

4.920 kW DC ROOF MOUNT PHOTOVOLTAIC SYSTEM

CODES:

THIS PROPOSED INSTALLATION COMPLIES WITH THE FOLLOWING:
 2022 CALIFORNIA BUILDING CODE
 2022 CALIFORNIA FIRE CODE
 2022 CALIFORNIA PLUMBING CODE
 2022 CALIFORNIA MECHANICAL CODE
 2022 CALIFORNIA ENERGY CODE
 2022 CALIFORNIA RESIDENTIAL CODE
 2022 CALIFORNIA ADMINISTRATIVE CODE
 2022 CALIFORNIA ELECTRICAL CODE
 AS ADOPTED BY [CITY OF SAN JUAN CAPISTRANO \(CA\)](#)

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.

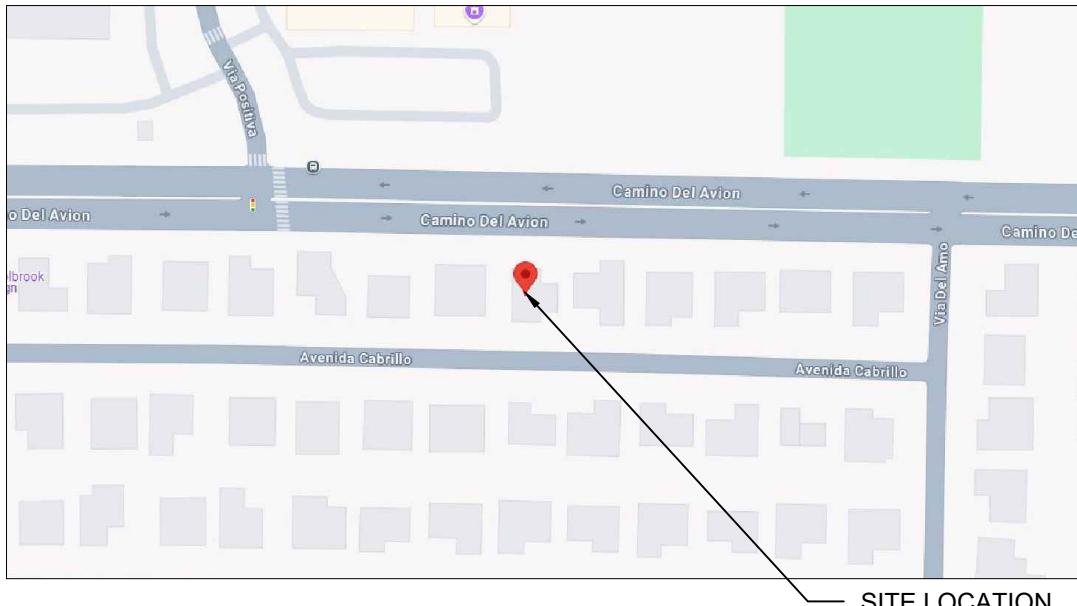
MODULES SHALL BE TESTED, LISTED AND IDENTIFIED WITH FIRE CLASSIFICATION IN ACCORDANCE WITH UL 2703. SMOKE AND CARBON MONOXIDE ALARMS ARE REQUIRED PER SECTION R314 AND 315 TO BE VERIFIED AND INSPECTED BY INSPECTOR IN THE FIELD.

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 2022 CEC SEC 250.166(A).

SOLAR PHOTOVOLTAIC SYSTEM EQUIPMENT WILL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF ART. 690 OF THE 2022 CEC

VICINITY MAP:



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

SOLAREDGE 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.

SYSTEM SIZE

PV SYSTEM (DC): 4.920kW
 PV SYSTEM (AC): 3.800 kW @240V

CLIENT DETAILS

EMILY NELSON
 ADDRESS: 25965 AVENIDA CABRILLO, SAN JUAN CAPISTRANO, CA 92675
 AHJ: CITY OF SAN JUAN CAPISTRANO (CA)
 UTILITY: SDG&E - SAN DIEGO GAS AND ELECTRIC
 PHONE: (425) 503-1872
 EMAIL ID: EMILY.NELSON1001@GMAIL.COM
 FINANCE: ENFIN

SYSTEM DETAILS

MODULES: 12 X HANWHA QCELL : Q.PEAK DUO BLK ML-GL10+410
 OPTIMIZER : 12 X SOLAREDGE U650 POWER OPTIMIZER
 INVERTER 1 : SOLAREDGE USE3800H-USMNBL75
 BATTERY : 1 X SOLAREDGE ENERGY BANK BAT-10K1P

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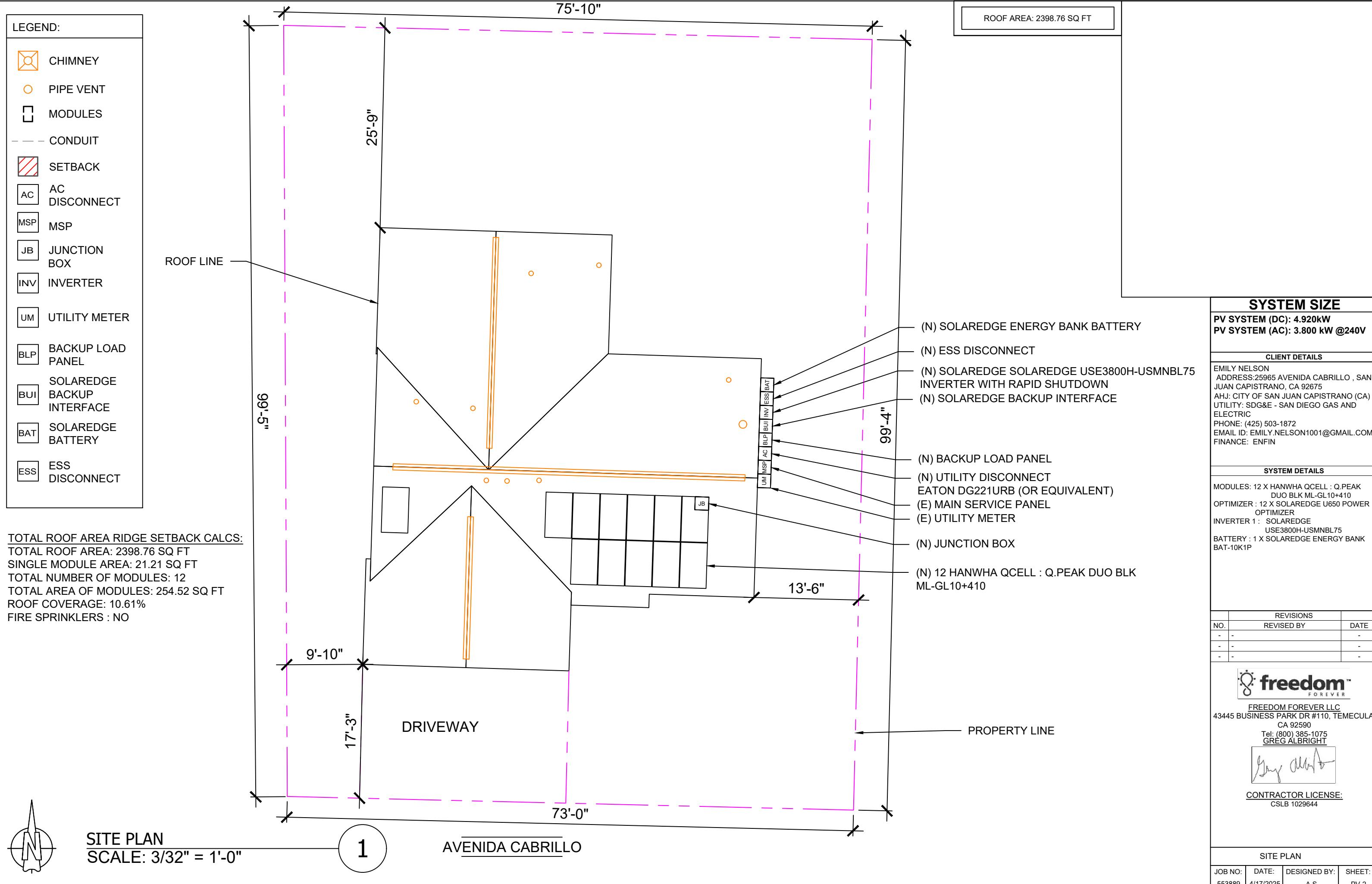


