS FOR USE WITH PV MODULES THAT HAVE A MAXIMUM SERIES FUSE RATING OF 30A.
4. MATERIALS ARE AS SPECIFIED OR EQUIVALENT:
   HARDWARE: 304 STAINLESS STEEL
   FABRICATED EXTRUDED PARTS: 6005-T5 ALUMINUM ALLOY
   FABRICATED DIE CAST PARTS: ANSI/AA A380 ALUMINUM ALLOY
   STEEL PIPE: SCHEDULE 40 GALVANIZED
   ALUMINUM PIPE: SCHEDULE 10 ANODIZED
5. THE MAXIMUM PERMISSIBLE LENGTH OF ANY STRUCTURE SHALL BE 200 FT. FOR SYSTEMS USING A SHARED RAIL CONFIGURATION, A THERMAL BREAK IS REQUIRED IN THE RAIL EVERY 40 FT. PER THE DRAWING DETAILS.
6. 4LX7-25DEG-STR-GSM-AGM-BGM-PGM
7. APPROVED RAIL PROFILES
   VARY BASED ON ENGINEERING REQUIREMENTS. CONFIRM SELECTION WITH STRUCTURAL ENGINEER. SEE BOM IN BOTTOM RIGHT CORNER.
8. K10224-XXX END CLAMP KIT OR K10299-XXX ADJ. END CLAMP KIT.
9. FOUNDATION TYPES:
   GSM = GROUND SCREW GROUND MOUNT
   AGM = HELICAL AUGER GROUND MOUNT
   PGM = POST-IN-CONCRETE GROUND MOUNT
   BSM = BALLAST GROUND MOUNT
10. 1 OF 1 ARRAY TYPES
11. 1 ARRAYS TOTAL

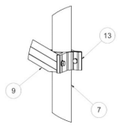
PACKET A5	
Model Code	ASCE 7-10
Exposure Category	B
Wind Speed	115
Ground Snow Load	20
Tilt	25

4LX7 ARRAY

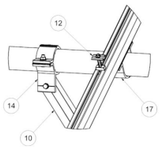




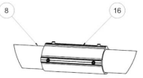
DETAIL A



DETAIL B



DETAIL C



DETAIL D

DETAIL E

ITEM	PART NUMBER	DESCRIPTION	QTY
17	K10343-005	2.5" Pipe U-Clamp Kit	28
16	K10342-001	2.5" Pipe Splice Kit	8
15	K10341-002	2.5" Pipe T-Cap Kit	14
14	K10222-001	2.5" Pipe Clamp Kit	2
13	K10219-001	2" Pipe Clamp Kit	16
12	K10417-003	Mid Clamp, SMR Pop-on	42
11	K10469-001	SMR Grounding Lug	1
10	A50164-066	HSS E/W Tube Brace	2
9	A50164-092	HSS N/S Tube Brace	7
8	A21168-112	2.875" OD E/W Pipe Beam, 112"	10
7	A21165-060	HSS 2.375" OD Front Pipe	7
6	A21165-120	HSS 2.375" OD Rear Pipe	7
5	A20380-001	2.5" PIPE END CAP (OPTIONAL)	4
4		Panel 1,821 x1,016 x30.0mm	28
3	A20444-174-ML	SMR300 Rail, 174"	14
2	A20445-001	Rail End Cap, SMR300	28
1	K10418-003	End Clamp, SMR Pop-On	28

