

TABLE OF CONTENTS

PAGE NUMBER:	PAGE TITLE:
001 CS	COVER SHEET and INDEX
002 NS1	NOTES SHEET
003 SP1	SITE PLAN
003.1 SP2	PROPERTY PLAN
004 RF1	ROOF PLAN
005 RF1	RACKING & FRAMING
006 LD1	LINE DIAGRAM & DESIGN TABLES
007 PP1	PLACARDS & PLACARD MAP
008 OM1	OPTIMIZER MAP
009 JH1	JOB HAZARD ANALYSIS
SS	SPECIFICATION PAGES

PROPERTY INFORMATION

OWNER:	Arnold Vinyard
PHONE:	1386-965-5846
EMAIL:	arnoldvinyard85@gmail.com
CONTRACTOR:	BETTER EARTH ELECTRIC INC.
PHONE:	(888) 373-9379
AUTHORITIES HAVING JURISDICTION	
BUILDING:	LAKE CITY (FL)
UTILITY:	CLAY ELECTRIC COOPERATIVE

DESIGN SPECIFICATIONS

OCCUPANCY:	R-3/U
CONSTRUCTION:	V-B
NAME:	RESIDENTIAL
SNOW LOAD:	0 PSF
WIND EXPOSURE:	C
WIND SPEED:	156 MPH
ROOF SURFACE:	2073 SQ.FT.
PV SQ FOOTAGE:	359.1 SQ.FT.
PV COVERAGE:	17.32 %
WEIGHT OF EQUIPMENT:	810.7 LBS
WEIGHT PER ATTACHMENT:	25.33 LBS
DISTRIBUTED WEIGHT:	2.26 PSF
NO. OF STORIES:	1
FIRE SPRINKLERS:	NO

LOT INFORMATION

APN:	325S1709477112
LOT AREA:	47044.8
LIVING AREA:	1248

INSTALLER NOTES:

Arnold Vinyard
9325 Sw Tustenuggee Ave, LAKE CITY, FL 32024
APN: 325S1709477112
SYSTEM SIZE: 6970 DC
SYSTEM SIZE: 6000 AC

APN: 325S1709477112

SYSTEM SIZE: 6970 DC

SYSTEM SIZE: 6000 AC



PROJECT DETAILS

MODULE INFORMATION	MOUNTING INFORMATION
--------------------	----------------------

MODULE QTY:	17
MODULE MFG:	QCELLS NORTH AMERICA
MODULE TYPE:	Q.PEAK DUO BLK ML-G10+ 410

INVERTER INFORMATION

INVERTER MFG:	SOLAREEDGE
INVERTER QTY:	1
INVERTER MODEL:	6000H-US (ENERGY HUB)

INVERTER TYPE:	RGM
----------------	-----

INVERTER VOLTAGE:	240V
-------------------	------

POWER OPTIMIZER INFORMATION

OPTIMIZER QTY:	17
OPTIMIZER MFG:	SOLAREEDGE
OPTIMIZER TYPE:	S440

MOUNTING INFORMATION

MOUNT FLASHING QTY:	32
MOUNT FLASHING MFG:	UNIRAC
MOUNT FLASHING TYPE:	S-5! SOLARFOOT

RAILING INFORMATION

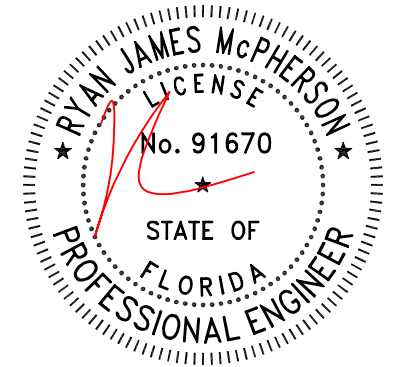
RAILING MFG:	UNIRAC
RAILING TYPE:	UNIRAC SM LIGHT

ENERGY STORAGE SYSTEM INFORMATION

BATTERY QTY:	1
BATTERY MFG:	FRANKLIN WH
BATTERY TYPE:	APOWER X - 13.6kWh

EXISTING SOLAR INFORMATION - N/A

JURISDICTION STAMPS:



This item has been digitally signed
and sealed by Ryan McPherson,
PE, on Sep 12, 2024

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

**Ryan J
McPherson** Digitally signed by
Ryan J McPherson
Date: 2024.09.24
11:45:47 -07'00'

ADDITIONAL SCOPE OF WORK

MAIN PANEL UPGRADE: N/A

DERATE MAIN BREAKER: N/A

UPSIZE MAIN BREAKER: N/A

EV CHARGER: N/A

ESS: OUTDOORS ON EXTERIOR WALL - (1) FRANKLIN WH APOWER X AT 13.6kWh EACH

BATTERY TO BE INSTALLED AT LEAST 3' FROM WINDOWS, DOORS, VENTS, AND GAS.

ESS IS NOT SUBJECT TO VEHICLE IMPACT.



PHONE #: (888) 373-9379
LIC #: 13011324

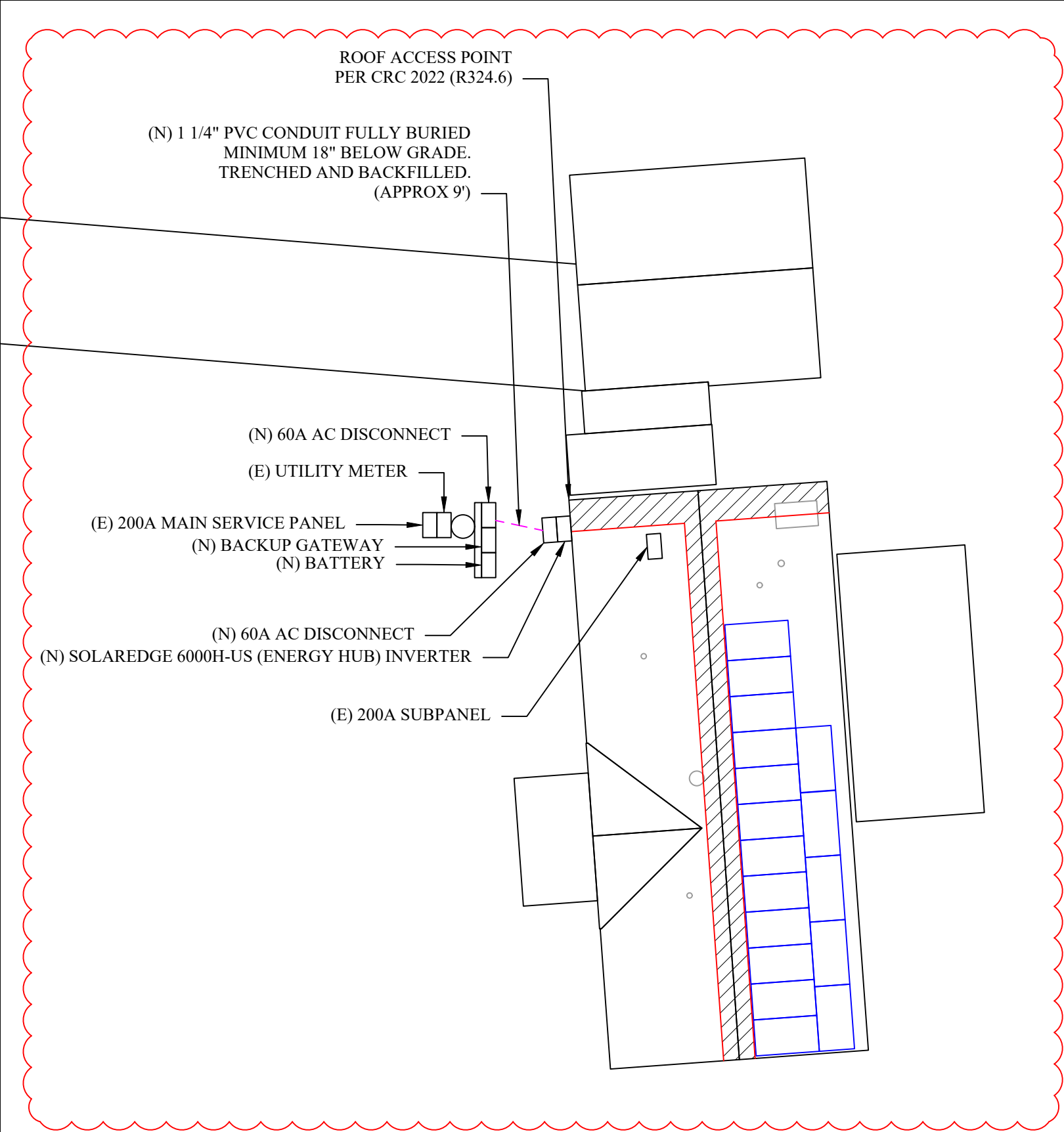
Arnold Vinyard
9325 Sw Tustenuggee Ave, LAKE CITY, FL 32024

SCALE:

