



Town of Erwin
Zoning Application & Permit
 Planning & Inspections Department

Permit #
24-0184

Rev Sep2014

Each application should be submitted with an attached plot/site plan with the proposed use/structure showing lot shape, existing and proposed buildings, parking and loading areas, access drives and front, rear, and side yard dimensions.

Name of Applicant	Freedom Forever LLC	Property Owner	Geoffrey Stoddard
Home Address	902 Purser Dr	Home Address	600 Warren rd
City, State, Zip	Raleigh NC 27603	City, State, Zip	Erwin, NC 28339
Telephone	757-812-4077	Telephone	910-389-0043
Email	permitsraleigh@freedomforever.com	Email	geoffreystoddard@gmail.com

Address of Proposed Property		600 Warren	
Parcel Identification Number(s) (PIN)		Estimated Project Cost	106,946
What is the applicant requesting to build / what is the proposed use of the subject property? Be specific.		Installing 62 roof mounted solar panels with battery backup	
Description of any proposed improvements to the building or property			
What was the Previous Use of the subject property?			
Does the Property Access DOT road?			
Number of dwelling/structures on the property already		Property/Parcel size	
Floodplain SFHA <u> </u> Yes <u> </u> No	Watershed <u> </u> Yes <u> </u> No	Wetlands <u> </u> Yes <u> </u> No	
MUST circle one that applies to property		Existing/Proposed Septic System Or	
		Existing/Proposed County/City Sewer	

Owner/Applicant Must Read and Sign

The undersigned property owner, or duly authorized agent/representative thereof certifies that this application and the forgoing answers, statements, and other information herewith submitted are in all respects true and correct to the best of their knowledge and belief. The undersigning party understands that any incorrect information submitted may result in the revocation of this application. Upon issuance of this permit, the undersigning party agrees to conform to all applicable town ordinances, zoning regulations, and the laws of the State of North Carolina regulating such work and to the specifications of plans herein submitted. The undersigning party authorizes the Town of Erwin to review this request and conduct a site inspection to ensure compliance to this application as approved.

Aleyce Cullen	<i>Aleyce Cullen</i>	6/27/24
Print Name	Signature of Owner or Representative	Date

For Office Use

Zoning District	R-10	Existing Nonconforming Uses or Features	NA
Front Yard Setback	35 Ft	Other Permits Required	<input type="checkbox"/> Conditional Use <input checked="" type="checkbox"/> Building <input type="checkbox"/> Fire Marshal <input type="checkbox"/> Other
Side Yard Setback	10 Ft	Requires Town Zoning Inspection(s) <input type="checkbox"/> Foundation <input type="checkbox"/> Prior to C. of O.	
Rear Yard Setback	35 Ft	Zoning Permit Status	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied
		Fee Paid: \$75	Date Paid: Staff Initials:

Comments	Trades from Homebbs County
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Signature of Town Representative: <i>[Signature]</i>	Date Approved/Denied: 6/27/2024
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Freedom Forever
Planset Revision Letter

6/7/2024
REV #1

Attn. County of Harnett (NC):

The changes outlined in Revision Details have been applied to the plans corresponding to the following customer:

GEOFFREY STODDARD
600 WARREN ROAD, ERWIN, NC 28339

Revision Details:

- Added (3) Tesla powerwall batteries, (4) in total, for whole home backup.
- Added generation sources disconnects.
- Framing and attachment specifications revised as reflected on PV-3.

All corresponding changes are notated on the plans by revision clouds.

Thank you for your time in reviewing these plans. Please reach out if you have any additional questions or concerns.

Construction Engineering
Freedom Forever
engineering@freedomforever.com

ROOF MOUNT PHOTOVOLTAIC SYSTEM

CONSTRUCTION NOTES:

- CONDUIT AND CONDUCTOR SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.
- ALL SOLAR ENERGY SYSTEM EQUIPMENT SHALL BE SCREENED TO THE MAXIMUM EXTENT POSSIBLE AND SHALL BE PAINTED A COLOR SIMILAR TO THE SURFACE UPON WHICH THEY ARE MOUNTED.
- MODULES SHALL BE TESTED, LISTED AND IDENTIFIED WITH FIRE CLASSIFICATION IN ACCORDANCE WITH UL 2703. SMOKE AND CARBON MONOXIDE ALARMS ARE REQUIRED PER SECTION R314 AND 315 TO BE VERIFIED AND INSPECTED BY INSPECTOR IN THE FIELD.
- DIG ALERT (811) TO BE CONTACTED AND COMPLIANCE WITH EXCAVATION SAFETY PRIOR TO ANY EXCAVATION TAKING PLACE
- PHOTOVOLTAIC SYSTEM GROUND WILL BE TIED INTO EXISTING GROUND AT MAIN SERVICE FROM DC DISCONNECT/INVERTER AS PER 2017 NEC SEC 250.166(A).
- SOLAR PHOTOVOLTAIC SYSTEM EQUIPMENT WILL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF ART. 690 OF THE 2017 NEC
- THE MAIN SERVICE PANEL WILL BE EQUIPPED WITH A GROUND ROD OR UFER
- UTILITY COMPANY WILL BE NOTIFIED PRIOR TO ACTIVATION OF THE SOLAR PV SYSTEM
- SOLAREGE OPTIMIZERS ARE LISTED TO IEC 62109-1 (CLASS II SAFETY) AND UL 1741 STANDARDS
- INSTALL CREW TO VERIFY ROOF STRUCTURE PRIOR TO COMMENCING WORK. EMT CONDUIT ATTACHED TO THE ROOF USING CONDUIT MOUNT.

CODES:

- THIS PROJECT COMPLIES WITH THE FOLLOWING:
- 2018 NORTH CAROLINA BUILDING CODE
- 2018 NORTH CAROLINA RESIDENTIAL CODE
- 2018 NORTH CAROLINA PLUMBING CODE
- 2018 NORTH CAROLINA MECHANICAL CODE
- 2018 NORTH CAROLINA FUEL GAS CODE
- 2017 NATIONAL ELECTRICAL CODE
- AS ADOPTED BY COUNTY OF HARNETT

VICINITY MAP:



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XIAOJIA N XIE
Digitally signed
by XIAOJIAN XIE
Date: 2024.06.08
08:53:42 -04'00'

CLIENT:
GEOFFREY STODDARD
600 WARREN ROAD, ERWIN, NC 28338
AHL: COUNTY OF HARNETT
UTILITY: DUKE ENERGY
METER: 329 524 333
ADDRESS: 10100 WOODWAY
PHONE: 910 384 0043
EMAIL: GEOFFREYSTODDARD@GMAIL.COM

SYSTEM:
SYSTEM SIZE (DC): 62 X 395 = 23,870 KW
INVERTER: 2 X SOLAREGE SE1000H-USRGM
MODULES: 62 X JINKO SOLAR
OPTIMIZERS: 62 X SOLAREGE S40
INVERTER 1: SOLAREGE SE1000H-USRGM
INVERTER 2: SOLAREGE SE1000H-USRGM
[SH]
BATTERY: 4 X TESLA POWERWALL 2

NO.	REVISIONS	DATE
1	J.R.L.	02/2024



FREEDOM FOREVER LLC
415 INDUSTRIAL CT., GREER, SC 29615
Tel: (800) 385-1075

GREG ALBRIGHT

Greg Albright

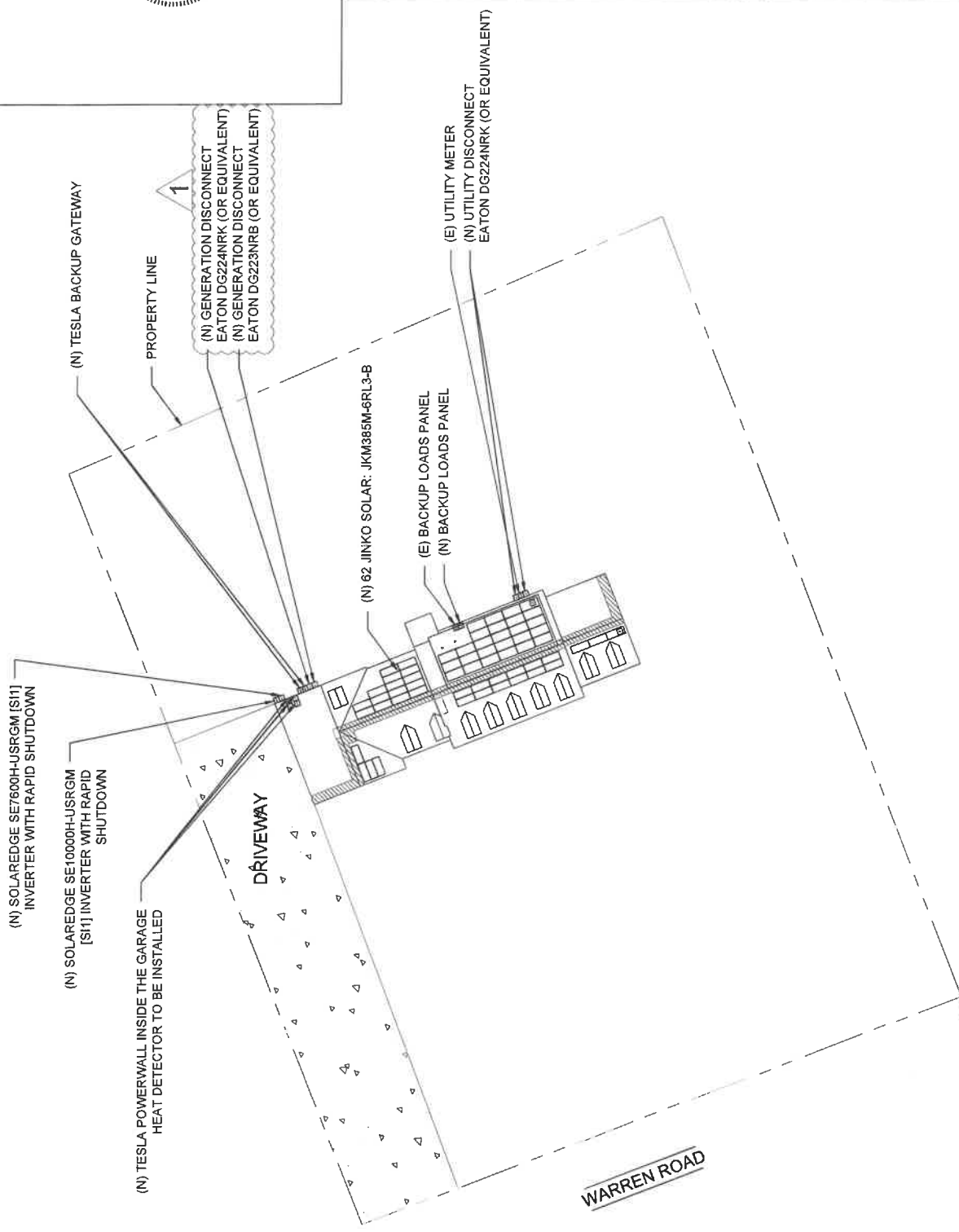
CONTRACTOR LICENSE
ELECTRICAL CONTRACTOR UJ3640

JOB NO: 397887 DATE: 6/7/2024 DESIGNED BY: J.R.L. SHEET: PV-1



LEGEND:

	CHIMNEY
	PIPE VENT
	MODULES
	CONDUIT
	SETBACK
	UTILITY METER
	JUNCTION BOX
	INVERTER
	TESLA BACKUP GATEWAY 2
	MAIN SERVICE PANEL



ROOF AREA: 5590.33 SQ FT

CLIENT:
 GEOFFREY STODDARD
 600 WARREN ROAD, ERWIN, NC 28639
 AHL, COUNTY OF HARNETT
 100 ENERGY
 METER, 320 USA
 APN: 060597 0201
 PHONE: (910) 369-4043
 EMAIL: GEOFFREYSTODDARD@3MAIL.COM

SYSTEM:
 SYSTEM SIZE (DC): 62 X 385 = 23,870 MW
 SYSTEM SIZE (AC): 17,600 MW @ 240V
 MODULES: 62 X JINKO SOLAR:
 JKM385M-6RL3-B
 CAPACITORS: 2 X SOLAREGE 6449
 INVERTER 1: SOLAREGE SE7600H-USRGM
 [S11]
 INVERTER 2: SOLAREGE SE10000H-USRGM
 [S11]
 BATTERY: 4 X TESLA POWERWALL 2

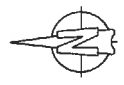
REVISIONS		DATE
NO.	REVISED BY	DATE
1	J.R.L.	8/3/2024

freedom
 7511111

FREEDOM FOREVER LLC
 415 INDUSTRIAL CT., GREER, SC 29681
 TEL: (800) 385-1075
 GREG ALBRIGHT

CONTRACTOR LICENSE:
 ELECTRICAL CONTRACTOR U.3443

SITE PLAN		SHEET
JOB NO.	DATE	DESIGNED BY
307967	8/2/2024	J.R.L.