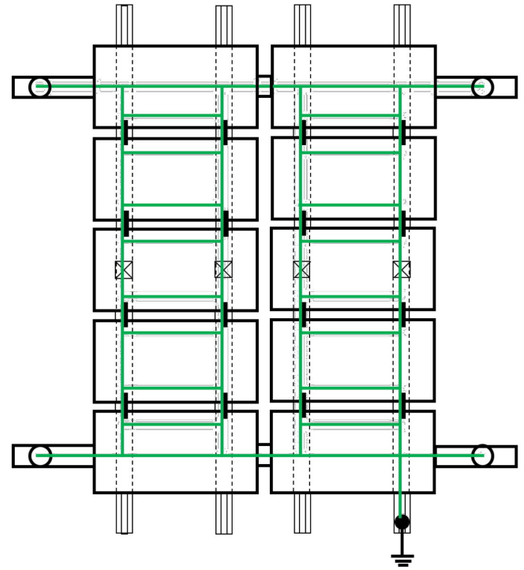
SEE BOM

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

LEIGH MATTHEWS

D | 67B3E2

SCALE: N.T.S. | SHEET 1 of 4



- Pipe Connection
- Mid Clamp
- Rail
- Rail Splice
- Ground Lug
- Pipe
- Fault Current Path
- Solar Panel

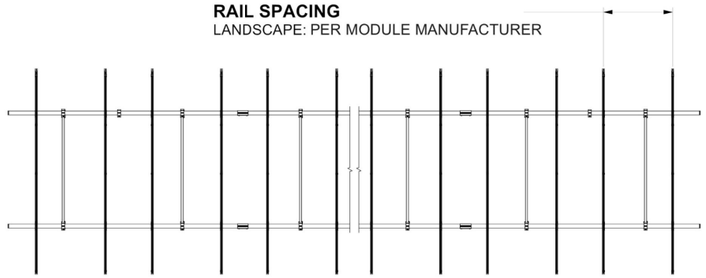
Note: All SunTurf metal structural components (Horizontal and Vertical Pipe, Pipe Splices, Post Caps, Pipe Clamps, Braces, Rail and Rail Splices) are electrically bonded together by design during the assembly of the racking.

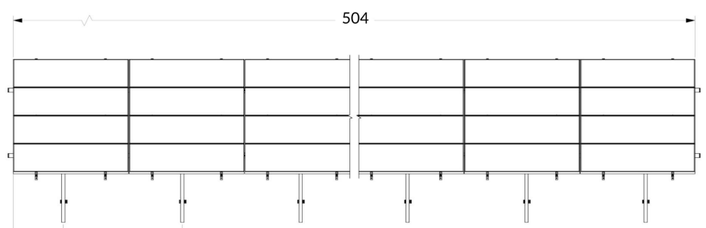
NOTES:

1. DIMENSIONS LABELED AS MAX ARE MAXIMUM ALLOWABLE AND MAY RESULT IN END POSTS BEING OUTSIDE ARRAY EDGES. MAXIMUM DIMENSIONS MAY BE REDUCED IF DESIRED.

RAIL SPACING

LANDSCAPE: PER MODULE MANUFACTURER





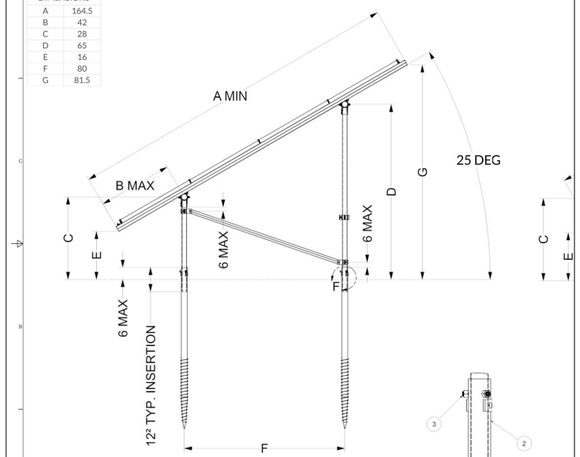
84 IN. MAX. ALLOW. SPAN
MIN # OF FRONT POSTS = 7
MIN # OF BACK POSTS = 7

SunModo Corp.
LEIGH MATTHEWS
D | 67B3E2
SCALE: N.T.S. | SHEET 2 of 4

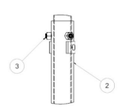
NOTES:

1. MAX DENOTES MAXIMUM PERMISSIBLE DIMENSIONS.
2. PIPE IS DESIGNED TO TELESCOPE IN AND OUT OF SCREW/AUGER FOR FIELD ADJUSTABILITY. 12" IS RECOMMENDED.