TIME: 01:44 PM

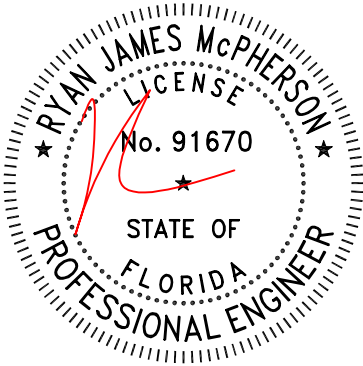
DESIGNER SIGNATURE: *Taylor Burford*

GENERAL NOTES		JURISDICTION NOTES		ELECTRICAL NOTES		JURISDICTION STAMPS:	
1. THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE 2020 NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURERS’S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION’S (AHJ) APPLICABLE CODES 2. THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION 3. ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC 690.4: PV MODULES: UL1703, IEC61730, AND IEC61215, AND NFPA 70 CLASS C FIRE INVERTERS: UL 1741 CERTIFIED, IEEE 1547, 929, 519 COMBINER BOX(ES): UL 1703 OR UL 1741 ACCESSORY 4. NEC REFERS SPECIFICALLY TO “UNGROUNDED” PV SYSTEMS. ALSO DESIGNATED AS “TRANSFORMERLESS” BY INVERTER MANUFACTURERS AND "NON-ISOLATED” BY UNDERWRITERS LABORATORY 5. INVERTER(S) USED IN UNGROUNDED SYSTEM SHALL BE LISTED FOR THIS USE 6. AS SPECIFIED BY THE AHJ, EQUIPMENT USED IN UNGROUNDED SYSTEMS LABELED ACCORDING TO NEC 7. MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7 8. ALL INVERTERS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AND SOURCE CIRCUIT COMBINERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D). SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS FROM LISTING OR LABELING [NEC 110.3] 9. ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ 10. SOLAR PV MODULES (PANELS) CANNOT BE INSTALLED OVER OR BLOCK ANY ATTIC VENTS, PLUMBING VENTS, FURNACE OR WATER HEATER VENTS ETC 11. ALL CONDUCTORS OF A CIRCUIT, INCLUDING THE EGC, MUST BE INSTALLED IN THE SAME RACEWAY OR CABLE, OR OTHERWISE RUN WITH THE PV ARRAY CIRCUIT CONDUCTORS WHEN THEY LEAVE THE VICINITY OF THE PV ARRAY 12. ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE. GROUND MOUNTED SYSTEMS, WIRING MUST BE PERMANENTLY AND COMPLETELY HELD OFF OF THE ROOF SURFACE RYAN JAMES McPHERSON LICENSE No. 91670 STATE OF FLORIDA PROFESSIONAL ENGINEER EXP. 2/28/25 This item has been digitally signed and sealed by Ryan McPherson, PE, on Sep 12, 2024 Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.		1. PV SOURCE CIRCUIT(S) ARE TO BE SUNLIGHT-RESISTANT PV-WIRE AS PERMITTED BY CEC 690.31(B). 2. ALL DIRECT CURRENT CIRCUITS ARE TO BE INSTALLED IN METAL RACEWAY FROM THE POINT OF PENETRATION OF THE SURFACE OF THE BUILDING OR STRUCTURE TO THE MAIN SERVICE PANEL AS MANDATED BY NEC 690.31(E). 3. WEATHERPROOF J-BOX – NEMA 3R. 4. ROOFTOP CONDUIT SHALL BE A MINIMUM OF 7/8" ABOVE THE ROOF SURFACE. 5. ALL WORK SHALL COMPLY WITH THE 2020 NATIONAL ELECTRICAL CODE AND 2020 FL STATE AMENDMENTS CODE REFERENCES 2020 NATIONAL ELECTRIC CODE - NFPA 70 8TH EDITION 2020 FLORIDA BUILDING CODE - RESIDENTIAL 8TH EDITION 2020 FLORIDA BUILDING CODE - BUILDING 8TH EDITION 2020 FLORIDA BUILDING CODE - ENERGY 8TH EDITION 2020 FLORIDA BUILDING CODE - TEST PROTOCOL 8TH EDITION 2020 FLORIDA BUILDING CODE - PLUMBING 8TH EDITION 2020 FLORIDA BUILDING CODE - MECHANICAL 8TH EDITION 2020 FLORIDA BUILDING CODE - EXISTING BUILDING 8TH EDITION 2020 FLORIDA BUILDING CODE - FUEL GAS 8TH EDITION 2020 FLORIDA BUILDING CODE - ACCESSIBILITY 8TH EDITION 2020 FLORIDA FIRE PREVENTION CODE FAIR HOUSING GUIDELINES UTILITY NOTES		JURISDICTION STAMPS: CONSTRUCTION NOTES 1. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. 2. ALL OUTDOOR EQUIPMENT SHALL BE RAIN TIGHT WITH MINIMUM NEMA 3R RATING. 3. ALL LOCATIONS ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION. 4. THE SOLAR INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING OR MECHANICAL VENTS. 5. A LADDER WILL BE IN PLACE FOR INSPECTIONS IN COMPLIANCE WITH OSHA REGULATIONS. 6. MODULE MOUNTING STRUCTURE WILL BE TIED DIRECTLY INTO STRUCTURAL ELEMENTS OF SINGLE FAMILY DWELLING ROOF TRUSSES / RAFTERS OR BEAMS ACCORDING TO MOUNTING STRUCTURE DIRECTIONS. 7. ROOF COVERING PENETRATIONS SHALL BE DESIGNED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH BUILDING CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERINGS SHALL SERVE TO PROTECT THE BUILDING STRUCTURE. 8. CONDUIT, WIRING SYSTEMS, AND RACEWAYS FOR PHOTOVOLTAIC CIRCUITS SHALL BE LOCATED AS CLOSE AS POSSIBLE TO THE RIDGE, HIP, OR VALLEY. THIS EQUIPMENT SHALL ALSO BE LOCATED AS CLOSE AS POSSIBLE TO AN OUTSIDE WALL TO REDUCE TRIP HAZARDS AND MAXIMIZE VENTILATION OPPORTUNITIES. 9. MODULES MUST HAVE 6" CLEARANCE FROM ALL VENTS AND OBSTRUCTIONS.			
betterearth BETTER EARTH ELECTRIC INC. 4040 N COMBEE ROAD, STE. 12 LAKELAND, FL 33805 PHONE #: (888) 373-9379 LIC #: 13011324 Roger Gaydou NEW PV SYSTEM: 6970W DC / 6000W AC Arnold Vinyard 9325 Sw Tustenuggee Ave, LAKE CITY, FL 32024 APN: 325S1709477112 DRAWING TITLE: NOTES SHEET DRAWING PAGE: 002 NS1 DATE: 8/26/2024 TIME: 01:44 PM DESIGNER: TAYLOR BICKFORD DESIGNER SIGNATURE: Taylor Bickford SCALE:							



JURISDICTION STAMPS:

NOTES:



EXP. 2/28/25
This item has been digitally signed and sealed by Ryan McPherson, PE, on Sep 12, 2024
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Ryan J McPherson
Digitally signed by Ryan J McPherson
Date: 2024.09.24 11:46:46 -07'00'

MODULE QTY: 17
MODULE MFG: QCELLS NORTH AMERICA
MODULE TYPE: Q.PEAK DUO BLK ML-G10+ 410

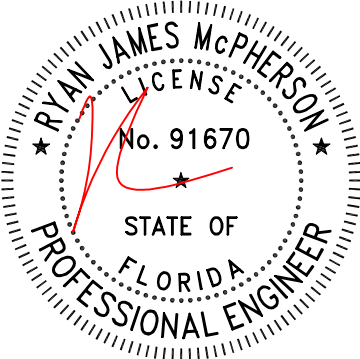
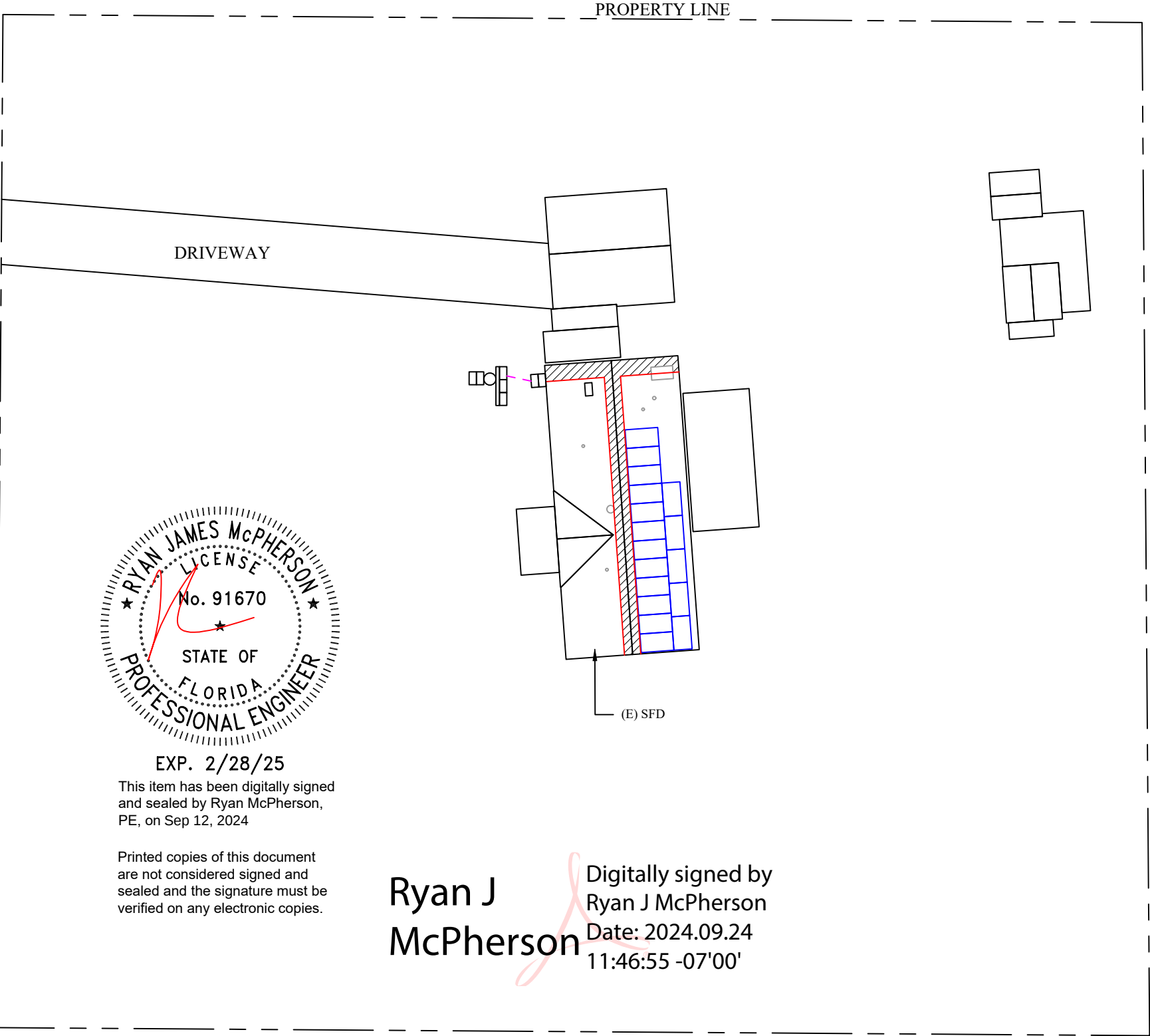
better
earth
BETTER EARTH ELECTRIC INC.
4040 N COMBEE ROAD, STE. 12
LAKELAND, FL 33805
PHONE #: (888) 373-9379
LIC #: 13011324
Roger Laydon

NEW PV SYSTEM: 6970W DC / 6000W AC
Arnold Vinyard
9325 Sw Tustenuggee Ave, LAKE CITY, FL 32024
APN: 325S1709477112

DRAWING TITLE:
SITE PLAN

DRAWING PAGE:
003 SP1

9325 SW TUSTENUGGEE AVE, LAKE CITY, FL 32024



EXP. 2/28/25
This item has been digitally signed
and sealed by Ryan McPherson,
PE, on Sep 12, 2024

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

Ryan J
McPherson
Digitally signed by
Ryan J McPherson
Date: 2024.09.24
11:46:55 -07'00'

JURISDICTION STAMPS:

NOTES:

MODULE QTY: 17
MODULE MFG: QCELLS NORTH AMERICA
MODULE TYPE: Q.PEAK DUO BLK ML-G10+ 410



BETTER EARTH ELECTRIC INC.
4040 N COMBEE ROAD, STE. 12
LAKELAND, FL 33805
PHONE #: (888) 373-9379
LIC #: 13011324
Roger Gaydou

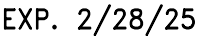
NEW PV SYSTEM: 6970W DC / 6000W AC
Arnold Vinyard
9325 Sw Tustenuggee Ave, LAKE CITY, FL 32024
APN: 325S1709477112

DRAWING TITLE:
PROPERTY PLAN

DRAWING PAGE:
003.1 SP2



JURISDICTION STAMPS:



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

Digitally signed by
Ryan J McPherson
Date: 2024.09.24
11:47:06 -07'00'