FREEDOM FOREVER LLC
 43445 BUSINESS PARK DR #110, TEMECULA,
 CA 92590
 Tel: (800) 385-1075
 GREG ALBRIGHT

CONTRACTOR LICENSE:
 CSLB 1029644

THIS SYSTEM DESIGNED WITH:
 WIND SPEED: 115 MPH
 WIND EXPOSURE: B
 SNOW LOAD: 0 PSF

JOB NO:	DATE:	DESIGNED BY:	SHEET:
553889	4/17/2025	A.S	PV-1

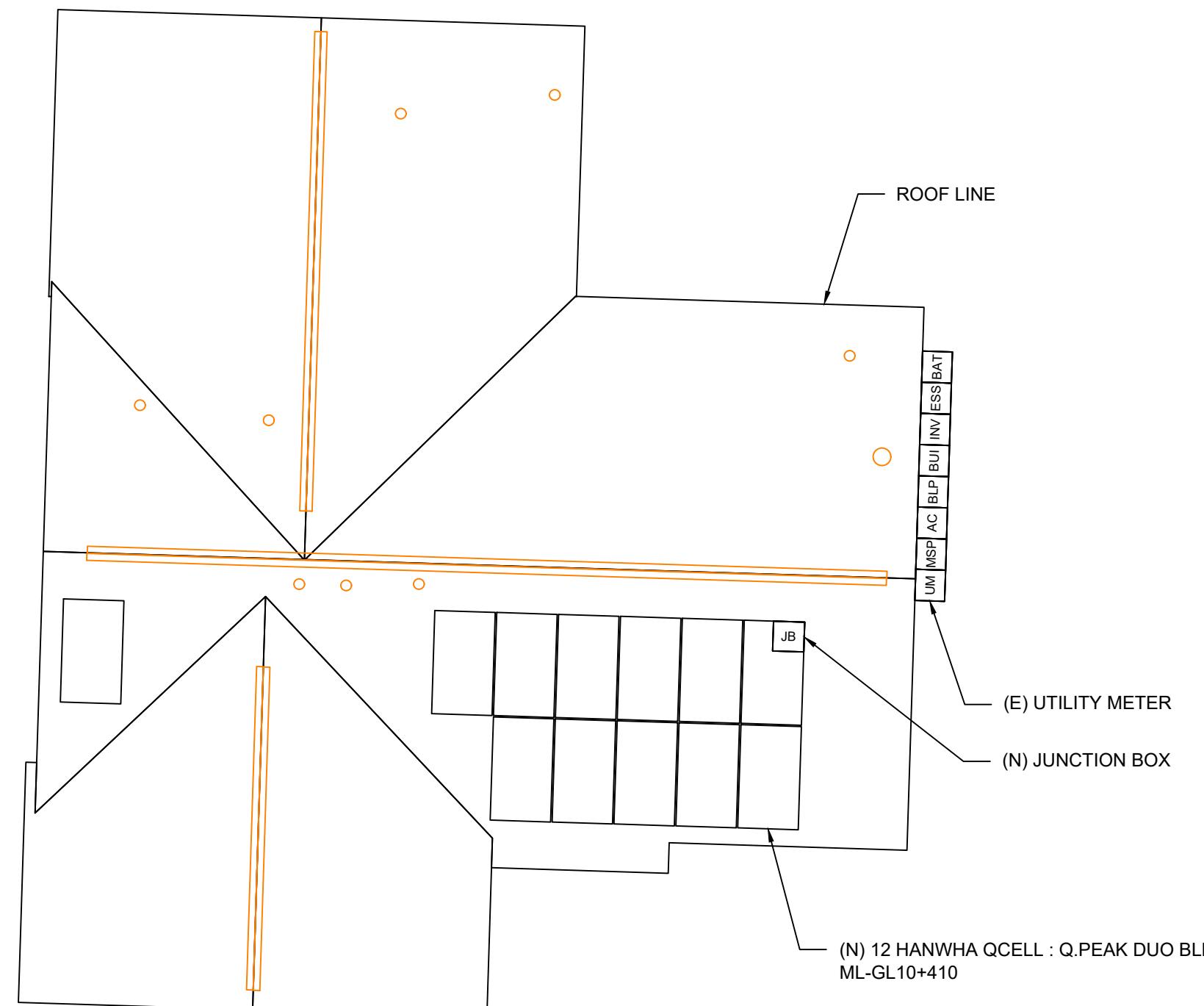


LEGEND:	
	CHIMNEY
	PIPE VENT
	MODULES
	CONDUIT
	SETBACK
	AC DISCONNECT
	MSP
	JUNCTION BOX
	INVERTER
	UTILITY METER
	BACKUP LOAD PANEL
	SOLAREDGE BACKUP INTERFACE
	SOLAREDGE BATTERY
	ESS DISCONNECT

TOTAL ROOF AREA RIDGE SETBACK CALCS:

TOTAL ROOF AREA: 2398.76 SQ FT
 SINGLE MODULE AREA: 21.21 SQ FT
 TOTAL NUMBER OF MODULES: 12
 TOTAL AREA OF MODULES: 254.52 SQ FT
 ROOF COVERAGE: 10.61%
 FIRE SPRINKLERS : NO

ROOF AREA: 2398.76 SQ FT



ROOF PLAN WITH MODULES LAYOUT
 SCALE: 1/8" = 1'-0"

1

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.

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 FINANCE: ENFIN

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 OPTIMIZER: 12 X SOLAREDGE U650 POWER OPTIMIZER
 INVERTER 1: SOLAREDGE USE3800H-USMNBL75
 BATTERY: 1 X SOLAREDGE ENERGY BANK BAT-10K1P

REVISIONS

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ROOF PLAN WITH MODULES LAYOUT

JOB NO:	DATE:	DESIGNED BY:	SHEET:
553889	4/17/2025	A.S	PV-2A

ROOF DETAILS:

TOTAL ROOF AREA: 2398.76 SQ FT
TOTAL ARRAY AREA: 254.52 SQFT
ARRAY COVERAGE: 10.61%

SYSTEM SIZE

PV SYSTEM (DC): 4.920kW
PV SYSTEM (AC): 3.800 kW @240V

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FINANCE: ENEN

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DUO BLK ML-GL10+410
OPTIMIZER: 12 X SOLAREDGE U650 POWER
OPTIMIZER
INVERTER 1: SOLAREDGE
USE3800H-USMNB75
BATTERY: 1 X SOLAREDGE ENERGY BANK
BAT 45K1P

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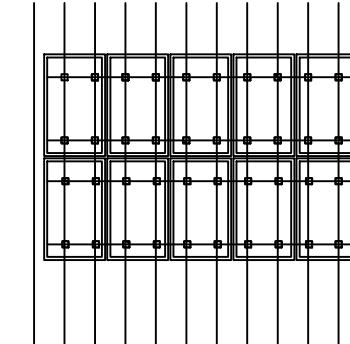
GREG ALBRITTON

CONTRACTOR LICENSE:
CSLP 16000614

ARRAY AND STRUCTURAL TABLES

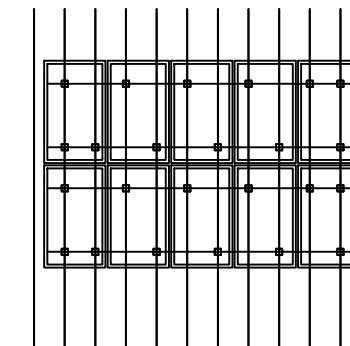
TABLE 1 - ARRAY INSTALLATION

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.
3. MAX RAIL OVERHANG APPLICABLE FOR RAILED ATTACHMENT INSTALLATIONS.