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

1



ROOF AREA: 5590.93 SQ FT

CLIENT:
 GEOFFREY STODDARD
 600 WARREN ROAD, ERWIN, NC 28339
 A/H: COUNTY OF HARNETT
 UTILITY: DUKE ENERGY
 METER: 329 524 333
 ADDRESS: 2000 W. HUNTER
 PHONE: (910) 883-0043
 EMAIL: GEOFFREY@STODDARD.COM

SYSTEM:
 SYSTEM SIZE (DC): 92 X 366 - 23,870 MW
 SYSTEM SIZE (AC): 120 X 366 - 23,870 MW
 MODULES: 92 X 366 INKGO SOLAR
 JUNCTION BOX: JMB366N-4R1.3-B
 OPTIMIZERS: 92 X 366 SOLAREDDGE S40
 INVERTER: 1: SOLAREDDGE SE7600H-USRGM
 INVERTER: 2: SOLAREDDGE SE10000H-USRGM [S11]
 BATTERY: 4 X TESLA POWERWALL 2

REVISIONS		DATE
NO.	REVISION BY	
1	J.R.L.	02/20/24
-	-	-
-	-	-



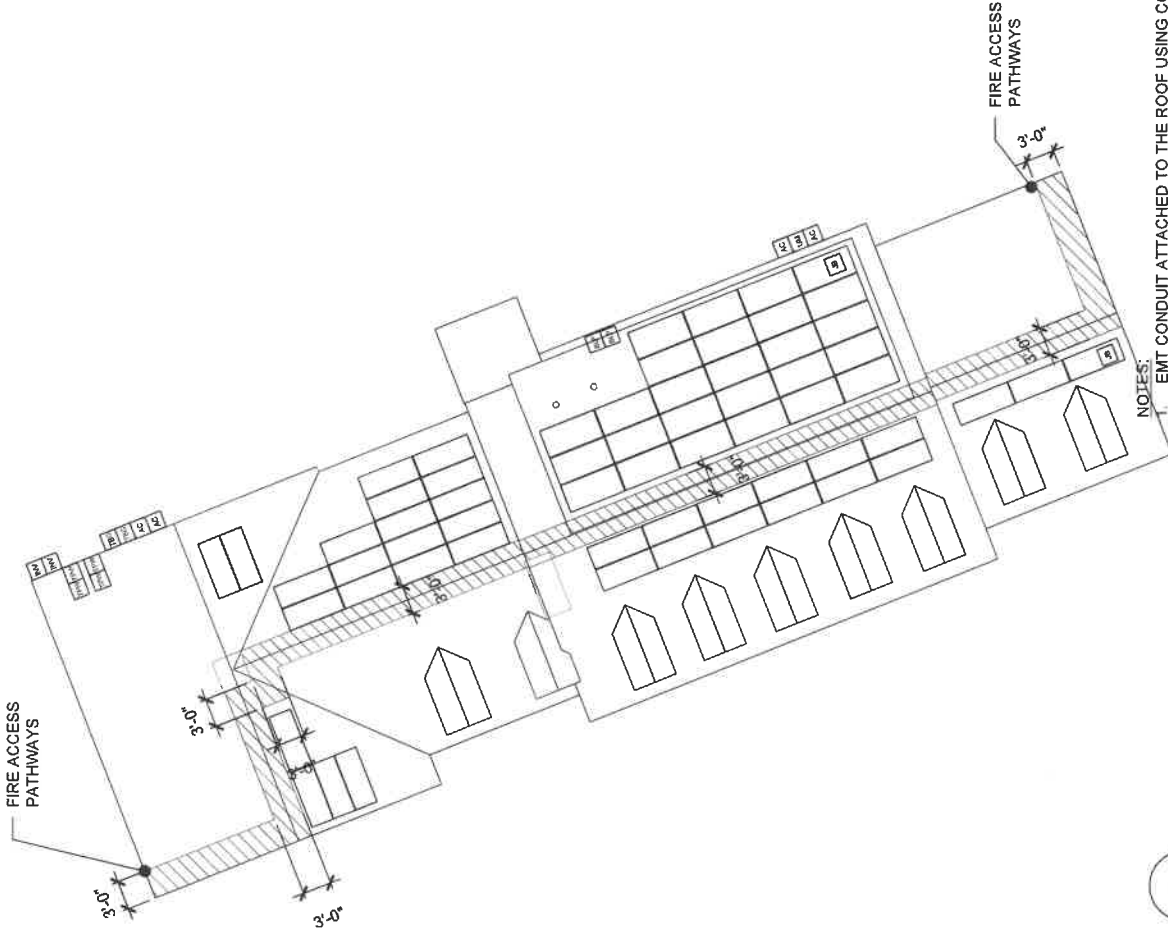
FREEDOM FOREVER LLC
 415 INDUSTRIAL CT., GREER, SC 29615
 Tel: (800) 366-1075

GREG ALBRIGHT

Greg Albright

CONTRACTOR LICENSE:
 ELECTRICAL CONTRACTOR UJ4649

ROOF PLAN WITH MODULES LAYOUT	DESIGNED BY:	J.R.L.	SHEET:	P1/2A
JOB NO:	DATE:	07/2024		



NOTES:

- EMT CONDUIT ATTACHED TO THE ROOF USING CONDUIT MOUNTS
- ATTACHED CLAMPS AT 25% FROM THE EDGE AND 50% FROM THE CENTER OF THE MODULES
- JUNCTION BOX IS MOUNTED TO THE RAIL.

LEGEND:

	CHIMNEY
	PIPE VENT
	MODULES
	CONDUIT
	SETBACK
	UTILITY METER
	JUNCTION BOX
	INVERTER
	TESLA BACKUP GATEWAY 2
	MAIN SERVICE PANEL

TOTAL ROOF AREA: 5590.93 SQ FT
 TOTAL ARRAY AREA: 1273.87 SQ FT
 ARRAY COVERAGE: 22.78%
 SYSTEM DISTRIBUTED WEIGHT: 2.29 LBS
 ROCKIT SMART SLIDE POINT-LOAD: 28.83 LBS



ROOF PLAN

SCALE: 2/25" = 1'-0"

1

ROOF DETAILS:

TOTAL ROOF AREA: 5590.93 SQ FT
 TOTAL ARRAY AREA: 1273.87 SQ FT
 ARRAY COVERAGE: 22.78%
 SYSTEM DISTRIBUTED WEIGHT: 2.29 LBS
 ROCKIT SMART SLIDE POINT-LOAD: 28.83 LBS



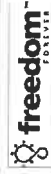
ROOF AREA STATEMENT

ROOF	MODULE QUANTITY	ROOF PITCH	ARRAY PITCH	AZIMUTH	ROOF AREA	ARRAY AREA
ROOF 1	4	45	45	159	550 SQ FT	82.19 SQ FT
ROOF 2	15	45	45	69	552 SQ FT	308.19 SQ FT
ROOF 3	26	28	28	69	780 SQ FT	534.2 SQ FT
ROOF 4	12	45	45	249	967 SQ FT	246.56 SQ FT
ROOF 5	3	45	45	249	369 SQ FT	61.64 SQ FT
ROOF 6	2	45	45	459	550 SQ FT	41.09 SQ FT
---	---	---	---	---	SQ FT	SQ FT
---	---	---	---	---	SQ FT	SQ FT
---	---	---	---	---	SQ FT	SQ FT
---	---	---	---	---	SQ FT	SQ FT

CLIENT:
 GEOFFREY STODDARD
 600 WARREN ROAD, ERWIN, NC 28339
 A/E: COUNTY OF HARNETT
 UTILITY: DUKE ENERGY
 MAILING ADDRESS:
 APN: 062677001
 PHONE: (810) 355-0043
 EMAIL: GEOFFREYSTODDARD@GMAIL.COM

SYSTEM:
 SYSTEM SIZE (DC): 62 X 385 = 29,870 MW
 SYSTEM SIZE (AC): 17,600 kW @ 240V
 MODULES: 66 X JINKO SOLAR
 JKH185M4R1.3-B
 OPERATORS: 62 X SOLAREXGE S440
 INVERTER 1: SOLAREXGE SE1000H-USRGM
 INVERTER 2: SOLAREXGE SE1000H-USRGM
 BATTERY: 4 X TESLA: POWERWALL 2

NO.	REVISIONS	DATE
1	J.R.L.	03/2024



FREEDOM FOREVER LLC
 415 INDUSTRIAL CT., GREER, SC 29615
 TEL: (800) 385-1075
 GREG ALBRIGHT

Greg Albright

CONTRACTOR LICENSE:
 ELECTRICAL CONTRACTOR U134043

JOB NO.	DATE:	DESIGNED BY:	SHEET:
397897	07/2024	J.R.L.	PA-2B



CLIENT:
 GEOFFREY STODDARD
 600 WARREN ROAD, ERWIN, NC 28339
 A/H: COUNTY OF HARNETT
 UTILITY: DUKE ENERGY
 METER: 328324333
 PHONE: (810) 388-0043
 EMAIL: GEOFFREYSTODDARD@GMAIL.COM

SYSTEM:
 INVERTER: 4X SOLAREDDGE SE1000H-USRGM
 OPTIMIZERS: 82X SOLAREDDGE S440
 JAM385M4R1.3-B
 MODULES: 82X JINKO SOLAR
 SYSTEM SIZE (AC): 17,400 MW @ 240V
 SYSTEM SIZE (DC): 85 X 395 - 33,870 MW
 BATTERY: 4X TESLA POWERWALL 2

NO.	J.R.L.	REVISIONS	DATE
1	J.R.L.	REVISED BY	8/22/24

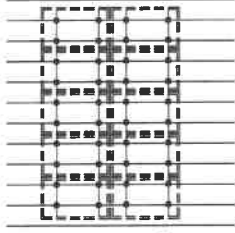


FREEDOM FOREVER LLC
 415 INDUSTRIAL CT., GREER, SC 29651
 TEL: (800) 395-1075
 GREG ALBRIGHT

Greg Albright

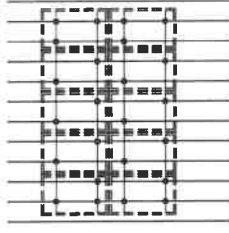
CONTRACTOR LICENSE:
 ELECTRICAL CONTRACTOR 0394043