[MSP]	(E) 200A MAIN SERVICE PANEL	[UM]	UTILITY METER (IF SEPARATED)
[INV]	(N) SOLAREEDGE 6000H-US (ENERGY HUB) INVERTER		

EMT CONDUIT	PVC TRENCH	(E) SOLAR MODULE
---	--	--

CONDUIT RUN TO BE DETERMINED IN FIELD



PHONE #: (888) 373-9379
LIC #: 13011324

NEW PV SYSTEM: 6970W DC / 6000W AC

APN: 325S1709477112

DESIGNER SIGNATURE: *Taylor Buehner*

ROOF PLAN

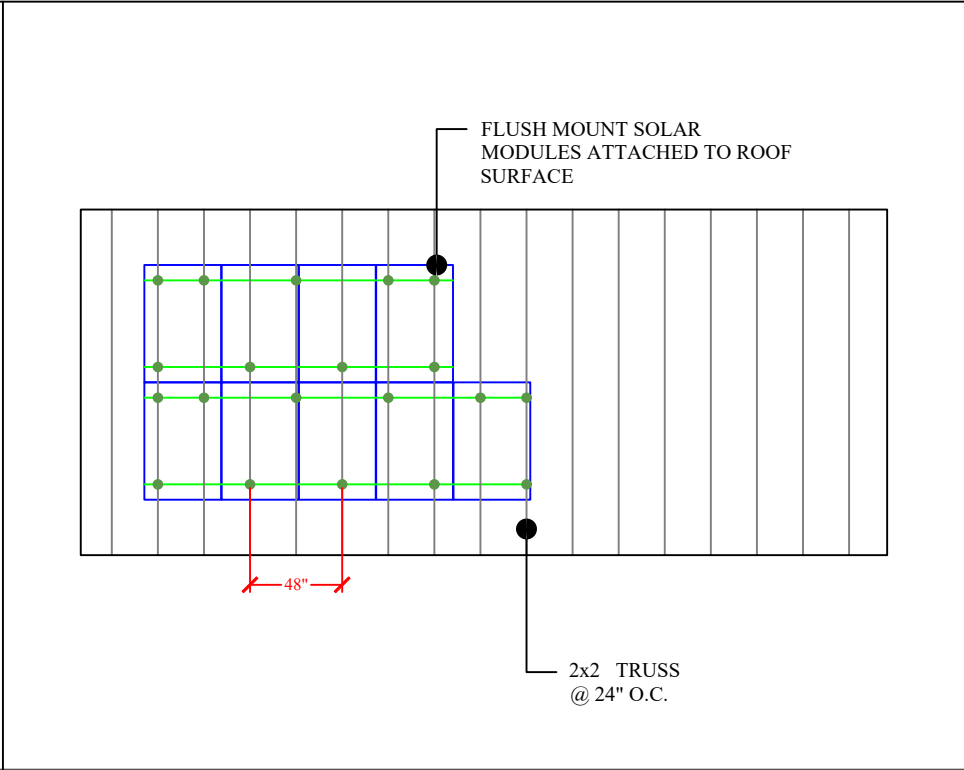
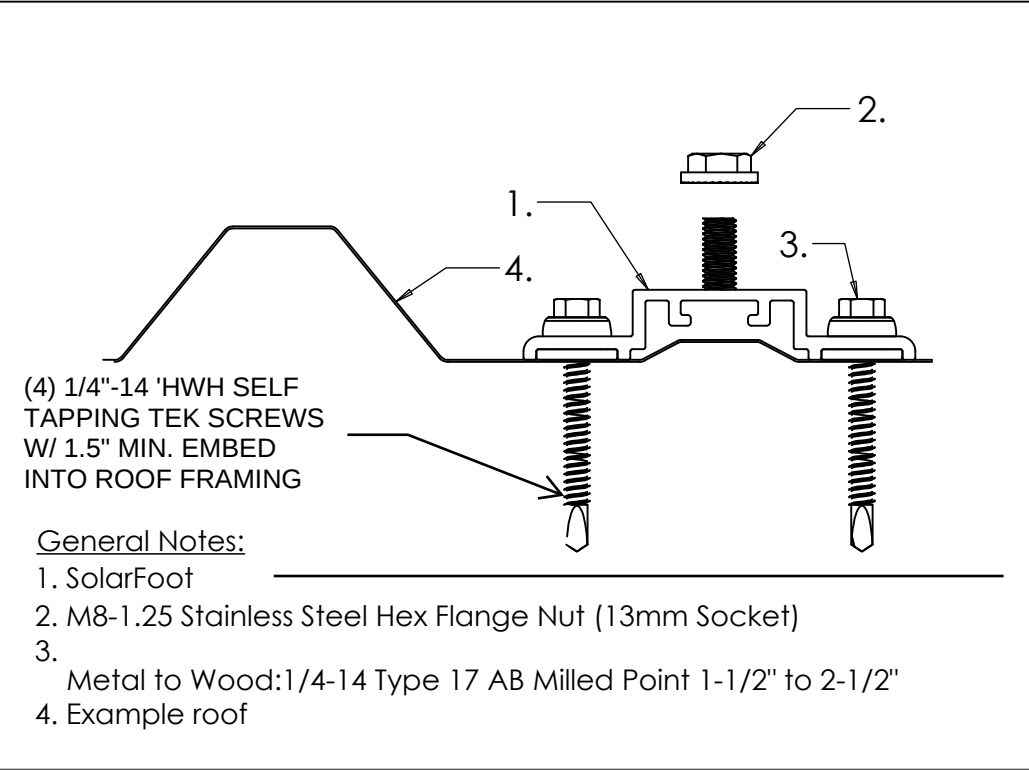
004 RP1

$$1'' = 8.93'$$

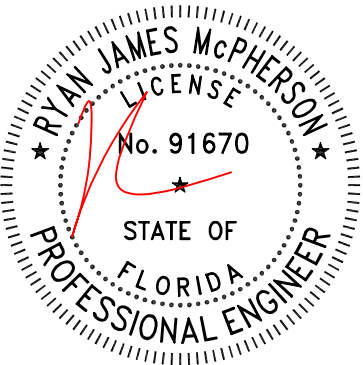
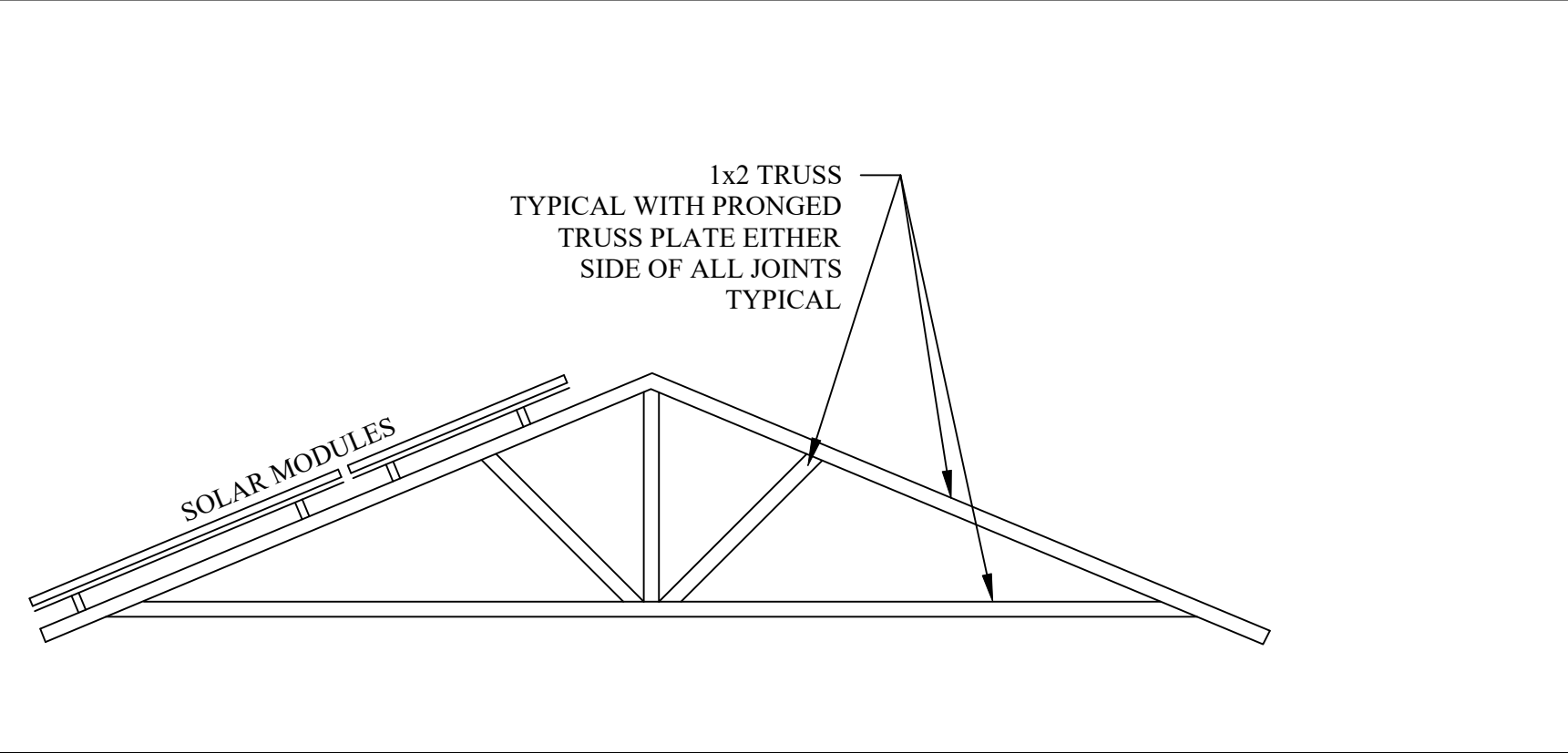
ATTACHMENT DETAIL

TYP ROOF ATTACHMENT PLAN

JURISDICTION STAMPS:



FRONT VIEW TYP FRAMING DETAIL



EXP. 2/28/25
This item has been digitally signed and sealed by Ryan McPherson, PE, on Sep 12, 2024

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

Ryan J McPherson
Digitally signed by Ryan J McPherson
Date: 2024.09.24 11:47:16 -07'00'

INSTALLER NOTES:



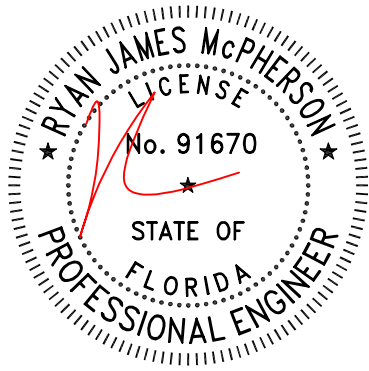
BETTER EARTH ELECTRIC INC.
4040 N COMBEE ROAD, STE. 12
LAKELAND, FL 33805
PHONE #: (888) 373-9379
LIC #: 13011324
Roger Laydon

NEW PV SYSTEM: 6970W DC / 6000W AC
Arnold Vinyard
9325 Sw Tustenuggee Ave, LAKE CITY, FL 32024
APN: 325S1709477112

DRAWING TITLE:
RACKING & FRAMING DETAILS
DRAWING PAGE:
005 RF1
SCALE:

DATE: 8/26/2024 TIME: 01:44 PM DESIGNER: TAYLOR BICKFORD DESIGNER SIGNATURE: Taylor Bickford

JURISDICTION STAMPS:

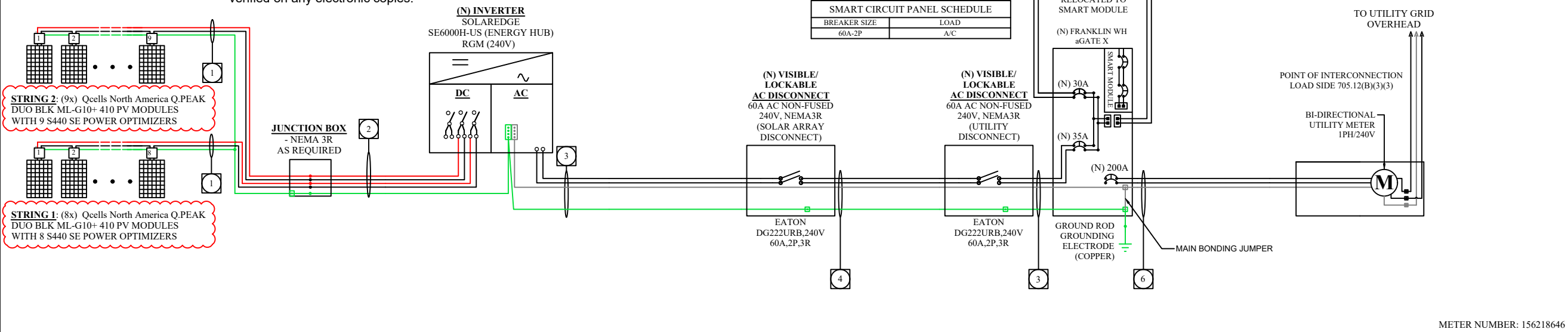


Ryan J
McPherson
n

Digitally signed
by Ryan J
McPherson
Date: 2024.09.24
11:47:26 -07'00'

EXP. 2/28/25
This item has been digitally signed
and sealed by Ryan McPherson,
PE, on Sep 12, 2024

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



AHJ/UTILITY NOTES:
SOLAREDGE INVERTER(S) RSD COMPLIANT PER 690.12

CONDUCTOR AND CONDUIT SCHEDULE W/ELECTRICAL CALCULATIONS										
ID	CONDUCTOR (CU)	CONDUIT	CONDUCTORS IN CONDUIT	EGC	TEMP. CORR. FACTOR	CONT. CURRENT	MAX. CURRENT (125%)	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING
1	#10 PV Wire, in open air	N/A	N/A	#6	0.91	15	18.75	40	36.4	90
2	#10 THWN-2, in conduit	3/4" EMT	4 & (1)G	#8	0.91	15	18.75	40	36.4	90
3	#8 THWN-2, in conduit	3/4" EMT	3 & (1)G	#8	0.91	25	31	55	55	90
4	#8 THWN-2, in conduit (18" UG)	1 1/4" PVC	3 & (1)G	#8	0.91	25	31	55	55	90
5	#10 THWN-2, in conduit	3/4" EMT	3 & (1)G	#8	0.91	21	26	40	36.4	90
6	2/0 THWN-2, in conduit	2" PVC	3 & (1)G	#4	0.91	—	—	195	177.45	90

DESIGN TEMPERATURES	MODULE SPECS		POWER OPTIMIZERS		SYSTEM SUMMARY	
	QCELLS NORTH AMERICA Q PEAK DUO BLK ML-G10+ 410		SOLAREDGE S440 OPTIMIZER		ARRAY STC POWER 6970W	
	PMAX 410W	PTC 381W	RATED INPUT 440W	MAX OUTPUT 15A	ARRAY PTC POWER 6477W	
	ISC 11.2A	IMP 10.89A			MAX AC CURRENT 25A	
	VOC 45.37V	VMP 37.64V	MAX ISC 15A		MAX DC 60V	MAX AC POWER 6000W
	TEMP. COEFF. OF VOC -0.122		WEIGHTED EFFICIENCY 98.6			
ASHRAE 2% HIGH 37°C						
ASHRAE EXTREME LOW -3°C						

BETTER EARTH ELECTRIC INC.
4040 N COMBEE ROAD, STE. 12
LAKELAND, FL 33805

PHONE #: (888) 373-9379
LIC #: 13011324

NEW PV SYSTEM: 6970W DC / 6000W AC

Arnold Vinyard
9325 Sw Tustenuggee Ave, LAKE CITY, FL 32024

APN: 325S1709477112

DATE: 8/26/2024

TIME: 01:44 PM

DESIGNER: TAYLOR BICKFORD

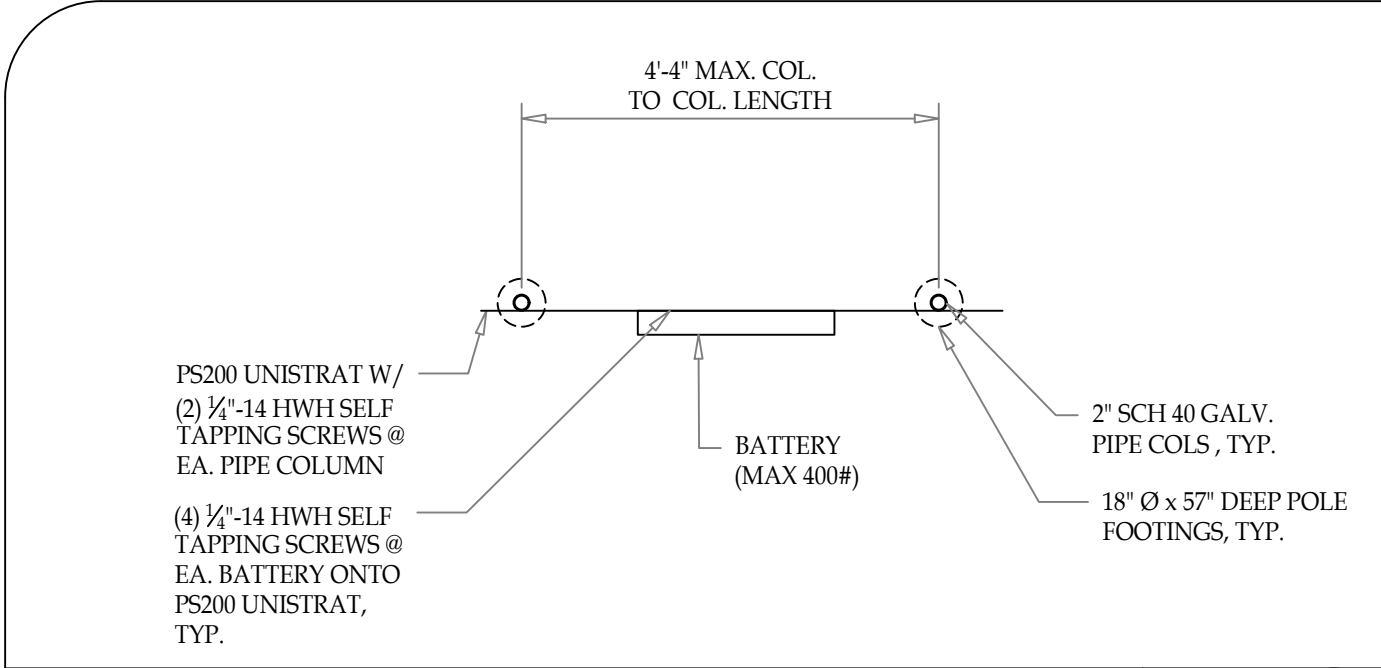
DESIGNER SIGNATURE: *Taylor Bickford*

SCALE:

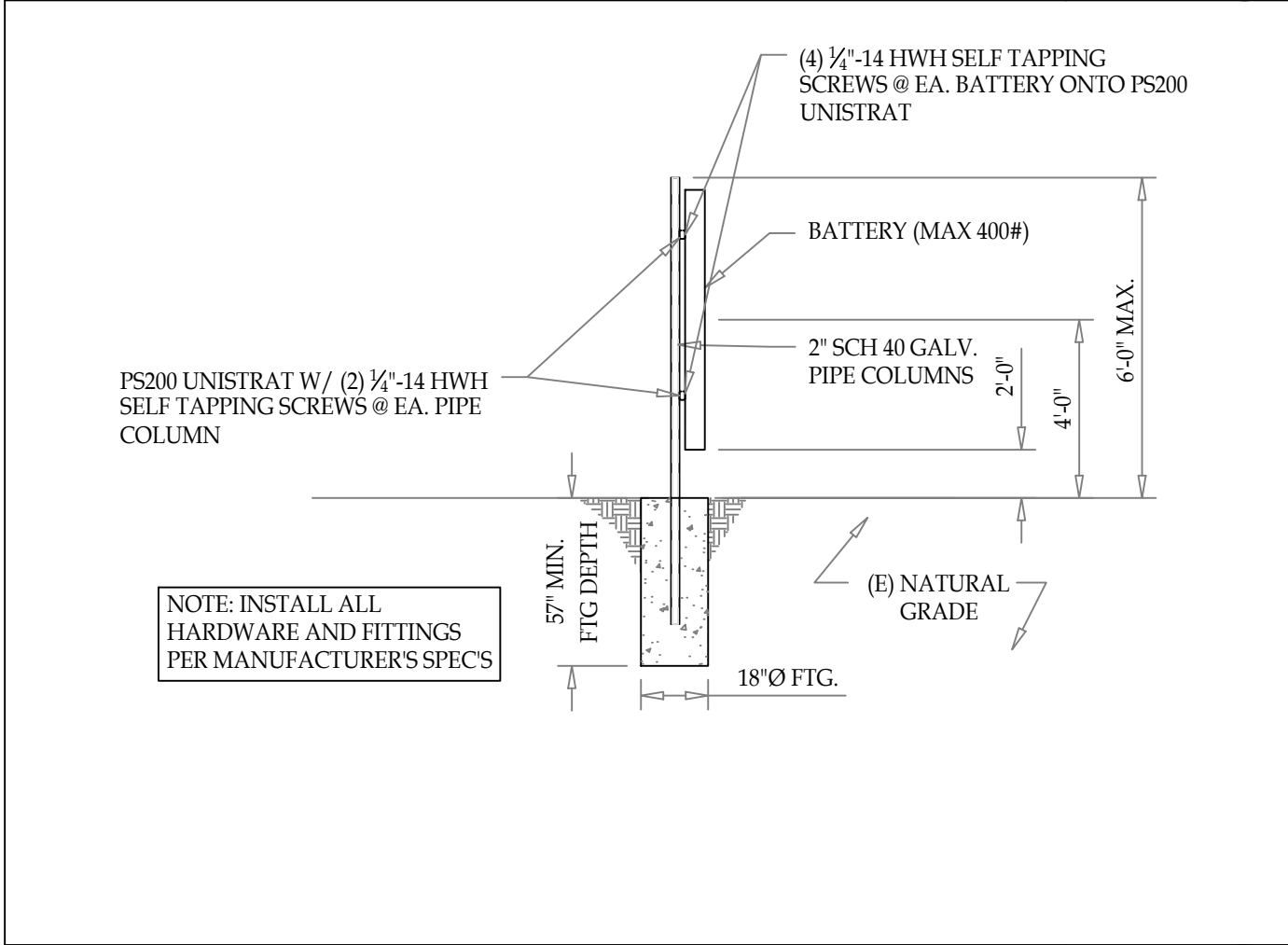
INSTALLER NOTES:

DRAWING TITLE:
**LINE DIAGRAM &
DESIGN TABLES**

DRAWING PAGE:
006 LD1



PLAN SCALE: 1 N.T.S.