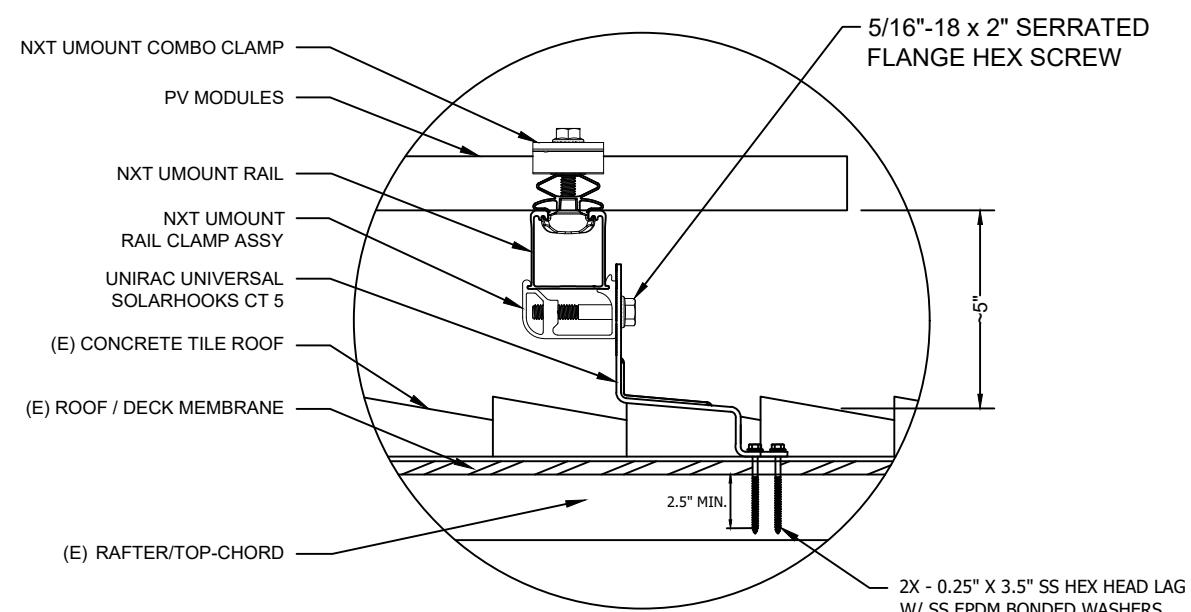
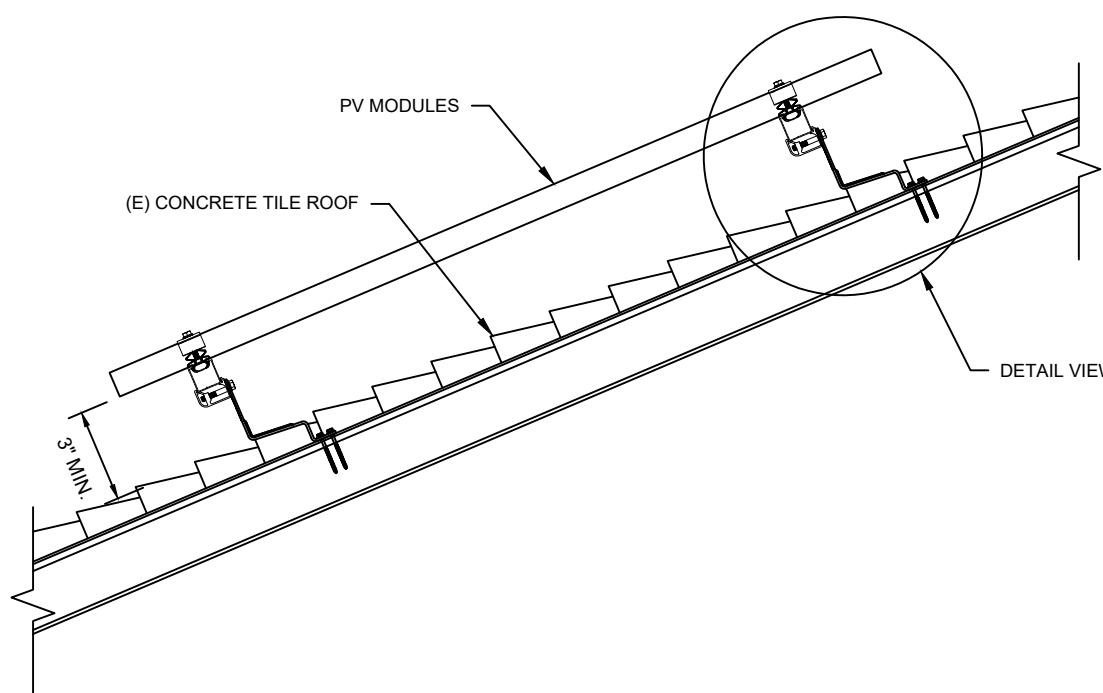
STACKED DETAIL

For Illustration purposes only



STAGGERED DETAIL

For Illustration purposes only



SOLAR PV ARRAY SECTION VIEW

Scale: NTS

ATTACHMENT DETAIL

Scale: NTS

SYSTEM SIZE

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PV SYSTEM (AC): 3.800 kW @240V

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FINANCIE: ENEN

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INVERTER 1 : SOLAREDGE USE3800H-USMNB75
BATTERY : 1 X SOLAREDGE ENERGY BANK

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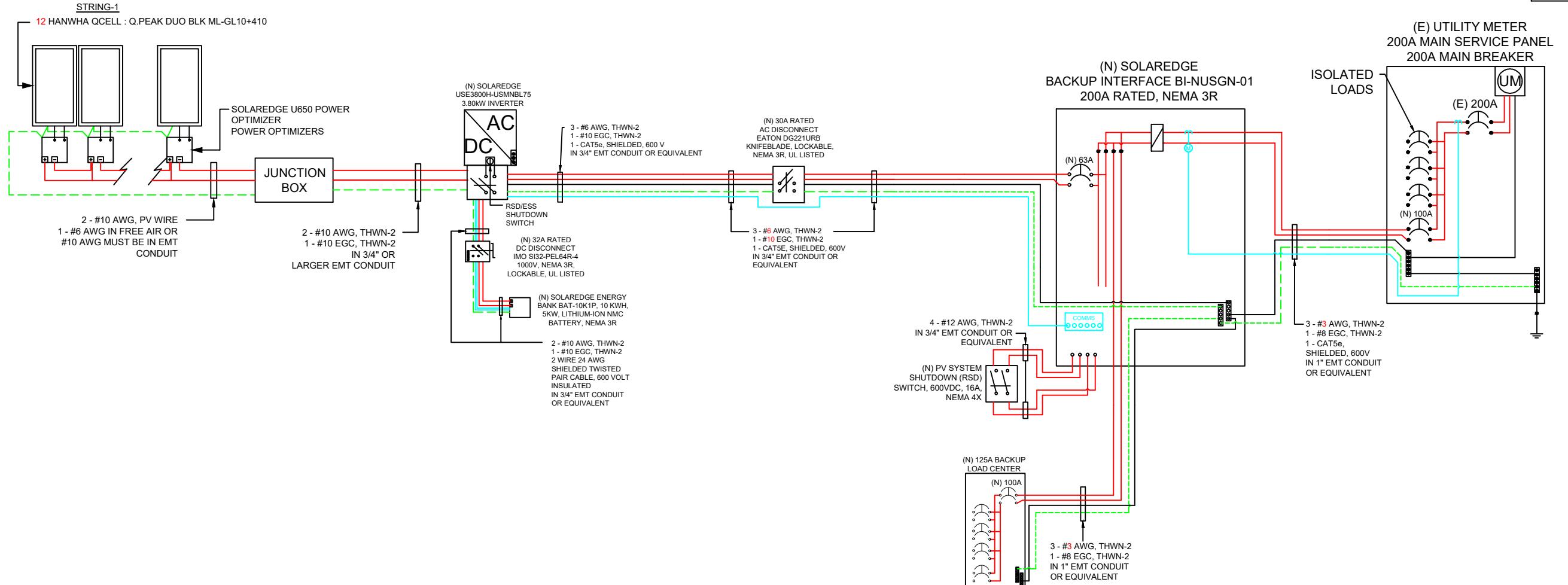
FREEDOM FOREVER LLC
43445 BUSINESS PARK DR #110, TEMECULA
CA 92590
Tel: (800) 385-1075
GREG ALBRIGHT