DIMENSIONS	
A	164.5
B	42
C	28
D	65
E	16
F	80
G	81.5



GROUND SCREW GOUND MOUNT (GSM)



DETAIL F

NOTE:

THE STRUCTURAL INFORMATION CONTAINED IN THE PLANS ON THIS SHEET WAS NOT PRODUCED OR VALIDATED BY MODEL ENERGY, PLLC. IT IS SHOWN AS PART OF THESE CONSTRUCTION DOCUMENTS FOR PERMITTING PURPOSES ONLY.

ENGINEER:

NORTH CAROLINA PROFESSIONAL SEAL 035699 ENGINEER ANDREW W. KING 04/26/23

MODEL ENERGY
300 FAYETTEVILLE ST.
#1430
RALEIGH, NC 27602
919-274-9905
MODELENERGY.COM
P-1194

JOB TITLE:

NEW SOLAR PV SYSTEM

10.935 kW DC INPUT
8.910 kW AC EXPORT

Leigh Matthews

620 Harvell Rd
Coats, NC 27521

CLIENT:

SMARTSUN

ISSUED FOR:	DATE:
CONSTRUCTION	04/26/23

STRUCTURAL INFORMATION

PV3.1

PV MODULES	
MAKE	REC
MODEL	REC404AA PURE
TECHNOLOGY	MONO-CRYST.
NOM. POWER (Pnom)	405 WATTS
NOM. VOLT. (Vmp)	42.4 VOLTS
O.C. VOLT. (Voc)	48.9 VOLTS
MAX. SYS. VOLT.	1000 V (UL)
TEMP. COEF. (Vtc)	-0.24 %/°C
NOM. CURR. (Imp)	9.56 Amps
S.C. CURR. (Isc)	10.14 Amps
MAX. SERIES FUSE	25 Amps

JUNCTION BOX	
MAKE	SOLADECK
MODEL	0783-3R
PRO. RATING	NEMA 3R
VOLT. RATING	600 VOLTS
AMP RATING	120 AMPS
UL LISTING	UL 50

NOTES:

- PROVIDE ADDITIONAL JUNCTION BOXED AS REQUIRED TO COMBINE MODULES ON DIFFERENT ARRAYS INTO A SINGLE STRING

DC/AC INVERTER	
MAKE	ENPHASE ENERGY
MODEL	IQ8M-72-2-US
TECHNOLOGY	MICRO INVERTER
DC INPUT:	
MAX. POWER	460 WATTS
VOLT. RANGE	33-60 VOLTS
MAX. CURRENT	15 AMPS
AC OUTPUT:	
NOM. POWER	330 WATTS
NOM. VOLT.	325 VOLTS
MAX. CURR.	1.35 AMPS
GFP (Y/N)	YES
GFCI (Y/N)	YES
AFCI (Y/N)	YES
DC DISC. (Y/N)	NO
RAPID SHUTDOWN	YES
FUSE RATING	15 AMPS
PROTECT. RATING	NEMA 6R

CONDUCTOR SCHEDULE

TAG	CURRENT CARRYING CONDUCTORS				GROUNDING CONDUCTORS				CONDUIT/RACEWAY				NOTES
	QTY.	SIZE	MATERIAL	INSULATION	QTY.	SIZE	MATERIAL	INSULATION	QTY.	SIZE	MATERIAL	LOCATION	
C1	2	10 AWG	COPPER	MANU. CAB.	1	6 AWG	COPPER	BARE	-	-	-	FREE AIR	1
C2	2	12 AWG	COPPER	MANU. CAB.	1	6 AWG	COPPER	BARE	-	-	-	EXTERIOR	1
C3	6	10 AWG	COPPER	THWN-2	1	10 AWG	COPPER	THWN-2	1	3/4"	PVC40	BURIED	2,4,7,8
C4	3	6 AWG	COPPER	THWN	1	10 AWG	COPPER	THWN	1	3/4"	NOTE 5	INT/EXT	2,4,5
C5	3	6 AWG	COPPER	THWN	-	-	-	-	1	3/4"	NOTE 5	EXT	2,4,5,6
XC	-	-	-	-	-	-	-	-	-	-	-	-	3