SECTION SCALE: 2 N.T.S.

FOUNDATION NOTES:

1. CONCRETE SHALL BE PLACED AGAINST UNDISTURBED SOIL OR BUILDING DEPARTMENT APPROVED COMPACTED FILL.
2. ALL FOOTING STEEL SHALL HAVE 3" MINIMUM CLEARANCE TO EARTH.
3. SOIL SHALL HAVE A MINIMUM BEARING VALUE OF 1,500 P.S.F. OR PER APPROVED GEOTECHNICAL RECOMMENDATIONS.
4. SHOULD UNUSUAL OR UNEXPECTED SOIL CONDITIONS BE ENCOUNTERED, A GEOTECHNICAL ENGINEER SHOULD BE NOTIFIED TO PROVIDE ADDITIONAL RECOMMENDATIONS.

CONCRETE NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,500 P.S.I. @ 28 DAYS UNLESS NOTED.
2. KEEP CONCRETE DAMP CONTINUOUSLY FOR 14 DAYS.
3. CONCRETE AGGREGATES SHALL CONFORM TO ASTM C 33.
4. WATER USED IN CONCRETE SHALL BE CLEAN AND FREE FROM DELETERIOUS SUBSTANCES.
5. HYDRATED LIME SHALL CONFORM TO ASTM C 51.
6. CEMENT SHALL BE PORTLAND CEMENT CONFORMING TO CBC/IBC CHAP. 19 DIV. II AND BE TYPE I OR II.
7. NO ADMIXTURES OF ANY KIND ARE ALLOWED WITHOUT APPROVAL FROM THIS OFFICE PRIOR TO CONSTRUCTION.
8. SHOULD PROVISIONS FOR SEVERE SULFATE EXPOSURE BE REQUIRED BY THE BUILDING AUTHORITY, CONCRETE IN CONTACT WITH SOIL SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 P.S.I. TYPE V CEMENT, AND A WATER/CEMENT RATIO OF 0.45.

DESIGN CRITERIA:

- FBC 2023
- CONCRETE: 2,500 P.S.I.
- STEEL: SCH 40 ASTM A53 GRADE B
- DEAD LOAD: 400 LBS
- S_s: 0.081
- S₁: 0.049
- SITE CLASS: D
- S.D.C.: D
- M.L.F.R.S.: CANTILEVER STEEL COL
- R: 2.0
- RISK CATEGORY: I
- WIND SPEED: 156M.P.H.
- EXPOSURE CATEGORY: C

GENERAL NOTES:

1. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER DRAWING SCALE.
2. THIS PLAN IS NOT INTENDED TO BE APPLICABLE FOR NON STRUCTURAL ITEMS INCLUDING BUT NOT LIMITED TO ELECTRICAL, WATERPROOFING, DRAINAGE, OR CONCRETE DECKING ON GRADE.
3. CONTRACTOR OR OWNER SHALL VERIFY AND IS ULTIMATELY RESPONSIBLE FOR ALL FIELD CONDITIONS AND DIMENSIONS AT THE JOB SITE. IF THE SITE CONDITIONS CHANGE OR ARE NOT AS SHOWN, CONTRACTOR OR OWNER SHALL CONTACT THE ENGINEER BEFORE CONSTRUCTION.
4. NO DEVIATIONS FROM STRUCTURAL DETAILS SHALL BE MADE WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. APPROVAL BY THE CITY INSPECTOR/PLAN REVIEWER DOES NOT CONSTITUTE AUTHORITY TO DEVIATE FROM PLANS OR SPECIFICATIONS.
5. OWNER, ARCHITECT OR CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND CHECKING STRUCTURAL PLANS AND DETAILS HEREIN FOR CORRECTNESS OF DESIGN INTENT PRIOR TO SUBMITTING FOR PERMIT, INITIATION OF WORK OR ORDERING OF MATERIALS. VARIANCES OR ERRORS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING.
6. THE PLANS AND SPECIFICATIONS REPRESENT THE COMPLETED STRUCTURE AND DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES AND PROCEDURES, INCLUDING, BUT NOT LIMITED TO BRACING, SHORING, AND DEMOLITION.
7. CONTRACTOR TO VERIFY WITH THE ENGINEER ANY CHANGES MADE TO THE PROJECT THAT DEVIATE FROM THIS PLAN PRIOR TO CONSTRUCTION.

Digitally signed by Ryan J McPherson
Date: 2024.09.24 11:47:36 -07'00'

McPHERSON ENGINEERING
RYAN JAMES MCPHERSON, P.E.
9240 LIMONITE AVE,
JURUPA VALLEY, CA 92509
(909) 566-0066
SE@MCPE.GROUP

PROJECT LOCATION:
THE VINYARD RESIDENCE
9325 SW TUSTENUGGEE AVE, LAKE CITY, FL 32024

PROJECT DESCRIPTION:
FREESTANDING BATTERY STRUCTURE

SHEET DESCRIPTION:
NOTES & PLAN

E.O.R.
RYAN JAMES MCPHERSON
LICENSE
No. 91670
STATE OF FLORIDA
PROFESSIONAL ENGINEER
EXP. 2/28/25

DATE: 2024.09.24
SCALE: N.T.S.
PROJECT # 2403399
SHEET # 1
This item has been digitally signed and sealed by Ryan McPherson, P.E. on Sep 12, 2024.
Other copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

S-1

TYP. NOTES & SPECS SCALE: 3 N.T.S.

LABELING PLAN

JURISDICTION STAMPS:

1

WARNING: PHOTOVOLTAIC POWER SOURCE

[690.31(D)(2)] PLACE ON JUNCTION BOXES AND CONDUIT EVERY 10'

2

DC DISCONNECT

DC PHOTOVOLTAIC POWER SOURCE

MAXIMUM SYSTEM VOLTAGE:480 VDC

MAXIMUM CIRCUIT CURRENT:25 AMPS

MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-DC CONVERTER (IF INSTALLED)15 AMPS

[690.53] AT EACH DC DISCONNECT MEANS (INVERTER 1)

3

WARNING!

ELECTRIC SHOCK HAZARD

TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

[690.13(B)] PLACE THIS LABEL ON ALL DISCONNECTING MEANS WHERE ENERGIZED IN AN OPEN POSITION

4

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

[690.56(C)(2)] PLACE ON INVERTER

5

AC DISCONNECT

AC PHOTOVOLTAIC POWER SOURCE

MAX AC OPERATING CURRENT:25A MAX

AC OPERATING VOLTAGE:240 VAC

[690.54] PLACE LABEL AT "INTERACTIVE POINT OF INTERCONNECTION" (AT MAIN SERVICE PANEL AND SUBPANEL IF APPLICABLE)

6

THIS PANEL IS FED BY MULTIPLE SOURCES (UTILITY & SOLAR)

[690.64(B)(4)] PLACE LABEL ON ALL EQUIPMENT CONTAINING OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO A BUSBAR OR CONDUCTORS SUPPLIED FROM MULTIPLE SOURCES

7

WARNING

INVERTER OUTPUT CONNECTION

DON'T RELOCATE THIS OVERCURRENT DEVICE

PLACE THIS LABEL AT P.O.C. TO SERVICE DISTRIBUTION EQUIPMENT (I.E. MAIN PANEL AND SUBPANEL IF APPLICABLE)

8

AC DISCONNECT

AC PHOTOVOLTAIC POWER SOURCE

[690.14(C)(2)] PLACE ON AC DISCONNECT

9

WARNING!

THIS EQUIPMENT FED BY MULTIPLE SOURCES.

TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR

[705.12(B)(3)(3)] PLACE THIS LABEL AT P.O.C. TO SERVICE DISTRIBUTION EQUIPMENT

10

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

FOR PV SYSTEMS THAT SHUT DOWN THE ARRAY AND CONDUCTORS LEAVING THE ARRAY: SIGN TO BE LOCATED ON OR NO MORE THAN 3 FT AWAY FROM SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED AND SHALL INDICATE THE LOCATION OF ALL IDENTIFIED RAPID SHUTDOWN SWITCHES IF NOT AT THE SAME LOCATION. [690.56(C)]

LABELING NOTES:
1.1 LABELING REQUIREMENTS BASED ON THE 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.

11

PV SOLAR BREAKER

DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATED INSIDE PANEL NEXT TO PV BREAKER

Ryan J McPherson

Digitally signed by Ryan J McPherson
Date: 2024.09.24 11:47:47 -07'00'

EXP. 2/28/25

This item has been digitally signed and sealed by Ryan McPherson, PE, on Sep 12, 2024

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

PROPERTY MAP

6"X6" DISCONNECT DIRECTORY PLAQUE
INSTALL AT MAIN SERVICE PANEL

NOTES:

FORMAT

1. WHITE LETTERING ON A RED BACKGROUND
2. MINIMUM 3/8 INCHES LETTER HEIGHT
3. ALL LETTERS SHALL BE CAPITALIZED
4. ARIAL OR SIMILAR FONT (NON-BOLD)

MATERIAL REFLECTIVE, WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT (USE UL-969 AS STANDARD FOR WEATHER RATING). DURABLE ADHESIVE MATERIALS

ADDITIONAL PLACARDS FOR ENERGY STORAGE SYSTEM

ENERGY STORAGE SYSTEM DISCONNECT

PLACE ON ACCESSIBLE ESS DISCONNECT

CAUTION

THIS PANEL HAS SPLICED FEED-THROUGH CONDUCTORS. LOCATION OF DISCONNECT AT ENERGY STORAGE BACK UP LOAD PANEL.