George Abbott

CONTRACTOR LICENSE:
CSLB 1029644

MOUNTING DETAILS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
553889	4/17/2025	A.S.	PV-3



SYSTEM SIZE

PV SYSTEM (DC): 4.920kW
PV SYSTEM (AC): 3.800 kW @240V

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FINANCE: ENFIN

SYSTEM DETAILS

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INVERTER 1: SOLAREDGE USE3800H-USMNL75
BATTERY: 1 X SOLAREDGE ENERGY BANK BAT-10KIP

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THREE LINE DIAGRAM

JOB NO:	DATE:	DESIGNED BY:	SHEET:
553889	4/17/2025	A.S	PV-4

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

690.13(B)

DO NOT DISCONNECT UNDER LOAD

NEC 690.15 (B) & NEC 690.33(D)(2)

WARNING

SINGLE 120-VOLT SUPPLY
DO NOT CONNECT
MULTIWIRE BRANCH CIRCUITS

NEC 710.15(C) & 692.9 (C)

WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

NEC 705.12(D) & NEC 690.59

WARNING

TURN OFF PHOTOVOLTAIC
AC DISCONNECT PRIOR TO
WORKING INSIDE PANEL

NEC 110.27(C) & OSHA 1910.145(F)(7)

WARNING

ELECTRICAL SHOCK HAZARD

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

706.15(C)(4) & 690.13(B)

WARNING

THIS EQUIPMENT FED BY
MULTIPLE SOURCES:
TOTAL RATING OF ALL OVERCURRENT
DEVICES EXCLUDING MAIN POWER
SUPPLY SHALL NOT EXCEED
AMPACITY OF BUSBAR

NEC 705.12(B)(3)(3)

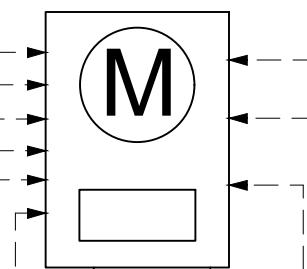
WARNING

THE DISCONNECTION OF THE
GROUNDED CONDUCTOR(S)
MAY RESULT IN OVERVOLTAGE
ON THE EQUIPMENT

NEC 690.31(E)

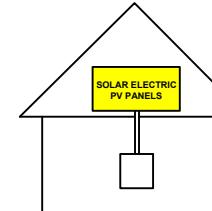
**RAPID SHUTDOWN SWITCH FOR
SOLAR PV SYSTEM**

690.56(C)(3)



**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



IFC 605.11.3.1(1) & 690.56(C)

CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

NEC 705.12(D) & NEC 690.59

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

NEC 705.12(C) & NEC 690.59

WARNING
ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

24 INCH FLASH HAZARD BOUNDARY
480 VAC SHOCK HAZARD WHEN COVER IS REMOVED
42 INCH LIMITED APPROACH
12 INCH PROHIBITED APPROACH - 600 V CLASS 0 GLOVES
1 INCH PROHIBITED APPROACH - 600 V CLASS 0 GLOVES
LOCATION:

NEC 706.15(C) AND NEC 110.16

PHOTOVOLTAIC

AC DISCONNECT

NEC 690.13(B)

PHOTOVOLTAIC AC DISCONNECT

NEC 690.54

RATED AC OUTPUT CURRENT: **16 A**

NOMINAL OPERATING AC VOLTAGE: **240V**

NEC 690.54

WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

NEC 705.12(D) & NEC 690.59

SOLAR PV DC CIRCUIT

EVERY 10' ON CONDUIT AND ENCLOSURES
NEC 690.31

PHOTOVOLTAIC POWER SOURCE

EVERY 10' ON CONDUIT AND ENCLOSURES
NEC 690.31(D)(2)

MAXIMUM VOLTAGE **480** V

MAXIMUM CIRCUIT CURRENT **16** A

MAX DC-DC CONVERTER
OUTPUT CURRENT **15** A

1. NEC ARTICLES 690 AND 705 AND IRC SECTION R324
MARKINGS SHOWN HEREON.

2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:

- UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR
MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
- RED BACKGROUND COLOR WHITE TEXT AND LINE
WORK.
- 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

PHOTOVOLTAIC

DC DISCONNECT

NEC 690.13(B)

MAXIMUM DC VOLTAGE

OF PV SYSTEM

NEC 690.53

WARNING

ELECTRICAL SHOCK HAZARD

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

DC VOLTAGE IS ALWAYS PRESENT
WHEN SOLAR MODULES
ARE EXPOSED TO SUNLIGHT

706.15(C)(4) & 690.13(B)

WARNING

ELECTRICAL SHOCK HAZARD

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

706.15(C)(4) & 690.13(B)

WARNING

TURN OFF PHOTOVOLTAIC

AC DISCONNECT PRIOR TO

WORKING INSIDE PANEL

NEC 110.27(C) & OSHA 1910.145(F)(7)

ARRAY

NEC 690.31(G)(3) & (4)

SYSTEM SIZE

PV SYSTEM (DC): 4.920kW
PV SYSTEM (AC): 3.800 kW @240V

CLIENT DETAILS

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ADDRESS:25965 AVENIDA CABRILLO , SAN
JUAN CAPISTRANO, CA 92675
AHJ: CITY OF SAN JUAN CAPISTRANO (CA)
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PHONE: (425) 503-1872
EMAIL ID: EMILY.NELSON1001@GMAIL.COM
FINANCE: ENFIN

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DUO BLK ML-GL10+410
OPTIMIZER : 12 X SOLAREDGE U650 POWER
OPTIMIZER
INVERTER 1 : SOLAREDGE
USE3800H-USMNBL75
BATTERY : 1 X SOLAREDGE ENERGY BANK
BAT-10K1P

REVISIONS

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freedom
FOREVER

FREEDOM FOREVER LLC
43445 BUSINESS PARK DR #110, TEMECULA,
CA 92590
Tel: (800) 385-1075
GREG ALBRITTON

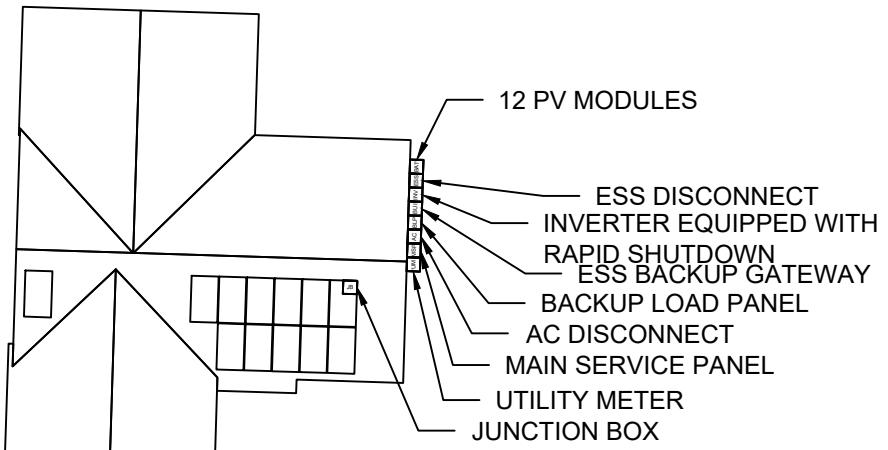
CONTRACTOR LICENSE:
CSLB 1029644

LABELS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
553889	4/17/2025	A.S	PV-5