JOB NO:	DATE:	DESIGNED BY:	SHEET:
381897	8/7/2024	J.R.L.	P43



STACKED DETAIL

For illustration purposes only



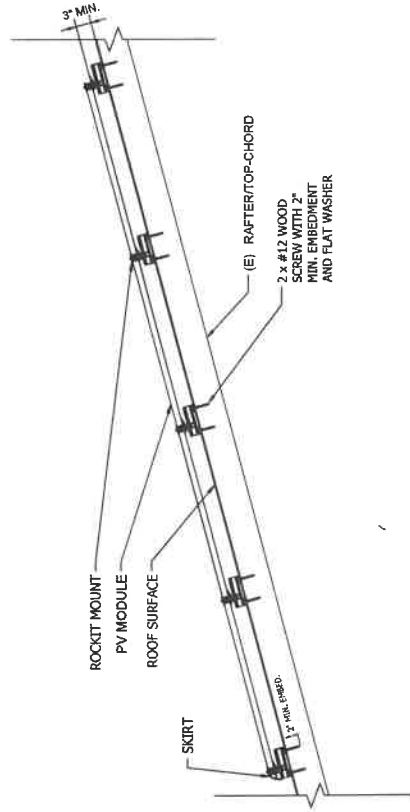
STAGGERED DETAIL

For illustration purposes only

TABLE 1 - ARRAY INSTALLATION

ROOF PITCH	ROOFING TYPE	ATTACHMENT TYPE	FRAMING TYPE	MAX UNBRACED LENGTH(FT.)	STRUCTURAL ANALYSIS RESULT	PENETRATION PATTERN	MAX ATTACHMENT SPACING (IN.)	MAX RAIL OVERHANG (IN.)
ROOF 1 45	Comp Shingle	Ecofasten Rockit Smart Slide	2x8 @ 16" O.C.	7	PASS	STAGGERED	64	21,33333
ROOF 2 45	Comp Shingle	Ecofasten Rockit Smart Slide	2x8 @ 16" O.C.	7	PASS	STAGGERED	64	21,33333
ROOF 3 28	Comp Shingle	Ecofasten Rockit Smart Slide	2x8 @ 16" O.C.	7	PASS	STAGGERED	64	21,33333
ROOF 4 45	Comp Shingle	Ecofasten Rockit Smart Slide	2x8 @ 16" O.C.	7	PASS	STAGGERED	64	21,33333
ROOF 5 45	Comp Shingle	Ecofasten Rockit Smart Slide	2x8 @ 16" O.C.	7	PASS	STAGGERED	64	21,33333
ROOF 6 45	Comp Shingle	Ecofasten Rockit Smart Slide	2x8 @ 16" O.C.	7	PASS	STAGGERED	64	21,33333

1. CONTRACTOR TO VERIFY FRAMING TYPE AND MAX UNBRACED LENGTH PRIOR TO INSTALLATION. IF THE ABOVE INFORMATION DOES NOT MATCH FIELD CONDITIONS, NOTIFY ENGINEER OF RECORD IMMEDIATELY.
 2. WHERE COLLAR TIES OR RAFTER SUPPORTS EXIST, CONTRACTOR SHALL USE RAFTERS WITH COLLAR TIES AS ATTACHMENT POINTS.

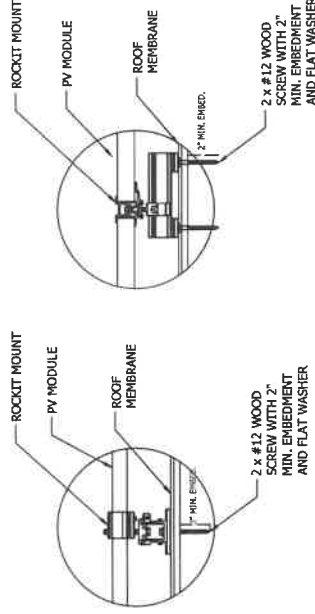


SOLAR PV ARRAY SECTION VIEW

Scale: NTS

ATTACHMENT DETAIL

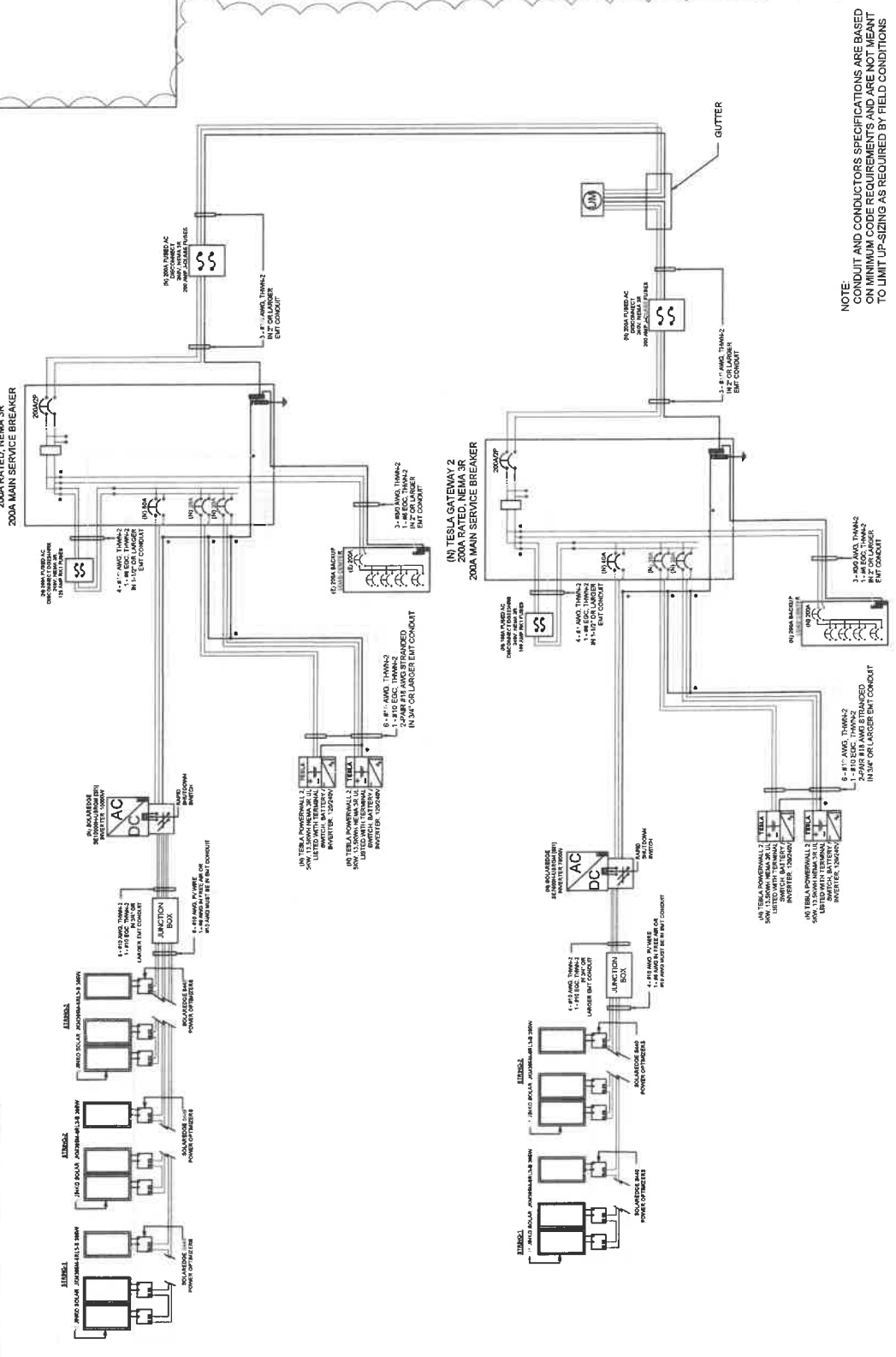
Scale: NTS



MOUNTING DETAILS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
381897	8/7/2024	J.R.L.	P43

BACKFEED BREAKER SIZING			
MAX. CONTINUOUS OUTPUT 32,00A @ 240V			
32	X	1.25	= 40.00AMPS
40A	BREAKER	-	OK
42	X	1.25	= 52.50AMPS
60A	BREAKER	-	OK
MSP IN COMPLIANCE WITH SUM OF BREAKERS			
NEC 705.12(B)(3)			



NOTE:
CONDUIT AND CONDUCTORS SPECIFICATIONS ARE BASED
ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT
TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS

CLIENT:
GEOFFREY STODDARD
500 WARREN ROAD, ERWIN, NC 28339
HAY COUNTY OF HARRNETT
1000 W. STATE ST.
METER: 329 524 313
APN: 060597 0201
PHONE: (910) 389-0043
EMAIL: GEOFFREYSTODDARD@GMAIL.COM

SYSTEM:
SYSTEM SIZE (DC): 62 X 395 = 24,870 KW
MODULES SIZE (AC): 17,600 KW @ 240V
MODULES: 62 X JINKO SOLAR
JINKO SOLAR 330
INVERTER 1: SOLAREGDE SE7500H-USRGM
INVERTER 2: SOLAREGDE SE10000H-USRGM
BATTERY: 4 X TESLA: POWERWALL 2

NO.	REVISIONS	REVISED BY	DATE
1	J.R.L.		03/2024



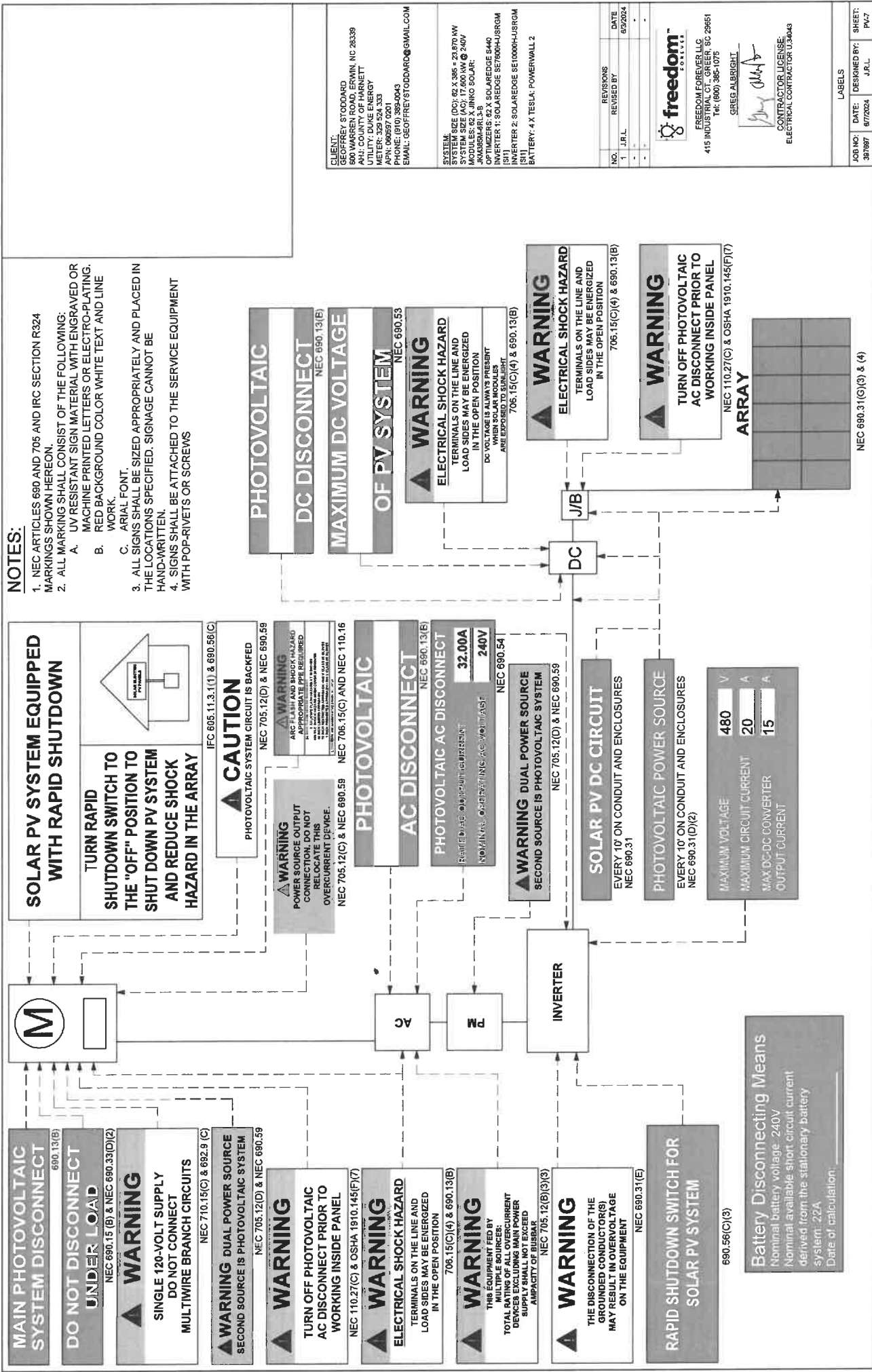
FREEDOM FOREVER LLC
415 INDUSTRIAL CT., GREER, SC 29615
TEL: (803) 368-1075