[312.8(A)(3)] PLACE ON MAIN PANEL IF POINT OF INTERCONNECTION IS SUPPLY SIDE

BACKUP LOAD CENTER

[NEC 408.4] PLACE ON BACKUP LOAD CENTER

CAUTION

TRI POWER SOURCE. SECOND SOURCE IS PHOTOVOLTAIC SYSTEM. THIRD SOURCE IS ENERGY STORAGE SYSTEM

[705.12(D)(3)] PLACE ON MAIN PANEL IF PV SYSTEM IS ALSO CONNECTED TO PANEL

ONLY 1 REQUIRED

ENERGY STORAGE SYSTEM ON SITE LOCATED WITHIN LINE OF SIGHT

PLACE ON MAIN PANEL IF ESS IS IN LINE OF SIGHT

ENERGY STORAGE SYSTEM ON SITE LOCATED ON ADJACENT WALL

PLACE ON MAIN PANEL IF ESS IS ON ADJACENT WALL

ENERGY STORAGE SYSTEM ON SITE LOCATED ON OPPOSITE WALL

PLACE ON MAIN PANEL IF ESS IS ON OPPOSITE WALL

INSTALLER NOTES:

BETTER EARTH ELECTRIC INC.
4040 N COMBEE ROAD, STE. 12
LAKELAND, FL 33805

PHONE #: (888) 373-9379
LIC #: 13011324

Roger Gaydou

NEW PV SYSTEM: 6970W DC / 6000W AC

Arnold Vinyard
9325 Sw Tustenugee Ave, LAKE CITY, FL 32024

APN: 325S1709477112

DATE: 8/26/2024

TIME: 01:44 PM

DESIGNER: TAYLOR BICKFORD

DESIGNER SIGNATURE: Taylor Bickford

DRAWING TITLE:

PLACARD & PLACARD MAP

DRAWING PAGE:

007 PP1

SCALE:



 BETTER EARTH ELECTRIC INC. 4040 N COMBEE ROAD, STE. 12 LAKELAND, FL 33805 PHONE #: (888) 373-9379 LIC #: 13011324 <i>Roger Gaydou</i>		NEW PV SYSTEM: 6970W DC / 6000W AC Arnold Vinyard 9325 Sw Tustenuggee Ave, LAKE CITY, FL 32024 APN: 325S1709477112		DRAWING TITLE: OPTIMIZER MAP
				DRAWING PAGE: 008 OM1
DATE: 8/26/2024	TIME: 01:44 PM	DESIGNER: TAYLOR BICKFORD	DESIGNER SIGNATURE: <i>Taylor Bickford</i>	SCALE:

Q.PEAK DUO BLK ML-G10+ SERIES



385-410 Wp | 132 Cells
20.9% Maximum Module Efficiency

MODEL Q.PEAK DUO BLK ML-G10+



6 busbar
cell technology

12 busbar
cell technology



Breaking the 20% efficiency barrier

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



A reliable investment

Inclusive 25-year product warranty and 25-year linear performance warranty¹.



Enduring high performance

Long-term yield security with Anti LeTID Technology, Anti PID Technology² and Hot-Spot Protect.



Extreme weather rating

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



Innovative all-weather technology

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



The most thorough testing programme in the industry

Qcells 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.

¹ See data sheet on rear for further information.

² APT test conditions according to IEC/TS 62804-1:2015, method A (-1500 V, 96h)

The ideal solution for:



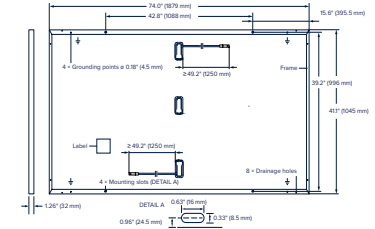
Rooftop arrays on
residential buildings



Q.PEAK DUO BLK ML-G10+ SERIES

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 anodised aluminium
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 mm ² Solar cable; (+) ≥ 49.2 in (1250 mm), (-) ≥ 49.2 in (1250 mm)
Connector	Stäubli MC4; IP68



Electrical Characteristics

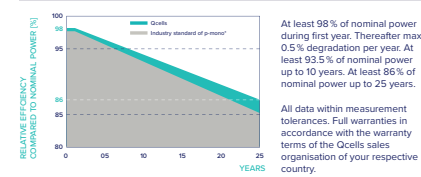
POWER CLASS		385	390	395	400	405	410
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W/-0 W)							
Power at MPP ¹	P _{MPP} [W]	385	390	395	400	405	410
Short Circuit Current ¹	I _{SC} [A]	11.04	11.07	11.10	11.14	11.17	11.20
Open Circuit Voltage ¹	V _{OC} [V]	45.19	45.23	45.27	45.30	45.34	45.37
Current at MPP	I _{MPP} [A]	10.59	10.65	10.71	10.77	10.83	10.89
Voltage at MPP	V _{MPP} [V]	36.36	36.62	36.88	37.13	37.39	37.64
Efficiency ¹	η [%]	≥ 19.6	≥ 19.9	≥ 20.1	≥ 20.4	≥ 20.6	≥ 20.9

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT²

Power at MPP	P _{MPP} [W]	288.8	292.6	296.3	300.1	303.8	307.6
Short Circuit Current	I _{SC} [A]	8.90	8.92	8.95	8.97	9.00	9.03
Open Circuit Voltage	V _{OC} [V]	42.62	42.65	42.69	42.72	42.76	42.79
Current at MPP	I _{MPP} [A]	8.35	8.41	8.46	8.51	8.57	8.62
Voltage at MPP	V _{MPP} [V]	34.59	34.81	35.03	35.25	35.46	35.68

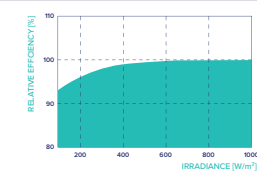
¹Measurement tolerances P_{MPP} ± 3%; I_{SC}, V_{OC} ± 5% at STC: 1000 W/m², 25 ± 2 °C, AM 1.5 according to IEC 60904-3, ²800 W/m², NMOT, spectrum AM 1.5

Qcells PERFORMANCE WARRANTY



¹Standard terms of guarantee for the 5 PV companies with the highest production capacity in 2021 (February 2022)

PERFORMANCE AT LOW IRRADIANCE



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/ft ²]	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/ft ²]	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).



Qcells pursues minimizing paper output in consideration of the global environment.

Note: Installation instructions must be followed. Contact our technical service for further information on approved installation of this product.
 Hanhua Q CELLS America Inc. 400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL: +1 949 748 59 96 | EMAIL: hqi-inquiry@qcells.com | WEB: www.qcells.com



SolarEdge Home Hub Inverter

For North America

SE3800H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US⁽¹⁾



HOME BACKUP

Optimized battery storage with HD-Wave technology

- Record-breaking 99% weighted efficiency with 200% DC oversizing
- Small, lightweight, and easy to install
- Modular design, future ready with optional upgrades to:
 - DC-coupled storage for full or partial home backup
 - Built-in consumption monitoring
 - Direct connection to the SolarEdge Home EV Charger
- Multi-inverter, scalable storage solution
 - With enhanced battery power up to 10kW
- Integrated arc fault protection and rapid shutdown for NEC 2014, NEC 2017 and NEC 2020, per article 690.11 and 690.12
- Embedded revenue grade production data, ANSI C12.20 Class 0.5

/ SolarEdge Home Hub Inverter

For North America

SE3800H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US⁽¹⁾

Applicable to inverters with part number	SEXXXXH-USNBBXX4				SE11400H-XXXXXXBXK5	Units	
	SE3800H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US		
OUTPUT – AC ON GRID							
Rated AC Power	3800 @ 240V 3300 @ 208V	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208	W	
Maximum AC Power Output	3800 @ 240V 3300 @ 208V	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208	W	
AC Frequency Range (min - nom - max)	59.3 – 60 – 60.5 ⁽²⁾					Hz	
Maximum Continuous Output Current @ 240V	16	25	32	42	47.5	A	
Maximum Continuous Output Current @ 208V	16	24	-	-	48.5	A	
GFDI Threshold	1					A	
Total Harmonic Distortion (THD)	< 3					%	
Power Factor	1, adjustable -0.85 to 0.85						
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes						
Charge Battery from AC (if allowed)	Yes						
Typical Nighttime Power Consumption	< 2.5					W	
OUTPUT – AC BACKUP ⁽³⁾							
Rated AC Power in Backup Operation ⁽⁴⁾	3800 7600*	6000	7600 10300*	10300	10300	W	
AC L-L Output Voltage Range in Backup	211 – 264					Vac	
AC L-N Output Voltage Range in Backup	105 – 132					Vac	
AC Frequency Range in Backup (min - nom - max)	55 – 60 – 65					Hz	
Maximum Continuous Output Current in Backup Operation	16 32*	25	32 43*	43	43	A	
GFDI	1					A	
THD	< 5					%	
OUTPUT – SOLAREGE HOME EV CHARGER AC							
Rated AC Power	9600					W	
AC Output Voltage Range	211 – 264					Vac	
On-Grid AC Frequency Range (min - nom - max)	59.3 – 60 – 60.5					Hz	
Maximum Continuous Output Current @240V (grid, PV and battery)	40					Aac	
INPUT – DC (PV AND BATTERY)							
Transformer-less, Ungrounded	Yes						
Max Input Voltage	480					Vdc	
Nom DC Input Voltage	380					Vdc	
Reverse-Polarity Protection	Yes						
Ground-Fault Isolation Detection	600kΩ Sensitivity						
INPUT – DC (PV)							
Maximum DC Power @ 240V	7600 15200*	12000	15200 22800*	22000	22800	W	
Maximum DC Power @ 208V	6600	10000	-	-	20000	W	
Maximum Input Current ⁽⁵⁾ @ 240V	10.5 20*	16.5	20 31*	27	31	Adc	
Maximum Input Current ⁽⁵⁾ @ 208V	9	13.5	-	-	27	Adc	
Max. Input Short Circuit Current	45						
Maximum Inverter Efficiency	99.2					%	
CEC Weighted Efficiency	99					99 @ 240V 98.5 @ 208V	%
2-pole Disconnection	Yes						

* Supported with PN SEXXXXH-USMMXXXXXX or SEXXXXH-USMXXXXXX.

(1) These specifications apply to inverters with part numbers SEXXXXH-USMMXXXXXX or SEXXXXH-USNBBXX4 and connection unit model number DCD-1PH-US-PxH-F-x.

(2) For other regional settings please contact SolarEdge support.

(3) Not designed for standalone applications and requires AC for commissioning. Backup functionality is only supported for 240V grid.

(4) Rated AC power in Backup Operation is valid for installations with multiple inverters. For a single backup inverter operation, rated AC power in Backup is 90% of the value stated.

(5) A higher current source may be used; the inverter will limit its input current to the values stated.

/ SolarEdge Home Hub Inverter

For North America

SE3800H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US⁽¹⁾

Applicable to inverters with part number	SEXXXXH-USNBBXX4				SE11400H – XXXXXBXXS	Units
	SE3800H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
OUTPUT – DC (BATTERY)						
Supported Battery Types	SolarEdge Home Battery, LG RESU Prime ⁽⁶⁾					
Number of Batteries per Inverter	Up to 3 SolarEdge Home Battery, up to 2 LG RESU Prime					
Continuous Power ⁽⁷⁾	7600		10000			W
Peak Power ⁽⁷⁾	7600		10000			W
Max Input Current	20		26.5			Adc
2-pole Disconnection	Yes					
SMART ENERGY CAPABILITIES						
Consumption Metering	Built-in ⁽⁸⁾					
Backup & Battery Storage	With Backup Interface (purchased separately) for service up to 200A; up to 3 inverters					
EV Charging	Direct connection to SolarEdge Home EV Charger					
ADDITIONAL FEATURES						
Supported Communication Interfaces	RS485, Ethernet, Cellular ⁽⁹⁾ , Wi-Fi (optional), SolarEdge Home Network (optional)					
Revenue Grade Metering, ANSI C12.20	Built-in ⁽⁸⁾					
Integrated AC, DC and Communication Connection Unit	Yes					
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi Access Point for local connection					
DC Voltage Rapid Shutdown (PV and Battery)	Yes, according to NEC 2014, NEC 2017 and NEC 2020 690.12					
STANDARD COMPLIANCE						
Safety	UL1741, UL1741 SA, UL1741 SB, UL1741 PCS, UL16998, UL1998, UL9540, CSA 22.2					
Grid Connection Standards	IEEE1547-2018, Rule 21, Rule 14H					
Emissions	FCC part 15 class B					
INSTALLATION SPECIFICATIONS						
AC Output and EV AC Output Conduit Size / AWG Range	1" maximum / 14-4 AWG					
DC Input (PV and Battery) Conduit Size / AWG Range	1" maximum / 14-6 AWG					
Dimensions with Connection Unit (H x W x D)	17.7 x 14.6 x 6.8 / 450 x 370 x 174	17.7 x 14.6 x 6.8 / 450 x 370 x 174	21.06 x 14.6 x 7.3 / 535 x 370 x 185	21.06 x 14.6 x 8.2 / 535 x 370 x 208 ⁽¹⁰⁾		in / mm
Weight with Connection Unit	26 / 11.8	26 / 11.8	41.7 / 18.9	44.9 / 20.3 ⁽¹⁰⁾		lb / kg
Noise	< 25 < 50*	< 25	< 50			dBA
Cooling	Natural Convection					
Operating Temperature Range	-40 to +140 / -40 to +60 ⁽¹¹⁾					°F / °C
Protection Rating	NEMA 4					

(6) The part numbers SExxxxH-USMxxxx only support the SolarEdge Home Battery. The part numbers SExxxxH-USNxxxx support both SolarEdge Home Battery and LG RESU Prime batteries. Requires supporting inverter firmware.