CAUTION:

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



AVENIDA CABRILLO

WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT
PRIOR TO WORKING INSIDE PANEL



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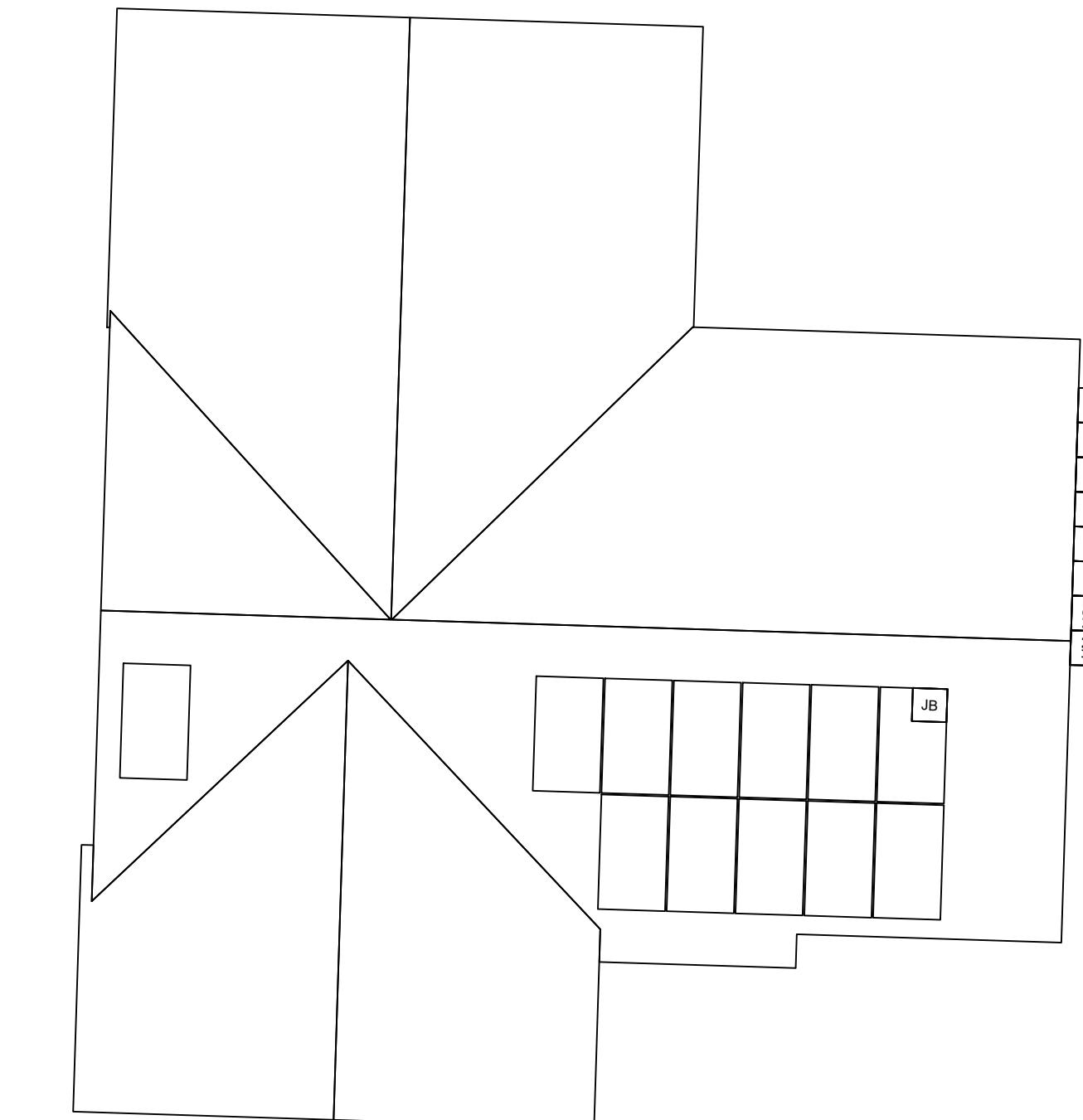
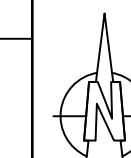
CONTRACTOR LICENSE:
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SITE PLACARD			
JOB NO:	DATE:	DESIGNED BY:	SHEET:
553889	4/17/2025	A.S	PV-5A

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.

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



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CONTRACTOR LICENSE:
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OPTIMIZER CHART

JOB NO:	DATE:	DESIGNED BY:	SHEET:
553889	4/17/2025	A.S	PV-6

SAFETY PLAN

INSTRUCTIONS:

1. USE SYMBOLS IN KEY TO MARK UP THIS SHEET.
2. SAFETY PLAN MUST BE MARKED BEFORE JOB STARTS AS PART OF THE PRE-PLAN
3. DOCUMENT ALL ADDITIONAL HAZARDS ON THIS PAGE & MAKE NOTES ON THE JHA SHEET

INCIDENT REPORTING:

INJURIES - CALL INJURY HOTLINE

(855) 400-7233

*If injury is life threatening, call 911 first THEN the Injury Hotline

NON-INJURIES - USE MOBILE INCIDENT REPORTING
(Auto, Property Damage, Near Miss)



NEAREST OCCUPATIONAL/INDUSTRIAL CLINIC:

NAME: _____

ADDRESS: _____

NEAREST HOSPITAL:

NAME: _____

ADDRESS: _____

SAFETY COACH CONTACT INFORMATION:

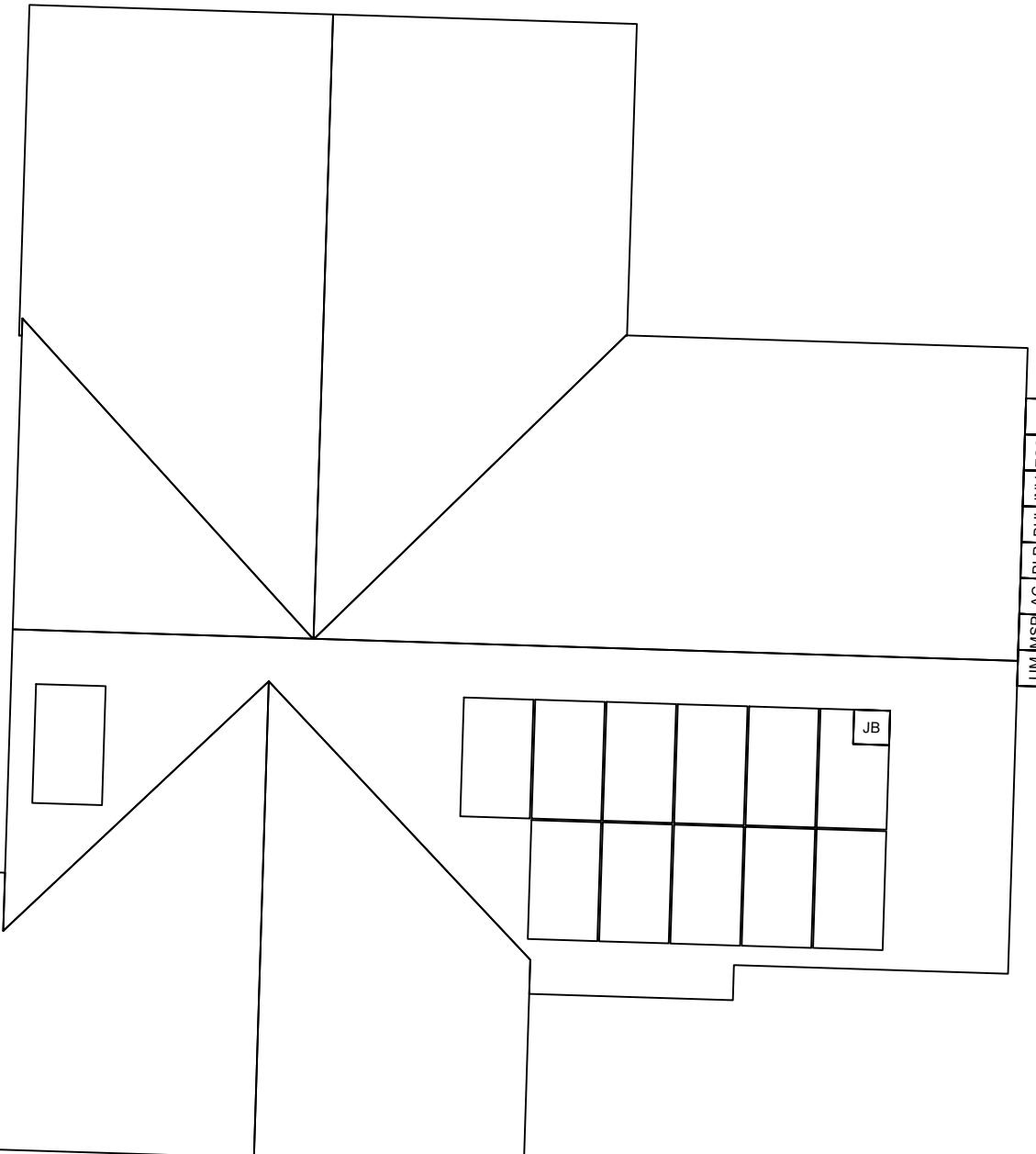
NAME: _____

PHONE NUMBER: _____

ALL EMPLOYEES ON SITE SHALL BE MADE AWARE OF THE SAFETY PLAN AND SIGN INDICATING THAT THEY ARE AWARE OF THE HAZARDS ON-SITE AND THE PLAN FOR WORKING SAFELY.

NAME	SIGNATURE
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

DATE: _____ TIME: _____



MARK UP KEY

- P PERMANENT ANCHOR
- T TEMPORARY ANCHOR
- IL INSTALLER LADDER
- B JUNCTION / COMBINER BOX
- S STUB-OUT
- X SKYLIGHT
- NO LADDER ACCESS (STEEP GRADE OR GROUND LEVEL OBSTRUCTIONS)
- RESTRICTED ACCESS
- CONDUIT
- GAS GAS SHUT OFF
- H₂O WATER SHUT OFF
- 7 SERVICE DROP
- Z POWER LINES

BREAK AND WATER LOG

THIS LOG IS TO BE FILLED OUT ANY TIME THE TEMP EXCEEDS 90 DEGREES. THE CREW LEAD AND ROOF LEAD ARE RESPONSIBLE FOR ENSURING THIS IS COMPLETED AND UPLOADED AT THE END OF EVERYDAY WHEN TEMPS EXCEED 90 DEGREES

NAME	0800HRS	0900HRS	1000HRS	1100HRS	1200HRS	1300HRS	1400HRS	1500HRS	1600HRS

INSTRUCTIONS:

1. SCAN QR LINK BELOW TO ACCESS ALL FREEDOM FOREVER SAFETY POLICIES AND PROGRAMS.



SYSTEM SIZE

PV SYSTEM (DC): 4.920kW
PV SYSTEM (AC): 3.800 kW @240V

CLIENT DETAILS

EMILY NELSON
ADDRESS: 25965 AVENIDA CABRILLO , SAN JUAN CAPISTRANO, CA 92675
AHJ: CITY OF SAN JUAN CAPISTRANO (CA)
UTILITY: SDG&E - SAN DIEGO GAS AND ELECTRIC
PHONE: (425) 503-1872
EMAIL ID: EMILY.NELSON1001@GMAIL.COM
FINANCE: ENFIN

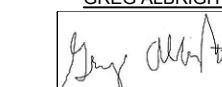
SYSTEM DETAILS

MODULES: 12 X HANWHA QCELL : Q.PEAK DUO BLK ML-GL10+410
OPTIMIZER : 12 X SOLAREDGE U650 POWER OPTIMIZER
INVERTER 1 : SOLAREDGE USE3800H-USMNBL75
BATTERY : 1 X SOLAREDGE ENERGY BANK BAT-10K1P

NO.	REVISIONS	DATE
-	-	-
-	-	-
-	-	-



FREEDOM FOREVER LLC
43445 BUSINESS PARK DR #110, TEMECULA, CA 92590
Tel: (800) 385-1075
GREG ALBRIGHT



CONTRACTOR LICENSE:
CSLB 1029644

SAFETY PLAN

JOB NO: DATE: DESIGNED BY: SHEET:
553889 4/17/2025 A.S PV-7

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

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 failing 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 un/installing fall protection.

• FPPC (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 tile):

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.

• 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):

Airborne Contaminants:

- Asbestos-containing (Transite) piping (ACP) - Do not disturb (move, drill, cut fracture, etc.)
- Asbestos-containing thermal insulation (ACI) and Asbestos-containing duct wrapping (ACW) - do not disturb, no attic or crawlspace access is allowed if work to be performed could cause exposure to personnel, client or public.

- If yes, list specific tasks and protection in place:

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 utilized 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):

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 offsite replenish is necessary, where will you go to replenish water (location/address):
- Who will replenish the drinking water (name):

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 offsite 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:

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

NOTE ADDITIONAL HAZARDS NOT ADDRESSED ABOVE

(add as many as necessary by using additional sheets)

Define the Hazard:	Method/steps to prevent incident:

SYSTEM SIZE

PV SYSTEM (DC): 4.920kW
PV SYSTEM (AC): 3.800 kW @240V

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NO.	REVISED BY	DATE
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SAFETY PLAN

JOB NO:	DATE:	DESIGNED BY:	SHEET:
553889	4/17/2025	A.S	PV-8

FOR INSTALLATION REFERENCE ONLY

SCAN QR CODE TO ACCESS REFERENCE LINK

FREEDOM REFERENCES



INSTALL HOTLINE

PV INSTALLATION REFERENCES



ENPHASE



SOLAREDGE



TESLA

BATTERY INSTALLATION REFERENCES



Enphase Storage Systems



SOLAREDGE Storage Systems



TESLA Storage Systems



NON-BACKUP Battery Systems



Misc. Quick Guide

Q.PEAK DUO BLK ML-G10+ SERIES

385-415 Wp | 132 Cells
21.0% Maximum Module Efficiency

MODEL Q.PEAK DUO BLK ML-G10+/TS



Breaking the 21% efficiency barrier

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 21.0%.



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.



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.