GREG ALBRIGHT
CONTRACTOR LICENSE:
ELECTRICAL CONTRACTOR U.34043

JOB NO.	DATE	DESIGNED BY	SHEET
297897	07/2024	J.R.L.	PN-4

NOTES:

1. NEC ARTICLES 690 AND 705 AND IRC SECTION R324 MARKINGS SHOWN HEREON.
2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
 - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
 - B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
 - C. ARIAL FONT.
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED. SIGNAGE CANNOT BE HAND-WRITTEN.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS



CLIENT:
 GEOFFREY STODDARD
 800 WARREN ROAD, ERWIN, NC 28338
 UTILITY: DUKE ENERGY
 METER: 329 524 333
 PHONE: (810) 384-0043
 EMAIL: GEOFFREYSTODDARD@GMAIL.COM

SYSTEM:
 SYSTEM SIZE (DC): 62.4 KW, 23,870 KW
 SYSTEM SIZE (AC): 40.0 KW @ 240V
 MODULES: 62 X HINKO SOLAR JMK9550-ARL5-B
 OPTIMIZERS: 62 X SOLAREDGE SE700H-USRGM
 INVERTER 1: SOLAREDGE SE700H-USRGM
 INVERTER 2: SOLAREDGE SE1000H-USRGM (S1)
 BATTERY: 4 X TESLA POWERWALL 2

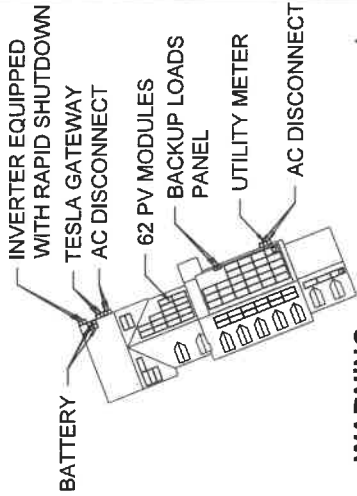
NO.	REVISIONS	DATE
1	J.R.L.	6/2/2024

freedom
 ENERGY
 FREEDOM FOREVER LLC
 415 INDUSTRIAL CT., GREER, SC 29615
 Tel: (800) 365-1075
 GREG ALBRIGHT
 CONTRACTOR LICENSE
 ELECTRICAL CONTRACTOR U.S.6403

JOB NO: 381897
DATE: 6/7/2024
DESIGNED BY: J.R.L.
SHEET: P4/7

CAUTION:

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



WARREN ROAD

WARNING
 TURN OFF PHOTOVOLTAIC AC DISCONNECT
 PRIOR TO WORKING INSIDE PANEL

NOTES:

1. NEC ARTICLES 690 AND 705 AND IRC SECTION R324 MARKINGS SHOWN HEREON.
2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
 - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
 - B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
 - C. AERIAL FONT.
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED. SIGNAGE CANNOT BE HAND-WRITTEN.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS.

CLIENT:
 GEOFFREY TODDARD
 500 WARREN ROAD, ERWIN, NC 28339
 HUNTER COUNTY OF HARNETT
 1711 COUNTRY CLUB DRIVE
 METTER, 28554-3333
 APN: 060597 0201
 PHONE: (910) 389-0043
 EMAIL: GEOFFREYTODDARD@GMAIL.COM

SYSTEM:
 SYSTEM SIZE (DC): 62 X 385 = 23,870 KW
 SYSTEM SIZE (AC): 17,400 KW @ 240V
 MODULES: 62 X JINKO SOLAR
 JINKO MONO-385
 INVERTER: 2 X SOLAREDOGE S440
 INVERTER 1: SOLAREDOGE SE7600H-USRGM
 (811)
 INVERTER 2: SOLAREDOGE SE10000H-USRGM
 (811)
 BATTERY: 4 X TESLA: POWERWALL 2

REVISIONS		DATE
NO.	REVISED BY	
1	J.R.L.	6/2/2024



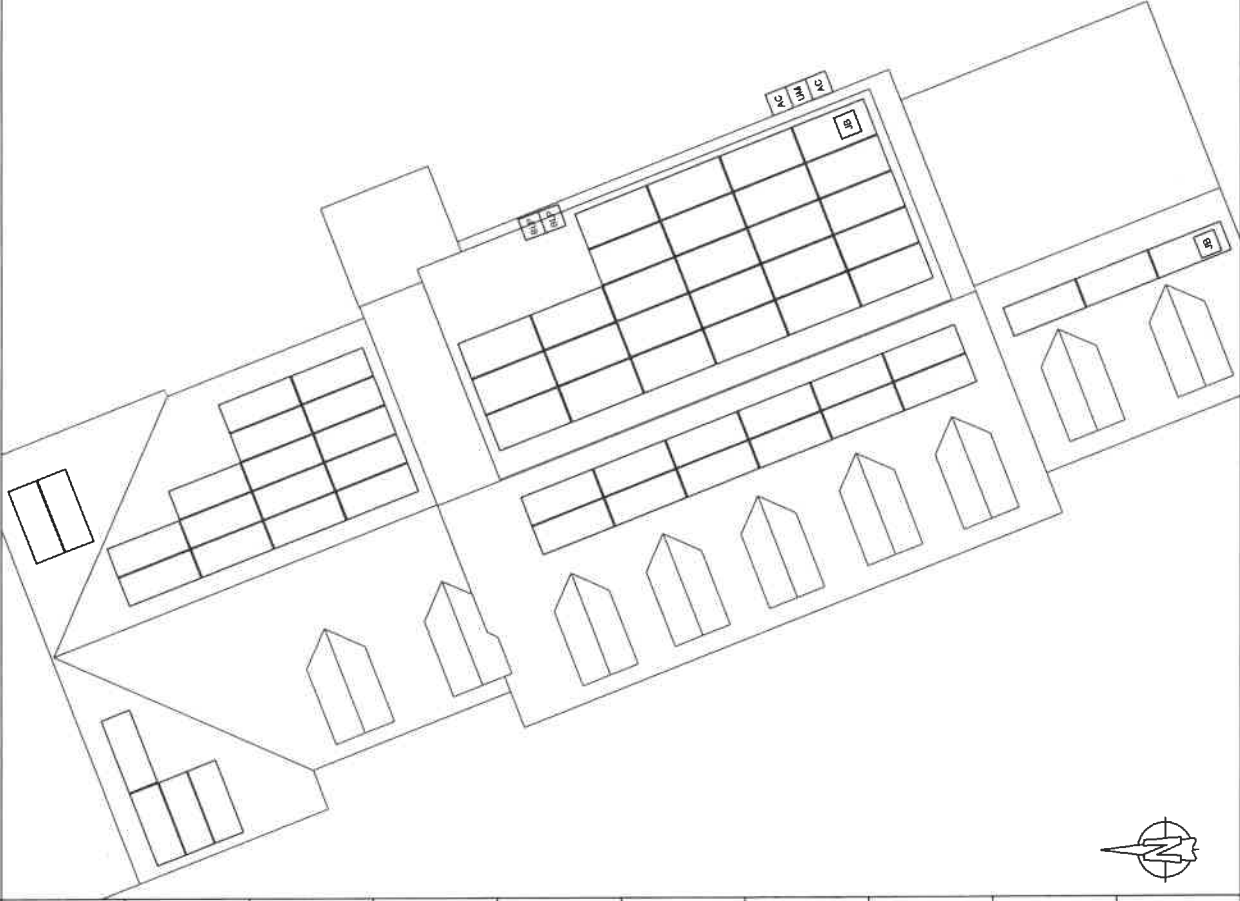
FREEDOM FOREVER LLC
 415 INDUSTRIAL CT., GREER, SC 29615
 PH: (803) 386-1075

GREG ALBRIGHT

CONTRACTOR LICENSE:
 ELECTRICAL CONTRACTOR UJ34048

SITE PLACARD		SHEET
JOB NO:	DATE:	DESIGNED BY:
357857	6/7/2024	J.R.L.
		PL-7A

SOLAREDDGE OPTIMIZER CHART



	1-10	11-20	21-30	31-40	41-50	51-60
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

CLIENT:
 GREG STODDARD
 600 WARREN ROAD, ERWIN, NC 28339
 A-H: COUNTY OF HARNETT
 UTILITY: DUKE ENERGY
 METER: 329.524.333
 APR: 06/26/17 0201
 TEL: 704.333.0943
 EMAIL: GREGSTODDARD@GMAIL.COM

SYSTEM:
 SYSTEM SIZE (DC): 62 X 368 = 23,470 MW
 INVERTER: 4 X SUNPOWER SP150
 MODULES: 62 X JINKO 360 LR
 JK335M4RLL3B
 OPTIMIZERS: 62 X SOLAREDDGE S440
 INVERTER 1: SOLAREDDGE SE7000H-USRGM
 INVERTER 2: SOLAREDDGE SE10000H-USRGM
 [SH1]
 BATTERY: 4 X TESLA POWERWALL 2

NO.	REVISIONS	DATE
1	J.R.L.	6/22/24

freedom
 POWER
 FREEDOM FOREVER LLC
 415 INDUSTRIAL CT., GREER, SC 29615
 Tel: (803) 395-1075
 GREG ALBRIGHT
 CONTRACTOR LICENSE
 ELECTRICAL CONTRACTOR U.3403

JOB NO.	DATE:	DESIGNED BY:	SHEET:
307897	6/22/24	J.R.L.	PV-6

OPTIMIZER CHART

JOB HAZARD ANALYSIS

Crew leader to fill out all sections below, hold a pre-job safety meeting with all personnel, and upload this completed document and the Safety Plan to Site Capture

- Crew leader responsible for communication with the client:
 - Client and public is excluded from work area by barricades (N/A, Yes, No):
- Training, and Pre-Job Safety Briefing**
- All employees onsite shall be made aware of the specific hazards of this project and review this HJA during a pre-job briefing, and their signature indicates awareness of site conditions and the plan to eliminate any hazards identified prior to and during the project.
- Crew leader (name/title):
 - Crew member (name/title):
 - Crew member (name/title):
 - Crew member (name/title):
 - Crew member (name/title):
 - Crew member (name/title):

- Ladder Access**
- Ladders must be inspected before each use.
 - Extension ladders must be set up on a firm and level surface at a 4-to-1 rise to run angle (or 75 degrees) and the top must be secured to the structure. Extension style ladders placed on uneven, loose or slippery surfaces must additionally have the base firmly anchored or lashed so the base will not slip out.
 - Extension ladders must be used with walk-through devices or the ladder must extend 36" above the stepping off point.
 - A-frame ladders must only be climbed with the ladder spreader bars locked in the open position; A-frame ladders shall not be climbed while in the closed position (ex. closed and used while leaned against a structure).
 - Additional notes:
- Mobile Equipment**
- Only Qualified operators will operate equipment; operators must maintain a certification on their person for the equipment being operated.
 - Type(s) of mobile equipment (Type/Make/Model):
 - Qualified operator(s):
- Material Handling and Storage**
- Materials will be staged/stored in a way that does not present a hazard to client, personnel or public. Materials stored on the roof will be physically protect from falling or sliding off.