(7) Discharge power is limited up to the inverter rated AC power for on-grid and backup applications.

(8) For consumption metering current transformers should be ordered separately: SECT-SPL-225A-T-20 or SEACT0750-400NA-20 units per box.

Revenue grade metering is only for production metering.

(9) Information concerning the Data Plan's terms & conditions is available in the following link: [SolarEdge Communication Plan Terms and Conditions](#).

(10) SE11400H-USxxxx is the updated PN, though SE11400H-USxxxx are still available. All specifications are similar for both models EXCLUDING the weight and dimensions (HxWxD). The weight and dimensions of SE11400H-USxxxx are 17.6 [kg] and 21.06-14.6-7.3 / 535-370-185 [in/mm], accordingly.

(11) Full power up to at least 50°C / 122°F; for power de-rating information refer to the [Temperature De-Rating Technical Note for North America](#).

SolarEdge is a global leader in smart energy technology. By leveraging world-class engineering capabilities and with a relentless focus on innovation, SolarEdge creates smart energy solutions that power our lives and drive future progress.

SolarEdge developed an intelligent inverter solution that changed the way power is harvested and managed in photovoltaic (PV) systems. The SolarEdge DC optimized inverter maximizes power generation while lowering the cost of energy produced by the PV system.

Continuing to advance smart energy, SolarEdge addresses a broad range of energy market segments through its PV, storage, EV charging, UPS, and grid services solutions.

f SolarEdge
@SolarEdgePV
@SolarEdgePV
SolarEdgePV
SolarEdge
www.solaredge.com/corporate/contact

solaredge.com

© SolarEdge Technologies, Ltd. All rights reserved. SOLAREGE, the SolarEdge logo, OPTIMIZED BY SOLAREGE are trademarks or registered trademarks of SolarEdge Technologies, Inc. All other trademarks mentioned herein are trademarks of their respective owners. Date: February 23, 2023 DS-000189-NAM Subject to change without notice.

Cautionary Note Regarding Market Data and Industry Forecasts: This brochure may contain market data and industry forecasts from certain third-party sources. This information is based on industry surveys and the preparer's expertise in the industry and there can be no assurance that any such market data is accurate or that any such industry forecasts will be achieved. Although we have not independently verified the accuracy of such market data and industry forecasts, we believe that the market data is reliable and that the industry forecasts are reasonable.



solaredge

Power Optimizer

For North America

S440 / S500 / S500B / S650B

25
YEAR
WARRANTY



POWER OPTIMIZER

Enabling PV power optimization at the module level

- Specifically designed to work with SolarEdge residential inverters
- Mitigates all types of module mismatch loss, from manufacturing tolerance to partial shading
- Detects abnormal PV connector behavior, preventing potential safety issues*
- Faster installations with simplified cable management and easy assembly using a single bolt
- Module-level voltage shutdown for installer and firefighter safety
- Flexible system design for maximum space utilization
- Superior efficiency (99.5%)
- Compatible with bifacial PV modules

* Functionality subject to inverter model and firmware version

solaredge.com

solaredge

Power Optimizer

For Residential Installations

S440 / S500 / S500B / S650B

	S440	S500	S500B	S650B	UNIT
INPUT					
Rated Input DC Power ⁽¹⁾	440	500	650		W
Absolute Maximum Input Voltage (Voc)	60	125	85		Vdc
MPPT Operating Range	8 – 60	12.5 – 105	12.5 – 85		Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5	15			Adc
Maximum Efficiency		99.5			%
Weighted Efficiency		98.6			%
Overvoltage Category		II			
OUTPUT DURING OPERATION					
Maximum Output Current		15			Adc
Maximum Output Voltage	60	80			Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)					
Safety Output Voltage per Power Optimizer		1 ± 0.1			Vdc
STANDARD COMPLIANCE ⁽²⁾					
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3, CISPR11, EN-55011				
Safety	IEC62109-1 (class II safety), UL1741				
Material	UL94 V-0, UV Resistant				
RoHS	Yes				
Fire Safety	VDE-AR-E 2100-712:2018-12				
INSTALLATION SPECIFICATIONS					
Maximum Allowed System Voltage		1000			Vdc
Dimensions (W x L x H)	129 x 155 x 30	129 x 165 x 45			mm
Weight	720	790			gr
Input Connector	MC4 ⁽³⁾				
Input Wire Length	0.1				m
Output Connector	MC4				
Output Wire Length	(+/-) 2.3, (-) 0.10				m
Operating Temperature Range ⁽⁴⁾	-40 to +85				°C
Protection Rating	IP68				
Relative Humidity	0 – 100				%

(1) Rated power of the module at STC will not exceed the Power Optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed.

(2) For details about CE compliance, see [Declaration of Conformity – CE](#).

(3) For other connector types please contact SolarEdge.

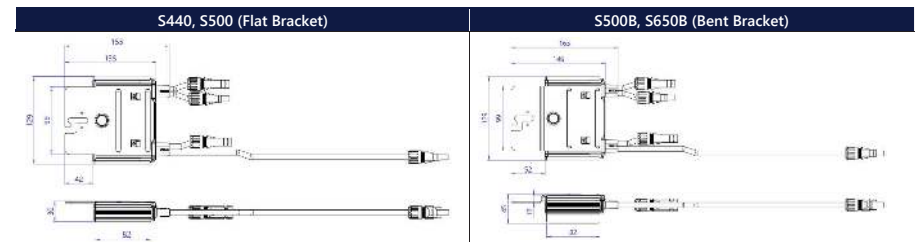
(4) Power de-rating is applied for ambient temperatures above +85°C for S440 and S500, and for ambient temperatures above +75°C for S500B. Refer to the [Power Optimizers Temperature De-Rating Technical Note](#) for details.

PV System Design Using a SolarEdge Inverter ⁽⁵⁾		SolarEdge Home Wave Inverter Single Phase	SolarEdge Home Short String Inverter Three Phase	Three Phase for 230/400V Grid	Three Phase for 277/480V Grid
Minimum String Length (Power Optimizers)	S440, S500	8	9	16	18
	S500B, S650B	6	8	14	
Maximum String Length (Power Optimizers)		25	20	50	
Maximum Continuous Power per String		5700	5625	11,250	12,750
Maximum Allowed Connected Power per String ⁽⁶⁾ (In multiple string designs, the maximum is permitted only when the difference in connected power between strings is 2,000W or less)		6800 ⁽⁷⁾	See ⁽⁶⁾	13,500	15,000
Parallel Strings of Different Lengths or Orientations		Yes			

(5) It is not allowed to mix S-series and P-series Power Optimizers in new installations in the same string.

(6) If the inverter's rated AC power is maximum continuous power per string, then the maximum connected power per string will be able to reach up to the inverter's maximum input DC power. Refer to the [Single String Design Guidelines](#) application note.

(7) For inverters with a rated AC power ≥ 8000W that are connected to at least two strings.



© SolarEdge Technologies, Ltd. All rights reserved. SOLAREEDGE, the SolarEdge logo, OPTIMIZED BY SOLAREEDGE are trademarks or registered trademarks of SolarEdge Technologies, Inc. All other trademarks mentioned herein are trademarks of their respective owners. Date: August 21, 2023 DS-000091-ENG. Subject to change without notice.



FRANKLINWH

aGate

Intelligent energy management system

Serves as the controller for all home power sources by interconnecting solar, grid, batteries, and a standby generator to supply electricity to the home. Seamlessly transitions the home supply from grid power to backup power so that always-on appliances, such as the refrigerator and network router, will not be affected when grid goes down.



- ✓ Micro-grid interconnect device (MID)
- ✓ Integrated PV and grid metering
- ✓ Auto load-shedding

- ✓ Compatible with micro and string solar inverter
- ✓ Optional Smart-Circuits Module
- ✓ Optional Generator Module

PERFORMANCE SPECIFICATIONS

Coupling	AC-coupled
Nominal AC Voltage	120 / 208 V, 120 / 240 V, 60 Hz
Phase	2 W+N+PE
aPower Over Current Protection Device	100 A Max
Solar Input Over Current Protection Device	80 A Max
Backup Load Port Over Current Protection Device	200 A Max
Generator Over Current Protection Device ¹	200 A Max
Smart Circuits Over Current Protection Device ²	Opt. a 1 x 80 A Max @ 208 V / 240 V & 1 x 50 A Max @ 208 V / 240 V Opt. b 1 x 80 A Max @ 208 V / 240 V & 2 x 50 A Max @ 120 V
Maximum Supply Fault Current	20 kA
Busbar Rating	280 A
Work Modes	Self-Consumption, Time of Use, Emergency Backup
Communications	Ethernet / 4G / Wifi
User Interface	FranklinWH App
Warranty	12 years

COMPLIANCE INFORMATION

Certifications	UL 1741 ¹ , UL 1741 PCS ¹ , UL 67 ¹ , UL 869A ¹ , UL 916 ¹ , CAN/CSA C22.2 No. 107.1-16, CSA C22.2 No. 29, CSA C22.2 No. 0.19 ¹
Seismic	AC 156, OSHPD, IEEE 693-2005 (high)
Environmental	California Proposition 65 RoHS Directive 2011 / EU
Emissions	FCC Part 15 Class B, ICES 003

1. Generator Module is optional.
2. Smart Circuit Module is optional.
3. Sections from these standards were used during the safety evaluation and included in the UL 1741 listing.

WWW.FRANKLINWH.COM

FRANKLINWH

aPower

AC-coupled battery

Store solar generated power while the sun is shining. Use the stored energy when needed to lower electric bills. Run heavy loads such as air conditioners and water heaters as usual even during grid outages. Provide homeowner peace of mind by fully charging before severe weather events.