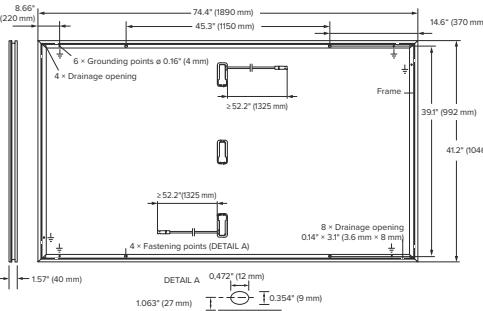
² APT test conditions according to IEC/TS 62804-1:2015, method A (-1500 V, 96 h)



Q.PEAK DUO BLK ML-G10+ SERIES

Mechanical Specification

Format	74.4 in × 41.2 in × 1.57 in (including frame) (1890 mm × 1046 mm × 40 mm)
Weight	51.8 lbs (23.5 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; (+) ≥ 52.2 in (1325 mm), (-) ≥ 52.2 in (1325 mm)
Connector	Stäubli MC4; IP68



Electrical Characteristics

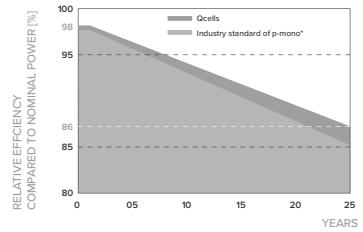
POWER CLASS	385	390	395	400	405	410	415	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5W/-0W)								
Power at MPP ¹	P _{MPP} [W]	385	390	395	400	405	410	415
Short Circuit Current ¹	I _{SC} [A]	11.04	11.07	11.10	11.14	11.17	11.20	11.23
Open Circuit Voltage ¹	V _{OC} [V]	45.19	45.23	45.27	45.3	45.34	45.37	45.41
Current at MPP	I _{MPP} [A]	10.59	10.65	10.71	10.77	10.83	10.89	10.95
Voltage at MPP	V _{MPP} [V]	36.36	36.62	36.88	37.13	37.39	37.64	37.89
Efficiency ¹	η [%]	≥ 19.5	≥ 19.7	≥ 20.0	≥ 20.2	≥ 20.5	≥ 20.7	≥ 21.0

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT²

Minimum	Power at MPP	P _{MPP} [W]	288.8	292.6	296.3	300.1	303.8	307.6	311.3
Short Circuit Current	I _{SC} [A]	8.90	8.92	8.95	8.97	9.00	9.03	9.05	
Open Circuit Voltage	V _{OC} [V]	42.62	42.65	42.69	42.72	42.76	42.79	42.83	
Current at MPP	I _{MPP} [A]	8.35	8.41	8.46	8.51	8.57	8.62	8.68	
Voltage at MPP	V _{MPP} [V]	34.59	34.81	35.03	35.25	35.46	35.68	35.89	

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 • *800 W/m², NMOT, spectrum AM 1.5

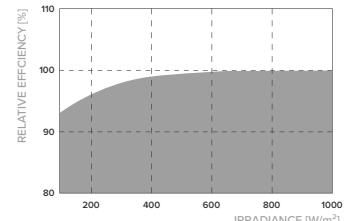
Qcells PERFORMANCE WARRANTY



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

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

PERFORMANCE AT LOW IRRADIANCE



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

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	a [%/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	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)/75 (3600 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]	112 (5400 Pa)/112 (5400 Pa)		

³ See Installation Manual

Qualifications and Certificates

UL61730-1 & UL61730-2, CE-compliant, Quality Controlled PV - TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells),



Specifications subject to technical changes © Qcells Q.PEAK DUO BLK ML-G10+ TS.DA_385-405_2024-04_Rev02_NAwithoutZEP

The ideal solution for:



Rooftop arrays on residential buildings



Rooftop arrays on commercial/industrial buildings



*Contact your Qcells Sales Representative for details regarding the module's eligibility to be Buy American Act (BAA) compliant.

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.

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

qcells



SolarEdge Home Hub Inverter

USA Domestic Content Eligible*

Single Phase, for North America

SE3800H-US / SE5700H-US / SE7600H-US / SE10000H-US /
SE11400H-US



**SolarEdge's USA-manufactured residential single phase inverter
offering for storage and backup applications**

- ✓ Eligible for domestic content: SolarEdge USA-manufactured inverters*, when paired with certain SolarEdge power optimizers, are intended to be eligible for the enhanced federal income tax credit for domestic content
- ✓ The ultimate home energy manager in charge of PV production, battery storage, backup operation during a power outage**, EV Charging, and smart energy devices
- ✓ Record-breaking 99% weighted efficiency with up to 200% DC oversizing
- ✓ Able to start high LRA HVAC systems during backup operation
- ✓ Integrates seamlessly with the complete SolarEdge Home Smart Energy Ecosystem, through SolarEdge Home Network
- ✓ Module-level monitoring and visibility of battery status, PV production, and self-consumption data
- ✓ Fast and easy installation – small and lightweight, with reduced commissioning time
- ✓ A scalable solution that supports future homeowner needs through easy connection to a growing ecosystem of products
- ✓ Advanced safety features with integrated arc fault protection and rapid shutdown for 690.11 and 690.12
- ✓ Advanced reliability with automotive-grade components
- ✓ Embedded revenue grade production data, ANSI C12.20 Class 0.5
- ✓ NEMA 4X-rated, for indoor and outdoor installations
- ✓ Embedded Power Control System (PCS) – install larger systems while avoiding main panel upgrade

* Manufactured by SolarEdge with the intent to be eligible for inclusion under the electric safe harbor in calculating the Domestic Cost Percentage under the "Rooftop (MLPE)" category (under IRS Notice 2024-41). For inverters with part number USExxxxH-USMNL75, the PCBA, Electrical Parts, and Enclosure are domestically produced and manufactured to meet the requirements of eligibility to be considered for the ITC domestic content bonus adder. For inverters with part number SExxxxxH-USMNxBLx5, the PCBA and Enclosure are domestically manufactured to meet the requirements of eligibility to be considered for the ITC domestic content bonus adder. SolarEdge does not provide tax and/or legal advice. You should consult with your own legal and/or tax advisor(s) regarding the eligibility of your project for the ITC or PTC, including the 10% domestic content bonus, to determine how the applicable rules apply to your particular project. The forward-looking statements in this datasheet are accurate as of the date herein and are subject to change. For more information, please contact your local SolarEdge sales representative.

** Requires additional hardware and firmware version upgrade.

solaredge.com

HOME BACKUP

/ SolarEdge Home Hub Inverter

USA Domestic Content Eligible

Single Phase, for North America

SE3800H-US / SE5700H-US / SE7600H-US / SE10000H-US / SE11400H-US

Applicable to inverters with part number	SExxxxxH-USMNxBLx5 / USExxxxH-USMNL75				
Model Number ⁽¹⁾	SE3800H-US	SE5700H-US	SE7600H-US	SE10000H-US	SE11400H-US
OUTPUT – AC ON GRID					
Maximum AC Power Output	3800 @ 240V 3300 @ 208V	5760 @ 240V 5000 @ 208V	7600 @ 240V	10,000 @ 240V	11,400 @ 240V 10,000 @ 208V
AC Output Voltage (Nominal)				208 / 240	Vac
AC Output Voltage (Range)				183 – 264	Vac
AC Frequency Range (min - nom - max)				59.3 – 60 – 60.5 ⁽²⁾	Hz
Maximum Continuous Output Current	16 @ 240V 16 @ 208V	24 @ 240V 24 @ 208V	32 @ 240V	42 @ 240V	47.5 @ 240V 48 @ 208V
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 STANDALONE (BACKUP)⁽³⁾					
Rated AC Power in Standalone Operation ⁽⁴⁾				11,400	W
Maximum Continuous Output Current in Standalone Operation				48	A
Locked Rotor Amperage (LRA) ⁽⁵⁾				Up to 106	A
AC L-N Output Voltage Range in Standalone Operation				211 – 264	Vac
AC L-N Output Voltage Range in Standalone Operation				105 – 132	Vac
AC Frequency Range in Standalone Operation (min - nom - max)				55 – 60 – 65	Hz
GFDI				1	A
THD				< 5	%
INPUT – DC (PV AND BATTERY)					
Transformer-less, Ungrounded				Yes	
Maximum Input Voltage				480	Vdc
Nominal DC Input Voltage				380	Vdc
Reverse-Polarity Protection				Yes	
Ground-Fault Isolation Detection				600kΩ Sensitivity	
Maximum Input Short Circuit Current				45	Adc
Maximum Inverter Efficiency				99.2	%
CEC Weighted Efficiency	98.5		99	99 @ 240V 98.5 @ 208V	%
2-Pole Disconnection				Yes	
DC CONNECTION – PV					
Maximum Input Power	7600 @ 240V 6600 @ 208V	11,520 @ 240V 10,000 @ 208V	15,200 @ 240V	20,000 @ 240V	22,800 @ 240V 20,000 @ 208V
Maximum Input Current	20 @ 240V 17 @ 208V	30 @ 240V 26 @ 208V	40 @ 240V	53 @ 240V	60 @ 240V 53 @ 208V
Number of Ports				3	
Maximum Current per Port				40	Adc