- Fall Protection**
- A site-specific plan for fall prevention and protection is required prior to starting work and must remain onsite at all times until work is complete; a fall rescue plan must be outlined and discussed among the crew prior to work start.
 - First-person-Up (FPU) must install their anchor and connect before any other task, including installing other anchors. The Last-Person-Down (LPD) must be the only person on a roof/uninstalling fall protection.
 - FPCP (name and title):
 - FPU and LPD (name and title):
- Electrical Safety**
- The Electrical Qualified Person (EQP) is required onsite to perform electrical work.
 - All electrical work will be performed with equipment in an electrically safe condition (de-energized) unless approval has been granted prior to work.
 - Service drops and overhead electrical hazards will be identified and protected from contact, as necessary.
 - EQP (name and title):
- Public Protection**
- The safety of the Client and Public must be maintained at all times.
 - The Client and the Public shall be prevented from entering the work zone through the use of barriers and/or signage, as required.
 - Company, Client and Public property shall be protected from falling objects.
 - Pets (including dogs) shall be secured by their owners prior to work start.
 - The Client should not leave pets, family members, or others in charge or care of Employees, Contractors, or Temporary Workers.

- Weather and Environment**
- The site supervisor shall forecast the weather conditions at the job site, prior to crew arrival, in order to mitigate any hazards associated with inclement weather (heat, cold, wind, rain, etc.)
 - The site supervisor will utilize a portable wind meter (anemometer) to verify actual onsite wind conditions, by checking at the ground and on any elevated work surface (ex. rooftop) prior to work start, at midday and prior to solar panel staging on a roof.
 - Elevated work involving the moving or maneuvering of solar panels shall cease at 25mph (sustained wind) until wind subsides.
 - Forecasted weather maximum temp (degrees f):

- Restroom facilities**
- Employees shall have access to restroom facilities with hand-washing stations. Use of onsite restroom is at the client's discretion (location is annotated below). If client does not give permission, location of suitable restroom facilities with hand-washing stations onsite will be provided. The onsite supervisor will identify location and make arrangements to ensure all employees have access at any point.
 - Restroom facilities will be (circle one): Onsite - Offsite
 - If Offsite, add location name and address:
- Incident Reporting Procedure**
- Contact your Site Supervisor Name:
 - Phone:
 - Contact your Manager Name:
 - Phone:
 - Contact your Site Supervisor Name:
 - Phone:

- Heat Related Illness Prevention**
- Employees shall have access to potable drinking water that is fresh, pure, and suitably cool. The water shall be located as close as practicable to the areas where employees are working. Water shall be supplied in sufficient quantity at the beginning of the work shift to provide at least one quart per employee per hour for drinking for the entire shift. Employees may begin the shift with smaller quantities of water, if they identify the location and have effective means for replenishment during the shift to allow employees to drink on quart or more per hour. The frequent drinking of water shall be encouraged.
 - Shade shall be present when temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work exceeds 80 degrees Fahrenheit, employees shall have and maintain one or more areas with shade at all times.
 - New employees must be acclimatized. New employees will be monitored by their Crew Leader (site supervisor) for the first two (2) weeks of employment or longer when necessary.
 - Employees will be allowed and encouraged to implement scheduled breaks during each shift. Employees must take cool-down breaks in the shade any time they feel the need to do so to protect them from overheating. Supervisors are REQUIRED to allow employees any break period they need during high heat conditions.
 - Cool Vests are encouraged for all employees at all times during periods of high heat.
 - Identify the location of the closest Occupational/Industrial Clinic or Hospital in case a crew member becomes ill.
- What is the specific plan to provide and replenish sufficient water for all employees on site?
- If onsite replenish is necessary, where will you go to replenish water (location/address):
 - Who will replenish the drinking water (name):

NOTE ADDITIONAL HAZARDS NOT ADDRESSED ABOVE (add as many as necessary by using additional sheets)

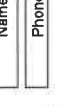
Define the Hazard:	Method/steps to prevent incident:

CLIENT:
 GREGORY STODDARD
 800 WARREN ROAD, ERWIN, NC 28539
 AHI, COUNTY OF HARNETT
 UTILITY, DUKE ENERGY
 METER: 329 524 933
 PHONE: (703) 398-0043
 EMAIL: GREGFREYSTODDARD@GMAIL.COM

SYSTEM:
 SYSTEM SIZE (DC): 62 X 385 = 23,870 kW
 INVERTER: 62 X 385 @ 240V
 MODULES: 62 X JINKO SOLAR
 OPTIMIZERS: 62 X SOLAREDOGE S440
 INVERTER 1: SOLAREDOGE SEF000H4US18GM
 INVERTER 2: SOLAREDOGE SEF000H4US18GM
 [S11]
 BATTERY: 4 X TESLA: POWERWALL 2

NO.	J.R.L.	REVISIONS	DATE
1			6/2/2024

freedom
 FOREVER LLC
 415 INDUSTRIAL CT., GREER, SC 29615
 Tel: (800) 395-1075

GREG ALBRIGHT

 ELECTRICAL CONTRACTOR U.34043

JOB NO: 387897
DATE: 6/7/2024
DESIGNED BY: J.R.L.
SAFETY PLAN
SHEET: PV-10

With: Your full name, phone number, office location, brief description of what happen and when.

FOR INSTALLATION REFERENCE ONLY

SCAN QR CODE TO ACCESS REFERENCE LINK

FREEDOM REFERENCES



INSTALL HOTLINE

PV INSTALLATION REFERENCES



ENPHASE



SOLAREEDGE



TESLA

BATTERY INSTALLATION REFERENCES



Enphase Storage Systems



SOLAREEDGE Storage Systems



TESLA Storage Systems



NON-BACKUP Battery Systems



Misc. Quick Guide








THE MOST DEPENDABLE SOLAR PRODUCT

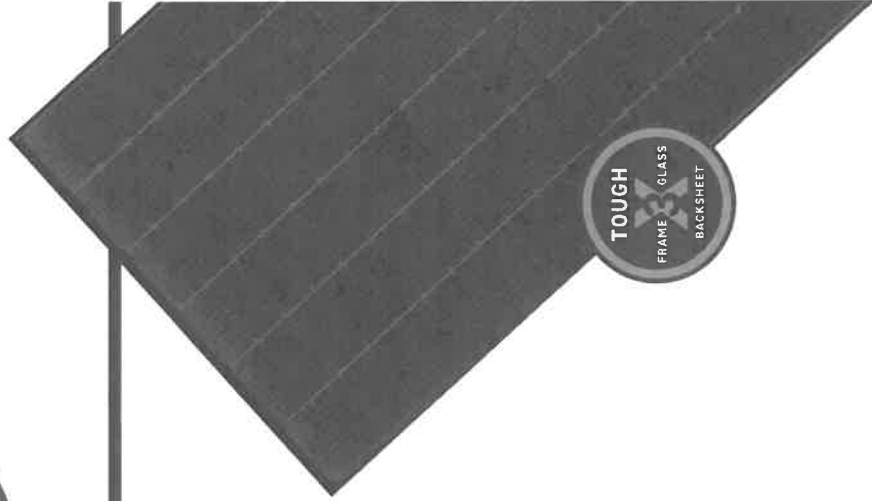
EAGLE 66TR G4 380-400 WATT TILING RIBBON MODULE

Positive power tolerance of 0-+3%

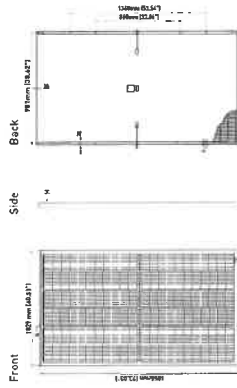
- NYSE-listed since 2010, Bloomberg Tier 1 manufacturer
- Top performance in the strictest 3rd party labs
- Premium solar factories in USA, Vietnam, and Malaysia

KEY FEATURES

-  **TR Technology**
Tiling Ribbon eliminates cell gaps to increase module efficiency and power.
-  **9BB Half Cell Technology**
Uniquely designed 9 busbar half cut solar cells deliver ultra-high power in a small footprint.
-  **Shade Tolerant**
Twin array design allows continued performance even with shading by trees or debris.
-  **Thick and Tough**
Fire Type I rated module engineered with a thick frame, 3.2mm front side glass, and thick backsheet for added durability.
-  **Leading Warranty**
25-year product and 25-year linear power warranty, 99% guaranteed first year, max 0.55% annual loss.



ENGINEERING DRAWINGS



MECHANICAL CHARACTERISTICS

No. of Cells	132 (2x66)
Dimensions	1855x1029x25mm (73.05x40.51x1.37 in)
Weight	21.5 kg (47.40 lbs)
Front Glass	3.2mm, Anti-Reflection Coating High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminum Alloy
Junction Box	IP67 Rated
Output Cables	12 AWG, 2053mm (80.83in) or Customized Length
Connector	Stäubli MCA
Fire Type	Type 1
Pressure Rating	5400Pa (Snow) & 7400Pa (Wind)

TEMPERATURE CHARACTERISTICS

Temperature Coefficients of P _{max}	-0.35%/°C
Temperature Coefficients of Voc	-0.28%/°C
Temperature Coefficients of Isc	0.048%/°C
Nominal Operating Cell Temperature (NOCT)	45 ± 2°C

MAXIMUM RATINGS

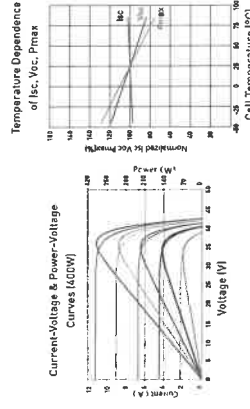
Operating Temperature (°C)	-40°C-+85°C
Maximum System Voltage	1000VDC
Maximum Series Fuse Rating	20A

PACKAGING CONFIGURATION

2 pallets = 1 stack; 20pcs/pallets, 40pcs/stack, 720pcs/40'HQ Container



ELECTRICAL PERFORMANCE & TEMPERATURE DEPENDENCE



ELECTRICAL CHARACTERISTICS

Module Type	JKM380M-4RL3-B		JKM385M-4RL3-B		JKM390M-4RL3-B		JKM395M-4RL3-B		JKM400M-4RL3-B	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (P _{max})	380Wp	283Wp	385Wp	286Wp	390Wp	290Wp	395Wp	294Wp	400Wp	298Wp
Maximum Power Voltage (V _{mp})	34.97V	32.72V	34.97V	33.90V	34.02V	34.13V	34.13V	34.13V	34.25V	34.25V
Maximum Power Current (I _{mp})	10.30A	8.39A	10.40A	8.45A	10.50A	8.53A	10.60A	8.61A	10.70A	8.69A
Open-circuit Voltage (V _{oc})	44.22V	41.74V	44.34V	41.85V	44.47V	41.97V	44.59V	42.09V	44.71V	42.20V
Short-circuit Current (I _{sc})	11.12A	8.98A	11.22A	9.06A	11.32A	9.14A	11.42A	9.22A	11.52A	9.30A
Module Efficiency STC (%)	19.91%		20.17%		20.43%		20.69%		20.95%	