- ✓ Safe LFP chemistry
- ✓ Built-in inverter
- ✓ 13.6 kWh per unit, up to 204 kWh (15 units) per aGate
- ✓ 5 kW continuous / 10 kW peak for 10s (discharge)

- ✓ Normal operations down to -4°F (-20°C)
- ✓ IP67 protection
- ✓ Single aPower capable of starting a 4-Ton AC
- ✓ First-of-its-kind 208 V compliant battery for multi-family housing

PERFORMANCE SPECIFICATIONS

Battery Chemistry	Lithium Iron Phosphate (LFP)
Usable System Energy	13.6 kWh per unit, up to 15 units ¹ per aGate
Aggregate Throughput	43 MWh
Real Power (charge)	5 kW continuous, 7.6 kW peak for 30 minutes
Real Power (discharge)	5 kW continuous, 10 kW peak for 10 seconds
Load Start Capability	118 A LRA ²
Nominal AC Voltage	120 / 208 V, 120 / 240 V, 60 Hz
Coupling	AC-coupled
Phase	2 W+N+PE
Round Trip Efficiency	89% ³
Work Modes	Self-Consumption, Time of Use, Emergency Backup
Noise Emission	< 30 dB (A) ⁴
User Interface	FranklinWH App
Warranty	12 years

COMPLIANCE INFORMATION

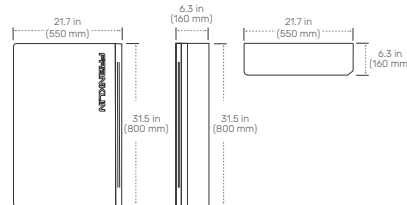
Certifications	UL 9540, UL 9540A, UL 1741, UL 1973, IEEE 1547, IEEE 1547.1, UN 38.3, CAN/CSA C22.2 No. 107.1-16
Seismic	AC 156, OSHPD, IEEE 693-2005 (high)
Environmental	California Proposition 65 RoHS Directive 2011 / EU
Emissions	FCC Part 15 Class B, ICES 003

1. For 120 / 208V applications, max. 4 aPowers per aGate can be connected in parallel. Please contact us if you have large capacity requirements.
2. Load start capability may vary.

WWW.FRANKLINWH.COM

MECHANICAL SPECIFICATIONS

Dimensions (H x W x D)	31.5 in x 21.7 in x 6.3 in (800 mm x 550 mm x 160 mm)
Weight	50 lb (23 kg)
Mounting	Wall mount or floor mount

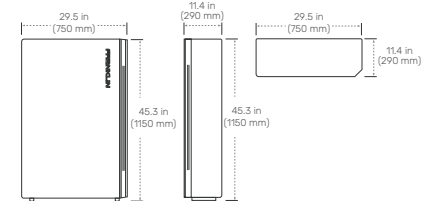


ENVIRONMENTAL SPECIFICATIONS

Enclosure Type	NEMA 3R
Operating Temperature	-4°F to 122°F (-20°C to 50°C)
Operating Humidity (RH)	Up to 100% RH, condensing
Altitude	Maximum 9,843 ft (3,000 m)
Environment	Indoor and outdoor rated

MECHANICAL SPECIFICATIONS

Dimensions (H x W x D)	45.3 in x 29.5 in x 11.4 in (1150 mm x 750 mm x 290 mm)
Weight	395 lb (179 kg)
Mounting	Wall mount or floor mount
Cooling	Natural air-cooled design



ENVIRONMENTAL SPECIFICATIONS

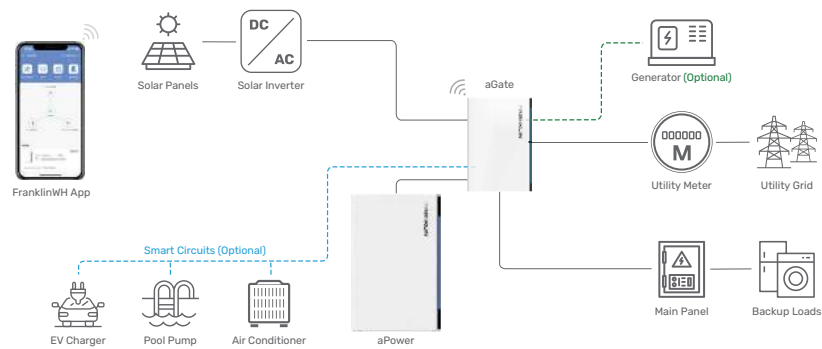
Ingress Protection	IP67 (Battery and power converter system), IP56 (Wiring compartment)
Operating Temperature	-4°F to 122°F (-20°C to 50°C)
Operating Humidity (RH)	Up to 100% RH, condensing
Altitude	Maximum 9,843 ft (3,000 m)
Environment	Indoor and outdoor rated

3. At beginning of life, AC to battery to AC, 50% power rating.
4. 5 kW discharge power, no fan running.

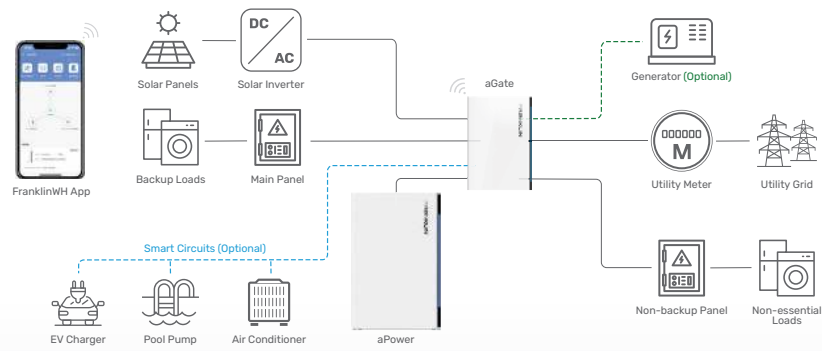
DATASHEET

Franklin Home Power Solution

Whole Home Backup



Partial Home Backup



Address: 1731 Technology Dr., Suite 530 San Jose, CA 95110 Telephone: +1 888-837-2655 Email: info@franklinwh.com Website: www.franklinwh.com
Copyright 2024 FranklinWH Energy Storage Inc. All rights reserved. The Franklin logo, FranklinWH, and other trademarks or service names are the trademarks of FranklinWH Energy Storage Inc.
The document is for informational purposes only, data subject to change. 2024-02-29



WWW.FRANKLINWH.COM

FRANKLINWH

The right way to attach almost anything to metal roofs!

SolarFoot Features:

Fabricated in our own ISO 9002
certified factory

All aluminum and stainless components

Lifetime limited warranty

Compatible with all commercial L-Foot products on the market

Factory applied 40-year isobutylene/
isoprene crosslink polymer sealant for
reliable weathertightness

Sealant reservoir to prevent over compression of sealant

Load-to-failure tested Normal to Seam
by a nationally accredited laboratory on
thousands of metal roof manufacturers,
profiles and materials

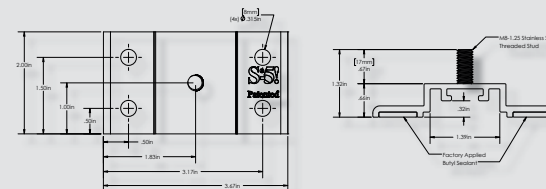
Four points of attachment into structure or deck with tested holding strength for engineered applications

Integrated with M8-1.25x17mm stud
and M8-1.25 stainless steel hex flange
nut included

888-825-3432 | www.S-5.com | 



The SolarFoot is a simple, cost-effective pedestal for L-Foot (not included) attachment of rail-mounted solar PV. The unique design is compatible with all rail producer L-Foot components. The new SolarFoot assembly ensures a durable weathertight solution for the life of the roof. Special factory applied butyl co-polymeric sealant contained in a reservoir is The Right Way, allowing a water-tested seal. Stainless integrated stud and hex flange lock-nut secure the L-Foot into position. A low center of gravity reduces the moment arm commonly associated with L-Foot attachments. Direct attachment of the SolarFoot to the structural member or deck provides unparalleled holding strength.



**Fasteners sold separately. Fastener type varies with substrate. Contact S-5! on how to purchase fasteners and obtain our test results. L-Foot also sold separately.*

Fastener Selection



Metal to Metal:
1/4-14 Self Drilling Screw
1-1/2" to 2-1/2"



Metal to Wood:
1/4-14 Type 17 AB Milled Point
1-1/2" to 2-1/2"

To source fasteners for your projects, contact S-5!

When other brands claim to be "just as good as S-5!", tell them to PROVE IT.

S-5!® Warning! Please use this product responsibly!

The independent lab test data found at www.S-5.com can be used for load-critical designs and applications.

Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, fastener torque, patents, and trademarks, visit the S-5! website at www.S-5.com. Copyright 2021, Metal Roof Innovations, Ltd. S-5! products are patent protected.

Copyright 2021, Metal Roof Innovations, Ltd. Version 083121

SolarFoot Advantages:

Exposed fasten mounting platform for solar arrays attached via L-Foot and Rails

Weatherproof attachment to exposed fastener roofing

Butyl sealant reservoir provides long-term waterproof seal

M8-1.25x17mm stud with M8 hex flange nut for attachment of all popular L-Foot/rail combinations

Tool: 13 mm Hex Socket or ½" Hex Socket

Electric screw gun with hex drive socket for self tapping screws

Low Center of Gravity reduces moment arm commonly associated with L-Foot/Rail solar mounting scenarios

Attaches directly to structure or deck for optimal holding strength

S-5! Recommended substrate-specific (e.g. steel purlin, wood 2x4, OSB, etc.) fasteners provide excellent waterproofing and pull out strength

Fastener through-hole locations comply with NDS (National Design Specification) for Wood Construction

Distributed by:

SOLARMOUNT



FEATURING SOLARMOUNT

- Designed for Unirac's Solarmount rail systems and certified to UL2703A for low-slope AND steep-slope roofs
- One-step butyl application for easy install and reliable waterproofing

DIFFERENT CLAMPS FOR DIFFERENT NEEDS

- Universal AF mid clamps and end clamps adjust to module heights from 30-46mm in a great looking, easy to install fastener
- Pro-series clamps feature hidden fasteners for fantastic aesthetics
- Standard clamps feature tight row spacing and various clamps to accommodate module frames up to 51mm in height

OPTIONS FOR ANY APPLICATION

- Solarmount Standard and Solarmount Light rails profiles for installations across the country, including Puerto Rico
- Huge selection of attachments for any roof form comp shingle to tile
- Adjustable tilt legs certified to UL2703 to dial in your system just right



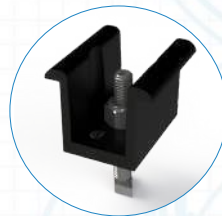
UNIVERSAL END CLAMP



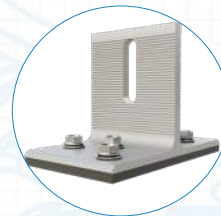
UNIVERSAL MID CLAMP



CONCEALED SM
END CLAMP



SM PRO SERIES
MID CLAMP



SOLARMOUNT
BUTYL



SOLARMOUNT PROFILE
AND LIGHT PROFILE

WHY SOLARMOUNT?

SOLARMOUNT is the professionals' choice for residential PV mounting applications. Every aspect of the system is designed for an easier, faster installation experience. SOLARMOUNT is a complete solution with universal clamps, tons of attachment options, full system UL 2703 certification, and 25-year warranty. Sleek rails for both light and heavy duty applications, with optional trim, make for a reliable, cost-effective, great looking racking solution.