NOTES:

1. MANUFACTURER PROVIDED, UL LISTED WIRING HARNESS FOR USE ON EXPOSED ROOFS
2. CONDUIT SIZE SHOWN IS CODE MINIMUM. LARGER SIZES ARE ALLOWED.
3. EXISTING CONDUCTORS, FIELD VERIFY
4. EQUIPMENT TERMINAL RATING SHALL BE A MINIMUM OF 75°C AT BOTH END OF CONDUCTOR
5. PVC, EMT, ROMEX, LFNMC & FMC ARE ACCEPTABLE WHEN USED IN ACCORDANCE WITH ARTICLES 330, 334, 348, 350, 352, 356, & 358 OF THE 2017 NEC
6. SERVICE CONDUCTORS SHALL NOT TRAVEL MORE THAN 5' INSIDE OF THE BUILDING AND MORE THAN 10' IN TOTAL.
7. EMT ABOVE GROUND BURIED PVC ALONG TRENCH PATH
8. SCH 40 PVC IN TRENCHING AT 18" MINIMUM DEPTH, EMT INSIDE OF BUILDING.

IQ COMBINER PANEL (NEW)	
MAKE	N/A
MODEL	N/A
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
BUS RATING	200 AMPS
UL LIST. (Y/N)	YES
MAIN BREAKER (Y/N)	NO
BREAKER RATING	N/A

NOTES:

- BACK-FEED INVERTER OUTPUT VIA (3) 20A BREAKERS AT THE OPPOSITE END OF THE BUS BAR FROM MAIN BREAKER.
- PROVIDE "FED BY MULTIPLE POWER SOURCES" LABEL.

AC DISCONNECT	
MAKE	GENERIC
MODEL	N/A
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
AMP RATING	60 AMPS
UL LIST. (Y/N)	YES
FUSED (Y/N)	YES
FUSE RATING	40 AMPS

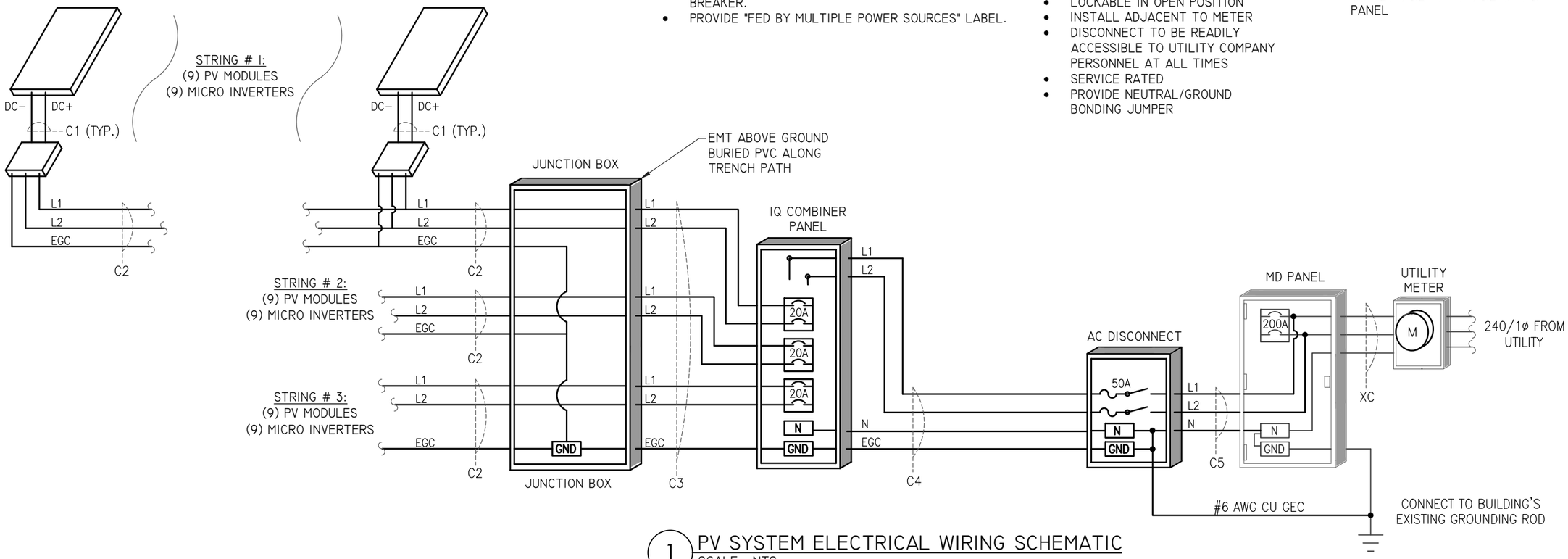
NOTES:

- LOAD-BREAK RATED
- VISIBLE OPEN
- LOCKABLE IN OPEN POSITION
- INSTALL ADJACENT TO METER
- DISCONNECT TO BE READILY ACCESSIBLE TO UTILITY COMPANY PERSONNEL AT ALL TIMES
- SERVICE RATED
- PROVIDE NEUTRAL/GROUND BONDING JUMPER

MD PANEL (EXISTING)	
MAKE	N/A
MODEL	N/A
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
BUS RATING	200 AMPS
UL LIST. (Y/N)	YES
MAIN BREAKER (Y/N)	YES
BREAKER RATING	200 AMPS

NOTES:

- BACK-FEED SOLAR OUTPUT VIA SUPPLY SIDE TAP INSIDE OF MD PANEL



1 PV SYSTEM ELECTRICAL WIRING SCHEMATIC
SCALE: NTS

ENGINEER:

NORTH CAROLINA PROFESSIONAL SEAL 035699 ENGINEER ANDREW W. KING 04/26/23

MODEL ENERGY
300 FAYETTEVILLE ST.
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CLIENT:

SMARTSUN

ISSUED FOR:	DATE:
CONSTRUCTION	04/26/23

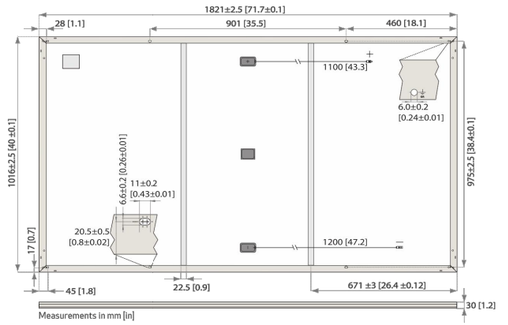
ELECTRICAL INFORMATION

PV4.1

REC
SOLAR'S MOST TRUSTED

REC ALPHA PURE BLACK SERIES > PRODUCT SPECIFICATIONS

PRODUCT SPECIFICATIONS



Measurements in mm [in]

GENERAL DATA

Cell type:	132 half-cut REC heterojunction cells with lead-free, gapless technology 6 strings of 22 cells in series	Connectors:	Stäubli MC4 PV-KBT4/KST4, 12 AWG (4 mm²) in accordance with IEC 62852 IP68 only when connected
Glass:	0.13 in (3.2 mm) solar glass with anti-reflection surface treatment	Cable:	12 AWG (4 mm²) PV wire, 43+47 in (1.1+1.2 m) accordance with EN 50618
Backsheet:	Highly resistant polymer (black)	Dimensions:	71.7 x 40 x 1.2 in (182.1 x 101.6 x 30 mm)
Frame:	Anodized aluminum (black)	Weight:	45 lbs (20.5 kg)
Junction box:	3-part, 3 bypass diodes, IP67 rated in accordance with IEC 62790	Origin:	Made in Singapore