• STC: • Irradiance 1000W/m²
 • Cell Temperature 25°C
 • AM = 1.5
 NOCT: • Irradiance 800W/m²
 • Ambient Temperature 20°C
 • AM = 1.5
 • Power measurement tolerance: +/- 3%



The company reserves the final right for explanation on any of the information presented hereby. JKM380-400M-4RL3-B-A2-US

BUILDING YOUR TRUST IN SOLAR. WWW.JINKOSOLAR.US



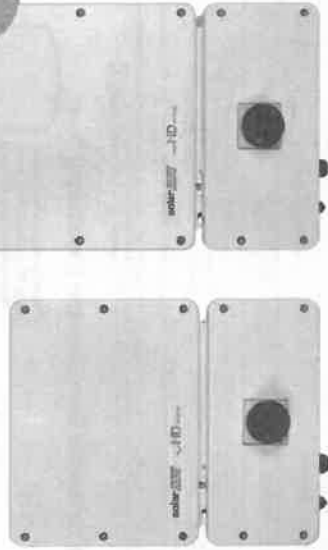
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INVERTERS

SolarEdge Home Wave Inverter For North America

SE3800H-US / SE5000H-US / SE6000H-US /
SE7600H-US / SE10000H-US / SE11400H-US

12-25
YEAR
WARRANTY



Optimized installation with HD-Wave technology

- / Specifically designed to work with power optimizers
- / Record-breaking 99% weighted efficiency
- / Quick and easy inverter commissioning directly from a smartphone using SolarEdge SetApp
- / Fixed voltage inverter for longer strings
- / Integrated arc fault protection and rapid shutdown for NEC 2014-2023 per articles 690.11 and 690.12
- / UL1741 SA certified, for CPUC Rule 21 grid compliance
- / Small, lightweight, and easy to install both outdoors or indoors
- / Built-in module-level monitoring
- / Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI CT12.20)

/ SolarEdge Home Wave Inverter For North America

SE3800H-US / SE5000H-US / SE6000H-US /
SE7600H-US / SE10000H-US / SE11400H-US

SE11400H-US	SE10000H-US	SE7600H-US	SE6000H-US	SE5000H-US	SE3800H-US	Unit
OUTPUT						
Rated AC Power Output	5000	6000 @ 240V 5000 @ 208V	7600	10000	14000 @ 240V 11000 @ 208V	VA
Maximum AC Power Output	5000	6000 @ 240V 5000 @ 208V	7600	10000	14000 @ 240V 11000 @ 208V	VA
AC Output Voltage	✓	✓	✓	✓	✓	Vac
Min-Output-Max (L1) - 240 - 264						Vac
Min-Output-Max (L3) - 208 - 229						Vac
AC Frequency (Nominal)			59.3 - 60 - 60.5 ¹⁾			Hz
Maximum Continuous Output Current	16	21	25	32	42	A
Maximum Continuous Output Current @208V	16		24			A
Power Factor	1, Adjustable - 0.85 to 0.95					A
GFN Threshold	1					A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes					A
INPUT						
Maximum DC Power @240V	5900	7150	9100	11800	16500	W
Maximum DC Power @208V	5100		7150		15500	W
Transformer-less, Ungrounded	Yes					
Maximum Input Voltage	480					Vdc
Normal DC Input Voltage	380					Vdc
Maximum Input Current @240V ²⁾	10.5	13.5	16.5	20	27	Adc
Max. Input Short Circuit Current	9		13.5		27	Adc
Reverse-Polarity Protection	Yes					
Ground-Fault Isolation Detection	600K Sensitivity					
Maximum Inverter Efficiency	99.2					%
CEC Weighted Efficiency	99					%
Nighttime Power Consumption	< 2.5					W

¹⁾ For other regional settings please contact SolarEdge support.
²⁾ A higher current source may be used, the inverter will limit its input current to the value stated.

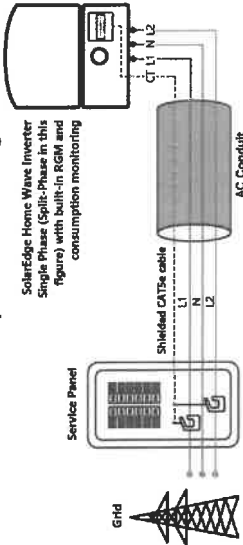
/ SolarEdge Home Wave Inverter For North America

SE3800H-US / SE5000H-US / SE6000H-US/
SE7600H-US / SE10000H-US / SE11400H-US

SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US
ADDITIONAL FEATURES Supported Communication Interfaces: RS485, Ethernet, ZigBee (optional), wireless SolarEdge Home Network (optional) ⁽¹⁾ , Wi-Fi (optional), Cellular (optional) Revenue Grid Metering: Optional* Consumption Metering: Optional* Inverter Commissioning: With the SetApp mobile application using Built-in Wi-Fi Access Point for Local Connection. Rapid Shutdown - NEC 2014-2012 per 690.11 and 690.12: Automatic Rapid Shutdown upon AC Grid Disconnect					
STANDARD COMPLIANCE Safety: UL1741, UL1741 SA, UL1741 SB, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-47 Emissions: IEEE1977-2018, Rule 21, Rule 14 HPL, CSA C22.3 No. 9 FCC Part 15 Class B					
INSTALLATION SPECIFICATIONS AC Output Conductor / AWG Rating: 1" Minimum / 14 – 4 AWG DC Input Conductor Size / # of Strands / AWG Range: 1" Minimum / 1 – 2 Strands / 14 – 6 AWG Dimensions with Safety Switch (H x W x D): 17.7 x 14.6 x 6.8 / 4.50 x 3.70 x 1.74 Weight with Safety Switch: 22.7 / 10, 25.1 / 11.4, 28.2 / 11.9, 38.6 / 17.6, 44.9 / 20.4 ⁽⁶⁾ Noise: < 25, < 50 Cooling: Natural Convection Operating Temperature Range: -40 to +160 / -40 to +60°F Protection Rating: NEMA 4X (Inverter with Safety Switch)					

(1) For more information, refer to the [SolarEdge Home Network](#) document.
 (2) Inverter with Revenue Grid Metering is available for the following models: SE3800H-US, SE5000H-US, SE6000H-US, SE7600H-US, SE10000H-US, SE11400H-US.
 (3) The weight and dimensions of SE10000H-US and SE11400H-US are for the inverter only. The weight and dimensions of SE10000H-US and SE11400H-US include the weight of the inverter and the weight of the inverter and the weight of the inverter and the weight of the inverter.
 (4) Inverter with Revenue Grid Metering is available for the following models: SE3800H-US, SE5000H-US, SE6000H-US, SE7600H-US, SE10000H-US, SE11400H-US.
 (5) The weight and dimensions of SE10000H-US and SE11400H-US are for the inverter only. The weight and dimensions of SE10000H-US and SE11400H-US include the weight of the inverter and the weight of the inverter and the weight of the inverter.
 (6) Full power up to at least 20°C / 68°F. For power derating information refer to the [Inverter Derating](#) document.

How to Enable Consumption Monitoring

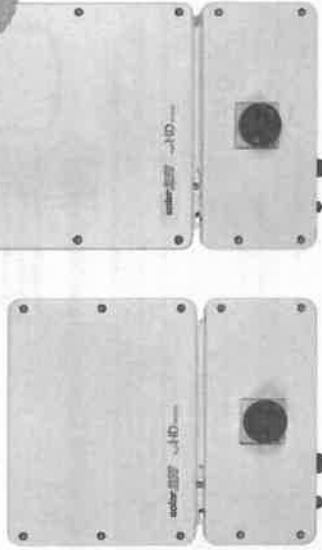


By simply wiring current transformers through the inverter's existing AC conduits and connecting them to the service panel, homeowners will gain full insight into their household energy usage helping them to avoid high electricity bills.

SolarEdge Home Wave Inverter For North America

SE3800H-US / SE5000H-US / SE6000H-US /
SE7600H-US / SE10000H-US / SE11400H-US

12-25
YEAR
WARRANTY



Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014-2023 per articles 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSIC12.20)

solaredge.com



/ SolarEdge Home Wave Inverter For North America

SE3800H-US / SE5000H-US / SE6000H-US /
SE7600H-US / SE10000H-US / SE11400H-US

SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	Unit
OUTPUT						
Rated AC Power Output	5000	7600	10000	15000	17650	VA
Maximum AC Power Output	5000	7600	10000	15000	17650	VA
AC Output Voltage	✓	✓	✓	✓	✓	Vdc
Min-Abom-Max. (21 - 240 - 264)						Vdc
AC Output Voltage	✓	✓	✓	✓	✓	Vdc
Min-Abom-Max. (88 - 208 - 275)						Vdc
AC Frequency (Nominal)	59.3 - 60 - 60.5*					Hz
Maximum Continuous Output Current @208V	16	21	25	32	42	A
Maximum Continuous Output Current @208V	16	-	24	-	-	A
Power Factor	1, Adjustable - 0.85 to 0.85					A
CFM Threshold	Yes					
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes					
INPUT						
Maximum DC Power @240V	5900	7750	9300	11800	15500	W
Maximum DC Power @208V	5800	-	7750	-	-	W
Transformerless, Ungrounded	Yes					
Maximum Input Voltage	480					Vdc
Normal DC Input Voltage	380					Vdc
Maximum Input Current @240V ⁽¹⁾	10.5	13.5	16.5	20	27	Adc
Maximum Input Current @208V ⁽²⁾	9	-	13.5	-	-	Adc
Max. Input Short Circuit Current	45					Adc
Reverse-Polarity Protection	Yes					
Ground-Fault Isolation Detection	500K Sensitivity					
Maximum Inverter Efficiency	99.2					%
CEC Weighted Efficiency	99					%
Nighttime Power Consumption	< 2.5					W

(1) For other regional settings, please contact SolarEdge support.
(2) A higher current source may be used; the inverter will limit its input current to the value stated.

INVERTERS

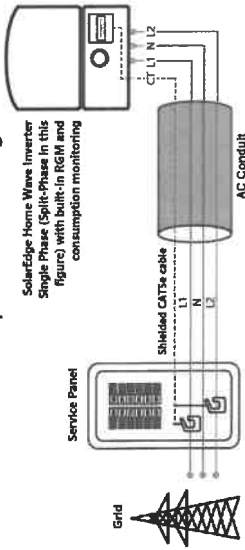
/ SolarEdge Home Wave Inverter For North America

SE3800H-US / SE5000H-US / SE6000H-US /
SE7600H-US / SE10000H-US / SE11400H-US

Model	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US
Revenue Grade Metering	Optional*	Optional*	Optional*	Optional*	Optional*	Optional*
Consumption Metering	Optional*	Optional*	Optional*	Optional*	Optional*	Optional*
Inverter Commissioning	Optional*	Optional*	Optional*	Optional*	Optional*	Optional*
Panel Shutdown - NEC 2014-502.2 per Articles 690.11 and 690.12	Optional*	Optional*	Optional*	Optional*	Optional*	Optional*
STANDARD COMPLIANCE	RS485, Ethernet, ZigBee (optional), wireless SolarEdge Home Network (optional) ¹⁾ , Wi-Fi (optional), Cellular (optional)					
Grid Connection Standards	UL1741, UL1741 SA, UL1741 SB, UL1999, CSA C22.2, Canadian AFCI (according to T.L.L. M-07 IEEE147-2018, Rule 21, Rule 14 (H), CSA C22.3 No. 9					
Grid Connection Standards Emissions	FCC Part 15 Class B					
INSTALLATION SPECIFICATIONS	AC Circuit Conduit Size / AWG Range: 1" Minimum / 14 – 6 AWG DC Input Conduit Size / # of Strands, AWG Range: 1" Minimum / 1 – 2 Strands, 14 – 6 AWG Dimensions with Safety Switch (H x W x D): 17.7 x 14.6 x 6.9 / 4.50 x 3.70 x 1.74 Weight with Safety Switch: 22.7 / 0.25 / 11.4 / 26.2 / 11.9 / 44.9 / 20.4 ^{kg} Noise: < 25 Cooling: Natural Convection Operating Temperature Range: -40 to +140 / -40 to +60 ^{°F} Protection Rating: NEMA 4X (Inverter with Safety Switch)					
AC Output	1" Minimum / 14 – 6 AWG 1" Maximum / 14 – 6 AWG 2106 x 14.6 x 2106 x 14.6 x 73 / 535 x 370 x 185 / 535 x 370 x 268 ^{mm} in / mm					
Weight with Safety Switch	22.7 / 0.25 / 11.4 / 26.2 / 11.9 / 44.9 / 20.4 ^{kg} gBA					
Temperature Range	-40 to +140 / -40 to +60 ^{°F} NEMA 4X (Inverter with Safety Switch)					
Protection Rating	NEMA 4X (Inverter with Safety Switch)					

(1) For more information, refer to the SolarEdge technical handbook, datasheet.
 (2) Inverter with Revenue Grade Metering must be ordered separately. SEAC10750-0200-M-020 or SEAC10760-0200-M-20, 20 units per box.
 (3) For more information, refer to the SolarEdge technical handbook, datasheet.
 (4) The weight and dimensions of SE11400H-US (Load Bank size: 17.6 ft) and 21.06 x 14.6 x 7.3 / 535 x 370 x 268 mm are for built models. For more information, refer to the SolarEdge technical handbook, datasheet.
 (5) Full power up to at least 95°C / 122°F. For power derating information, refer to the SolarEdge technical handbook, datasheet.