ELECTRICAL DATA

	Product Code*: RECxxxAA Pure Black				
STC	Power Output - P_{MAX} (Wp)	385	390	395	400	405
	Watt Class Sorting - (W)	0/+5	0/+5	0/+5	0/+5	0/+5
	Nominal Power Voltage - V_{MPP} (V)	41.2	41.5	41.8	42.1	42.4
	Nominal Power Current - I_{MPP} (A)	9.35	9.40	9.45	9.51	9.56
	Open Circuit Voltage - V_{OC} (V)	48.5	48.6	48.7	48.8	48.9
	Short Circuit Current - I_{SC} (A)	9.99	10.03	10.07	10.10	10.14
	Power Density (W/sq ft)	19.3	19.6	19.8	20.1	20.3
	Panel Efficiency (%)	20.8	21.1	21.3	21.6	21.9
NMOT	Power Output - P_{MAX} (Wp)	293	297	301	305	309
	Nominal Power Voltage - V_{MPP} (V)	38.8	39.1	39.4	39.7	40.0
	Nominal Power Current - I_{MPP} (A)	7.55	7.59	7.63	7.68	7.72
	Open Circuit Voltage - V_{OC} (V)	45.7	45.8	45.9	46.0	46.1
	Short Circuit Current - I_{SC} (A)	8.07	8.10	8.13	8.16	8.19

Values at standard test conditions (STC: air mass AM1.5, irradiance 1075 W/sq ft (1000 W/m²), temperature 77°F (25°C), based on a production spread with a tolerance of P_{MPP}, V_{OC} & I_{SC} ±3% within one watt class. Nominal module operating temperature (NMOT: air mass AM1.5, irradiance 800 W/m², temperature 68°F (20°C), windspeed 3.3 ft/s (1 m/s). * Where xxx indicates the nominal power class (P_{MPP}) at STC above.

CERTIFICATIONS

IEC 61215:2016, IEC 61730:2016, UL 61730 (Pending)
ISO 14001:2004, ISO 9001:2015, OHSAS 18001:2007, IEC 62941

WARRANTY

	Standard	REC ProTrust	
Installed by an REC Certified Solar Professional	No	Yes	Yes
System Size	All	<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	0.25%	0.25%	0.25%
Power in Year 25	92%	92%	92%

See warranty documents for details. Conditions apply

MAXIMUM RATINGS

Operational temperature:	-40 ... +185°F (-40 ... +85°C)
Maximum system voltage:	1000 V
Maximum test load (front):	+7000 Pa (146 lbs/sq ft)*
Maximum test load (rear):	-4000 Pa (83.5 lbs/sq ft)*
Max series fuse rating:	25 A
Max reverse current:	25 A

*See installation manual for mounting instructions. Design load = Test load / 1.5 (safety factor)

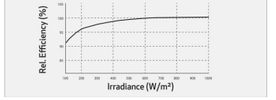
TEMPERATURE RATINGS*

Nominal Module Operating Temperature:	44°C (±2°C)
Temperature coefficient of P_{MAX}:	-0.26 %/°C
Temperature coefficient of V_{OC}:	-0.24 %/°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-DS-12-01-Rev-A 03.21

Founded in 1996, REC Group is an international pioneering solar energy company dedicated to empowering consumers with clean, affordable solar power. As Solar's Most Trusted, REC is committed to high quality, innovation, and a low carbon footprint in the solar materials and solar panels it manufactures. Headquartered in Norway with operational headquarters in Singapore, REC also has regional hubs in North America, Europe, and Asia-Pacific.

REC
www.recgroup.com

WARNING: PHOTOVOLTAIC POWER SOURCE

NEC 690.31 (G)(3)&(4)
PLACE ON ALL JUNCTION BOXES, EXPOSED RACEWAYS, AND OTHER WIRING METHODS EVERY 10' AND ON EVERY SECTION SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS.

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

NEC 690.56 (C)(3)
PLACE ON RAPID SHUTDOWN SWITCH OR EQUIPMENT WITH INTEGRATED RAPID SHUTDOWN *REFLECTIVE*

EQUIPMENT LABEL NOTES

1. LABELS SHOWN ARE 1/2 THEIR ACTUAL REQUIRED SIZE.
2. LABEL MATERIAL SHALL BE SUITABLE FOR THE EQUIPMENT ENVIRONMENT.
3. CONDUIT SHALL BE MARKED WITH REQUIRED LABEL EVERY 10 FEET.

⚠WARNING
FED BY MULTIPLE POWER SOURCES
TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING UTILITY OVERCURRENT DEVICE SHALL NOT EXCEED AMPACITY OF BUSBAR

NEC 705.12 (B)(2)(3)(c)
PLACE ADJACENT TO BACK-FED BREAKER

⚠WARNING
POWER SOURCE OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

NEC 705.12 (B)(2)(3)(b)
PLACE ADJACENT TO BACK-FED BREAKER

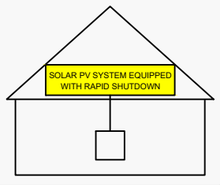
PHOTOVOLTAIC POWER SOURCE

OPERATING AC VOLT.	240 VAC
MAXIMUM OPERATING AC OUTPUT CURRENT	37 AMPS

NEC 690.54
PLACE ON INTERCONNECTION DISCONNECTING MEANS

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



NEC 690.56 (C)(1)(a)
PLACE WITHIN 3FT OF SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED AND SHALL INDICATE THE LOCATIONS OF RAPID SHUTDOWN SWITCHES

PV SYSTEM DISCONNECT

NEC 690.13 (B)
PLACE ON PV SYSTEM DISCONNECTING MEANS.

⚠WARNING
DUAL POWER SUPPLY
SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

NEC 705.12 (B)(3)
PLACE ON ALL EQUIPMENT THAT IS SUPPLIED BY BOTH POWER SOURCES

⚠WARNING
ELECTRIC SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

NEC 690.13 (B)
PLACE ON PV SYSTEM DISCONNECTING MEANS.

ENGINEER:

NORTH CAROLINA PROFESSIONAL SEAL 035609 ENGINEER ANDREW W. KING 04/26/23

MODEL ENERGY
300 FAYETTEVILLE ST.
#1430
RALEIGH, NC 27602
919-274-9905
MODELENERGY.COM
P-1194

JOB TITLE:

NEW SOLAR PV SYSTEM
10.935 kW DC INPUT
8.910 kW AC EXPORT

Leigh Matthews
620 Harvell Rd
Coats, NC 27521

CLIENT:

SMARTSUN

ISSUED FOR:	DATE:
CONSTRUCTION	04/26/23

LABELS, DETAILS & SPECS

PV5.1

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.

IQ8SE-DS-0001-01-EN-US-2021-10-19

Easy to install

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

High productivity and reliability

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

Microgrid-forming

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

IQ8 Series Microinverters

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

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

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EQUIPMENT SPEC SHEETS

PV5.2

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

ENGINEER:

NORTH CAROLINA PROFESSIONAL SEAL 035699 ENGINEER ANDREW W. KING 04/26/23

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EQUIPMENT SPEC SHEETS

PV5.3

SMARTSUN

Customer: Leigh Matthews
Installer: SmartSun
Subject: PV System Structural Compliance
Date: 04/26/23

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To whom it may concern:

Model Energy, PLLC has reviewed the installation details of the proposed PV system that is to be installed by SmartSun at 620 Harvell Rd, Coats, NC 27521. The conditions of the existing structure have been reviewed and validated by Model Energy, PLLC. The existing roof structure has been designed to support the additional loads of the proposed PV system. In addition, the racking and fastening system shall be capable of securing the system to the structure under design conditions when installed properly and in accordance with the racking and fastening arrangement detailed within the accompanying permit set. The installation design is compliant with current 2018 North Carolina state and national building codes.

Thank you,

Andrew King, PE