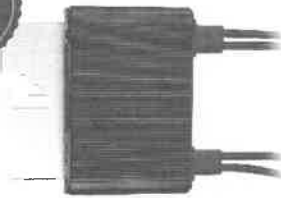
How to Enable Consumption Monitoring



By simply wiring current transformers through the inverter's existing AC conduits and connecting them to the service panel, homeowners will gain full insight into their household energy usage helping them to avoid high electricity bills.

Power Optimizer For North America

S440, S500



PV power optimization at the module level

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

* Expected availability in 2022

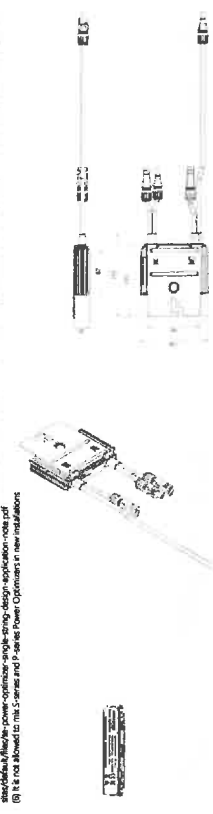
solaredge.com



/ Power Optimizer For North America S440, S500

	S440	S500	Unit
INPUT			
Rated Input DC Power ⁽¹⁾	440	500	W
Absolute Maximum Input Voltage (Voc)	60	60	Vdc
MPPT Operating Range	8 - 50	8 - 50	Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5	15	Adc
Maximum Efficiency	99.5	99.6	%
Weighted Efficiency	98.6	98.6	%
Overvoltage Category	II	II	
OUTPUT DURING OPERATION			
Maximum Output Current	15	15	Adc
Maximum Output Voltage	60	60	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)			
Safety Output Voltage per Power Optimizer	14/0.1	14/0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System	NEC 2014, 2017 & 2020		
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3		
Safety	IEC62109-1 (Class II safety), UL1741		
Material	UL94 V-0, LV Resistant		
RoHS	Yes		
Fire Safety	VDE-AR-E 2100-702:2013-05		
INSTALLATION SPECIFICATIONS			
Maximum Allowed System Voltage	1000		Vdc
Dimensions (W x L x H)	89 x 133 x 30.15 (3.51 x 5.22 x 1.18)		mm/in
Weight (including cables)	665/1.5		g/lb
Input Connector	0.75/0.32		m/f
Output Connector	M-C		m/f
Output Wire Length	(A) 2.2, (C) 0.0 / (A) 7.54, (C) 0.32		m/f
Operating Temperature Range ⁽²⁾	-40 to +85		°C
Protection Rating	IP69/Type6B		
Relative Humidity	0 - 100		%
⁽¹⁾ Rated power of this module at STC will not exceed the power optimizer rated input DC power. Modules with up to +5% power tolerance are allowed.			
⁽²⁾ For other connector types please contact SolarEdge.			
⁽³⁾ For ambient temperature above +30°C / +86°F power derating is applied. Refer to Power Optimizer Temperature Derating Technical Note for more details.			

	Single Phase 10-D-Wave	Three Phase grid	Three Phase for 208V 277/480V grid
Minimum String Length (Power Optimizers)	8	14	18
Maximum String Length (Power Optimizers)	3700 (6000 with SE7600-US-SE19000-4)	25	2750
Maximum Nominal Power per String	Refer to Footnote 5	One String 7200W Two strings or more 7800W	15,000W
Maximum Allowed Connected Power per String ⁽¹⁾	5440, S500	5440, S500	5440, S500
Maximum Allowed Connected Power per String ⁽²⁾	5440, S500	5440, S500	5440, S500
Maximum Allowed Connected Power per String ⁽³⁾	5440, S500	5440, S500	5440, S500
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Product specifications

Eaton DG223NRB

Catalog Number: DG223NRB

Eaton General duty cartridge fuse safety switch, 100 A, NEMA 3R, Painted galvanized steel, Class H fuses, Fusible with neutral, Two-pole, Three-wire, Category, General duty safety switch, 240 V

General specifications

Product Name Eaton general duty cartridge fuse safety switch

Catalog Number DG223NRB

UPC

782113144252

Product Height

19.25 in

Product Length/Depth

7.98 in

Product Weight

14 lb

Product Width

9.13 in

Warranty

Certifications

Eaton Sealing Policy 25-4000, one (1) year UL Listed

from the date of installation of the

Product or eighteen (18) months from the

date of shipment of the Product,

whichever occurs first.

Catalog Notes

Maximum trip ratings apply only when

dual element fuses are used. 3-Phase hp

rating shown is a grounded B phase

rating, UL listed.

Physical Attributes

Enclosure

NEMA 3R

Enclosure material

Painted galvanized steel

Fuse configuration

Fusible with neutral

Number Of Poles

Two-pole

Number of wires

3

Type

General duty, cartridge fused

Performance Ratings

Amperage Rating

100A

Fuse class provision

Class H fuses

Voltage rating

240V

Miscellaneous

Product Category

General duty safety switch

Resources

Catalogs

Eaton's Volume 2—Commercial Distribution

Multimedia

Double Up on Safety

Switching Devices Flex Center

Specifications and datasheets

Eaton Specification Sheet - DG223NRB

Eaton Corporation plc

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Dublin 4, Ireland

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Product specifications

Eaton DG224NRK

Catalog Number: DG224NRK

Eaton General duty cartridge fuse safety switch, 200 A, NEMA 3R, Painted galvanized steel, Class H fuses, Fusible with neutral, Two-pole, Three-wire, Category: general duty safety switch, 240 V

General specifications

Product Name Eaton general duty cartridge fuse safety switch
Catalog Number DG224NRK
UPC 782113213507
Product Length/Depth 11.25 in
Product Height 26.5 in
Product Width 16 in
Product Weight 55 lb
Warranty Eaton Selling Policy 25-000, one (1) year UL Listed from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.
Certifications Maximum hp ratings apply only when dual element fuses are used. 3-Phase hp rating shown is a grounded B phase rating. UL listed.



Physical Attributes

Enclosure NEMA 3R
Enclosure material Painted galvanized steel
Fusible with neutral
Fuses configuration Two-pole
Fuses Class H fuses
Fuses voltage rating 240V
Number of Poles 3
Number of Wires 3
Type General duty, cartridge fused

Performance Ratings

Ampere Rating 200A
Fuses Class H fuses
Voltage rating 240V

Miscellaneous

Product Category General duty safety switch

Resources

Catalogs Eaton's Volume 2—Commercial Distribution
Multimedia Double Up on Safety Switching Devices Flex Center
Specifications and datasheets Eaton Specification Sheet - DG224NRK

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POWERWALL

Tesla Powerwall is a fully-integrated AC battery system for residential or light commercial use. Its rechargeable lithium-ion battery packs provide energy storage for solar self-consumption, time-based control, and backup.

Powerwall's electrical interface provides a simple connection to any home or building. Its revolutionary simplified design achieves a compact footprint, energy density and is easy to install, enabling owners to quickly realize the benefits of reliable, clean power.

POWERWALL Backup Gateway 2

The Backup Gateway 2 for Tesla Powerwall supplies energy management and backup for solar self-consumption, Powerwall Gateway, and Powerwall. The Backup Gateway 2 provides connection to the grid, automatically detecting outages and providing a backup to ensure continuous power. When equipped with a circuit breaker, the Backup Gateway 2 can be installed at the service entrance. When the optional internal panelboard is installed, the Backup Gateway 2 can also function as a load center.

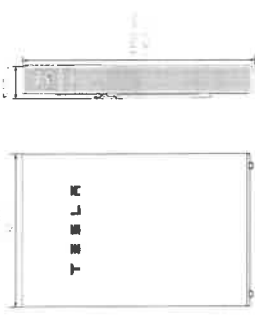
The Backup Gateway 2 communicates directly with Powerwall, allowing you to monitor energy use and manage on-site energy storage from any mobile device with the Tesla app.

PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240V
Feed-in Type	Grid Feed
Grid Frequency	50-60 Hz
Total Energy	13.5 kWh
Usable Energy	10 kWh
Real Power, max continuous	3 kW
Real Power, peak (10s, off-grid/backup)	3.5 kW
Apparent Power, max continuous	3.5 kVA
Apparent Power, peak (10s, off-grid/backup)	4.2 kVA
Load Start Capability	300 W
Maximum Supply Fault Current	100 A
Maximum Output Fault Current	100 A
Overcurrent Protection Device	100 A
Imbalance for Split-Phase Loads	100 A
Power Factor Output Range	0.9-1.0
Power Factor Range (full-rated power)	0.9-1.0
Internal Battery DC Voltage	384 V
Round Trip Efficiency	90%
Warranty	10 years

MECHANICAL SPECIFICATIONS

Dimensions	17.5" (443 mm) H x 17.5" (443 mm) W x 17.5" (443 mm) D
Weight	110 lbs (50 kg)
Mounting options	Wall mount, ceiling mount, floor mount, and rack mount



ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	32°F to 104°F (0°C to 40°C)
Recommended Temperature	68°F to 86°F (20°C to 30°C)
Operating Humidity (RH)	5% to 95%
Storage Conditions	Temperature: -40°F to 140°F (-40°C to 60°C) Humidity: 5% to 95%
Maximum Elevation	10,000 ft (3,048 m)
Environment	Indoor or outdoor
Enclosure Type	IP20
Ingress Rating	IP20
Wet Location Rating	Wet Location Not Permitted
Noise Level @ 1m	40 dBA (A-weighted)

COMPLIANCE INFORMATION

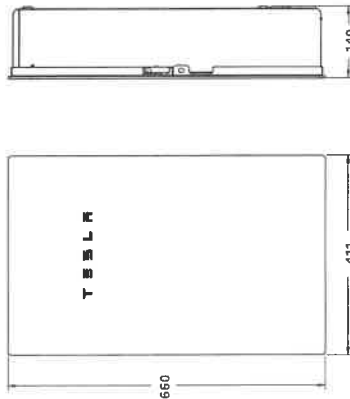
Grid Connection	AC
Emissions	CEC, FCC, IEC, UL, VDE
Environmental	RoHS, REACH, WEEE, ELV
Seismic	ASCE 7-16, IBC 2018, UBC 2012
Fire Testing	UL 9540, UL 197, UL 164

PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240V
Feed-in Type	Grid Feed
Grid Frequency	50-60 Hz
Current Rating	100 A
Maximum Input Short Circuit Current	100 A
Overcurrent Protection Device	100 A
Overvoltage Category	III
AC Meter	Optional
Primary Connectivity	Ethernet, Wi-Fi
Secondary Connectivity	RS-485, CAN, I2C, SPI
User Interface	Mobile app, web interface
Operating Modes	Grid-tied, off-grid, backup
Backup Transition	Automatic or manual
Modularity	Optional internal panelboard
Optional Internal Panelboard	Optional
Warranty	10 years

MECHANICAL SPECIFICATIONS

Dimensions	17.5" (443 mm) H x 17.5" (443 mm) W x 17.5" (443 mm) D
Weight	110 lbs (50 kg)
Mounting options	Wall mount, ceiling mount, floor mount, and rack mount

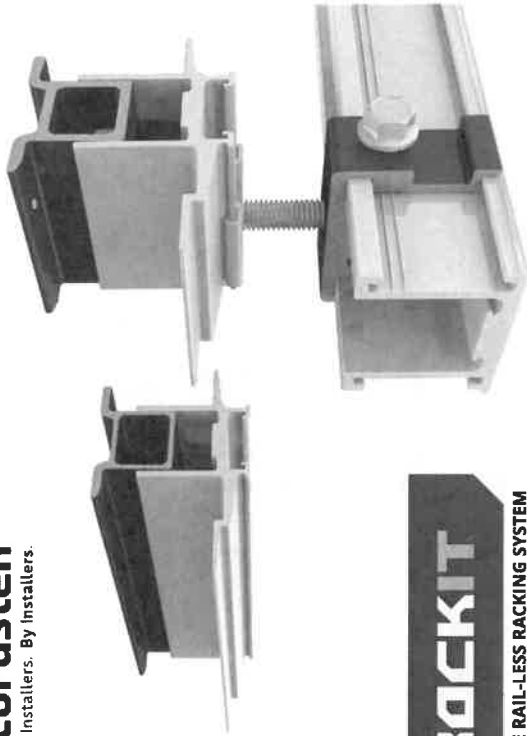


COMPLIANCE INFORMATION

Certifications	CEC, FCC, IEC, UL, VDE
Emissions	CEC, FCC, IEC, UL, VDE
Environmental	RoHS, REACH, WEEE, ELV
Seismic	ASCE 7-16, IBC 2018, UBC 2012
Fire Testing	UL 9540, UL 197, UL 164

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	32°F to 104°F (0°C to 40°C)
Operating Humidity (RH)	5% to 95%
Maximum Elevation	10,000 ft (3,048 m)
Environment	Indoor or outdoor
Enclosure Type	IP20



ROCKIT

COMPLETE RAIL-LESS RACKING SYSTEM

The Rockit system is the industry's premier rail-less PV racking system for composition shingle, tile, and metal roofs. Designed in conjunction with the needs of installers, Rockit quickly & easily installs with a single tool. Featuring an easy-to-position alignment slide and a top-down leveling system, Rockit is logistically intelligent with no need to ship or transport long rails. Components are available in a black finish that complements both commercial and residential applications. Conforms to UL 2703.

FEATURES & BENEFITS

- Patented watertight technology
- Fully integrated bonding
- Top-down leveling system
- North-South adjustability
- Single tool install
- Florida Product-Approved for composition shingle roofs

STREAMLINED INSTALLATION WITH MINIMAL ROOF PENETRATIONS



Composition Shingle,
Tile, Metal



Rail-Less



Structural-Attach
Direct-Attach



ECOFASTENSOLAR.COM

ROCKIT

ROCKIT COUPLING

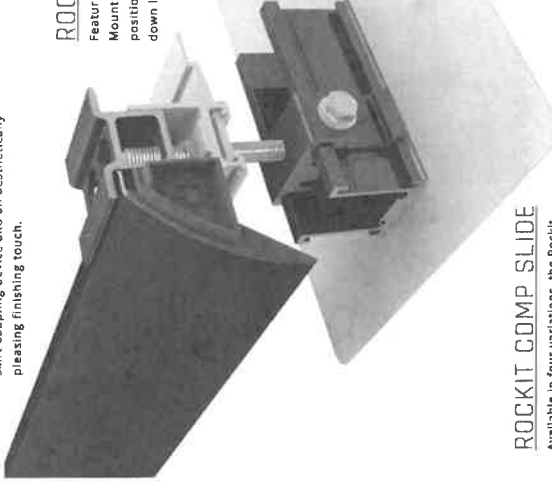
The fast installing Rockit Coupling easily attaches to the module frame to bridge the gaps between modules.

SKIRT

The sleek black Skirt installs first and acts as an alignment guide for the entire array. The Skirt End Cap does double duty as a skirt coupling device and an aesthetically-pleasing finishing touch.

ROCKIT MOUNT

Featuring integrated bonding pins, the Rockit Mount connects to the Slide and can easily be positioned for fast installation. Features top-down leveling.



ROCKIT COMP SLIDE

Available in four variations, the Rockit Slide allows installation on composition shingle, tile, and metal roofs.

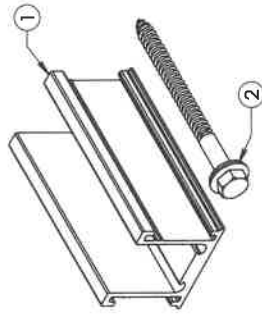
FRAME MLPE MOUNT

Attaches and fully bonds MLPE's (Module Level Power Electronics) to the module frame with a single bolt clip.



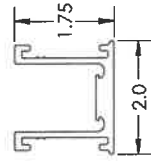
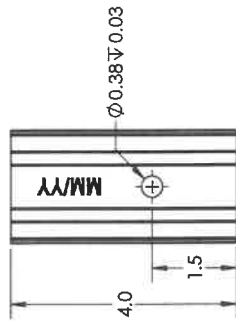
RI COMP SLIDE AL BLK

PART NUMBER	DESCRIPTION
2011013	RI COMP SLIDE AL BLK



ITEM NO.	DESCRIPTION
1	ROCKIT V3 SLIDECOMP
2	LAG SCREW, 5/16-4", THREAD 3", EPDM BACKED WASHER

1) ROCKIT V3 SLIDECOMP

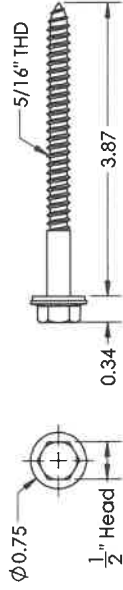


Material	Finish
Aluminum	Black

REV.- CS1

RI COMP SLIDE AL BLK

2) LAG SCREW, 5/16-4", THREAD 3", EPDM BACKED WASHER

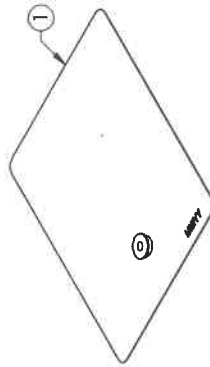


Material	Finish
Stainless Steel	Mill

REV.- CS1

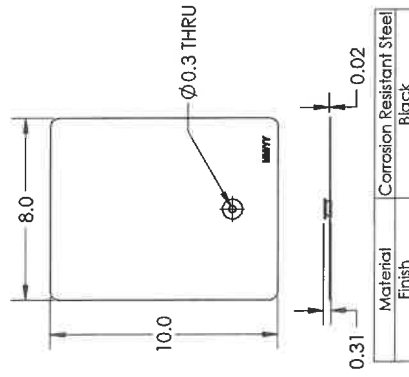
GF-1 FLASHING GLV BLK 8X10"

PART NUMBER	DESCRIPTION
3012020	GF-1 FLASHING GLV BLK 8X10"



ITEM NO.	DESCRIPTION
1	GF1M-GAL-BLK-810 W/O WASHER ASSEMBLY

1) GF1M-GAL-BLK-810 W/O WASHER ASSEMBLY



REV. - CS1





ECOFASTEN SOLAR LLC
4141 W. VAN BUREN ST., SUITE 2
PHOENIX, AZ 85009

877-859-3947
INFO@ECOFASTENSOLAR.COM

April 8th, 2024

EcoFasten
4141 West Van Buren St.
Phoenix, AZ 85009

Attn.: EcoFasten Solar Engineering Department

Re: Report # 7.16-RockIt_CS-SS EcoFasten RockIt System, with Comp Slide or Smart Slide, Certification for Gable and Hip roofs.

This letter certifies the loading criteria and design basis used for the structural analysis of the EcoFasten - RockIt System as shown in Report # 7.16-RockIt_CS-SS "Engineering Certification for the EcoFasten - RockIt System with Comp or Smart Slide for Gable and Hip Roofs". All information, data, and analysis therein are based on, and comply with, the following building codes and typical specifications. The Span Tables provided in the referenced report may be used when all assumptions listed therein are met.

Building Codes:

1. ASCE/SEI 7-16, Minimum Design Loads for Buildings and Other Structures, by American Society of Civil Engineers
2. 2021 International Building Code (IBC)
3. 2021 International Residential Code (IRC)
4. SEAOC (Structural Engineer Association of California) report PV2-2017 Wind Design for Solar Arrays
5. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES
6. Aluminum Design Manual 2020, by The Aluminum Association, Inc.
7. ANSI/AWC NDS-2018, National Design Specification for Wood Construction, by the American Wood Council

Please note our evaluation only applies to EcoFasten products and excludes the structural adequacy of the chosen roof attachments, PV modules, or underlying roof supporting members. It shall be the responsibility of the installer or system designer to verify the structural capacity and adequacy of the referenced system components with respect to the applied or resultant loads of the chosen array configuration.

Sincerely,



Matthew S Kuzila, P.E.

Sealed 04.08.2024
Expires 12.31.2024

ECOFASTENSOLAR.COM

Letter of Authorization

Issue Date: 04/12/2024

License Number: I.34043

Expiration Date: 04/30/2025

License Number: 84951

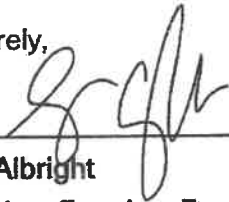
FEIN: 32-0540433

To Whom It May Concern:

Weyce Cullen is hereby authorized to sign, submit, and obtain permit applications, obtain business licenses and/or registrations, and perform all other duties tasks necessary to accomplish the said purpose with the local jurisdiction as a representative of Freedom Forever North Carolina, LLC.

To confirm if the authority being presented is current, or should you have any questions, please contact me at the information provided below.

Sincerely,



Greg Albright

President, Freedom Forever North Carolina, LLC

43445 Business Park Dr., Ste 104, Temecula, CA 92590

800.885.9450

licenses@freedomforever.com

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of North Carolina

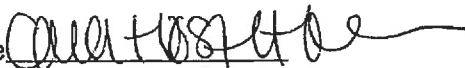
County of Mecklenburg

On April 12, 2024 before me, Cara Hostetler, notary public personally appeared Gregory Russell Albright who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of North Carolina that the foregoing paragraph is true and correct.

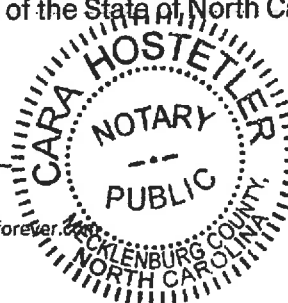
WITNESS my hand and official seal.

Notary Signature



800.885.9450

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