(1) These specifications apply to inverters with part number SExxxxxH-USMNxBLx5 and USExxxxH-USMNL75 and connection unit model number DCD-1PH-US-PxH-F-x

(2) For other regional settings please refer to the [SolarEdge Inverters Power Control Options](#) application note.

(3) Not designed for non-grid connected applications and requires AC for commissioning. Standalone (backup) functionality is only supported for the 240V grid.

(4) For models SE7600H-US and below, the Rated AC Power in Standalone Operation is configurable between 7,600W with a Maximum Continuous Output Current of 32A or 11,400W with a Maximum Continuous Output Current of 48A, from firmware version 4.20xx.

(5) For more information about LRA (Locked Rotor Amperage) values, see the [SolarEdge Home Hub Inverter LRA](#) application note.

/ SolarEdge Home Hub Inverter

USA Domestic Content Eligible

Single Phase, for North America

SE3800H-US / SE5700H-US / SE7600H-US / SE10000H-US / SE11400H-US

Applicable to inverters with part number	SExxxxxH-USMNxBLx5 / USExxxxH-USMNBL75				
Model Number ⁽¹⁾	SE3800H-US	SE5700H-US	SE7600H-US	SE10000H-US	SE11400H-US
DC CONNECTION – BATTERY					
Supported Battery Types	SolarEdge Home Battery 400V				
Number of Batteries per Inverter	Up to 3				
Maximum Continuous Power (Charge and Discharge) ⁽⁶⁾	11,400 W				
Number of Ports	2				
Maximum Current per Port	40 Adc				
2-pole Disconnection	Up to the inverter's rated standalone power				
SMART ENERGY CAPABILITIES					
Consumption Metering	Built-in ⁽⁷⁾				
Standalone & Battery Storage	With Backup Interface (purchased separately) for service up to 200A; up to 3 inverters				
EV Charging	Direct connection to the SolarEdge Home EV Charger ⁽⁸⁾				
ADDITIONAL FEATURES					
Supported Communication Interfaces	RS485, Ethernet, Cellular ⁽⁹⁾ , Wi-Fi ⁽¹⁰⁾ (optional), SolarEdge Home Network ⁽¹⁰⁾ (optional)				
Revenue Grade Metering, ANSI C12.20	Built-in ⁽⁷⁾				
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, NEC 690.12				
STANDARD COMPLIANCE					
Safety	UL 1741, UL 1741SA, UL 1741SB, UL 1699B, CSA 22.2#107.1, C22.2#330, C22.3#9, ANSI/CAN/UL 9540				
Grid Connection Standards	IEEE1547-2018 and IEEE-1547.1 Rule 21, Rule 14H				
Emissions	FCC Part 15 Class B				
Power Control System (PCS)	UL 1741 PCS ⁽¹¹⁾				
INSTALLATION SPECIFICATIONS					
AC Terminals	L1, L2, N terminal blocks, PE busbar for inverter connection L1, L2 terminal blocks, PE busbar for EV Charger AC connection				
DC Terminals	3 x terminal block pairs for PV input, 2 x terminal block pair for battery input				
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)	21.06 x 14.6 x 8.2 / 535 x 370 x 208 in / mm				
Weight with Connection Unit	44.9 / 20.3 lb / kg				
Noise	< 50 dBA				
Cooling	Natural Convection				
Operating Temperature Range	-40 to +140 / -40 to +60 ⁽¹²⁾ °F / °C				
Protection Rating	NEMA 4X				

(6) Discharge power is limited up to the inverter's rated AC power for on-grid and standalone applications, as well as up to the installed batteries' rating.

(7) For consumption metering current transformers should be ordered separately: SECT-SPL-225A-T-20 or SEACT1250-400NA-20. Revenue grade metering is only for production metering.

(8) For more information about the SolarEdge Home EV Charger, refer to the [SolarEdge Home EV Charger datasheet](#).

(9) Information concerning the data plan terms & conditions is available in [SolarEdge Communication Plan Terms and Conditions](#).

(10) SolarEdge Home Network Plugin ENET-HBNP-01 and Wi-Fi Antenna SE-ANT-ZBWFKIT purchased separately. For more information, refer to the [SolarEdge Home Network Plugin datasheet](#) and the [Antenna for Wi-Fi and ZigBee Wireless Communications datasheet](#).

(11) Only part numbers SExxxxxH-USMNxx7x and USExxxxH-USMNxx7x support the PCS meter.

(12) Full power up to at least 122°F / 50°C; for power derating information refer to the [Temperature Derating for North America technical note](#).

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.

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[!\[\]\(63c637fab7465f6861f4cd6c5336ca32_img.jpg\) @SolarEdgePV](#)

[!\[\]\(797008f668b861bc39af9103e66d0e26_img.jpg\) @SolarEdge_US](#)

[!\[\]\(37baff4e7b064d7b661cee21a346388a_img.jpg\) SolarEdge North America](#)

[!\[\]\(ddcec0f1a334b28c29f8ebacd57a342d_img.jpg\) SolarEdge](#)

[!\[\]\(fefe61cf712198e9351787562bfb099c_img.jpg\) www.solaredge.com/corporate/contact](http://www.solaredge.com/corporate/contact)

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Residential Power Optimizer

USA Domestic Content Eligible*

For North America

U650



Made in the USA
from imported parts

SolarEdge's USA-manufactured residential offering for PV power optimization at the module level

- ✓ Eligible for domestic content: SolarEdge USA-manufactured Power Optimizers*, when paired with certain SolarEdge inverters, are intended to be eligible for the enhanced federal income tax credit for domestic content
- ✓ Specifically designed to work with SolarEdge residential inverters
- ✓ Superior efficiency (99.5%)
- ✓ Mitigates diverse types of module mismatch loss, from manufacturing tolerance to partial shading
- ✓ Faster installations with simplified cable management and easy assembly using a single bolt
- ✓ Flexible system design for maximum space utilization
- ✓ Compatible with a wide range of modules, including high-powered and bifacial PV modules
- ✓ Advanced safety:
 - ✓ Patented Sense Connect technology, designed to automatically detect and prevent potential electric arcs at the connector level before an arc is created
 - ✓ Patented SafeDC™ – module-level voltage shutdown, for installer and firefighter safety
 - ✓ Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

* Manufactured by SolarEdge with the intent to be eligible for inclusion under the elective safe harbor in calculating the Domestic Cost Percentage under the "Rooftop (MLPE)" category (under IRS Notice 2024-41). The PCBA, Electrical Parts, Enclosure and Production are domestically manufactured to meet the requirements of eligibility to be considered for the ITC domestic content bonus adder. SolarEdge does not provide tax and/or legal advice. You should consult with your own legal and/or tax advisor(s) regarding the eligibility of your project for the ITC or PTC, including the 10% domestic content bonus, to determine how the applicable rules apply to your particular project. The forward-looking statements in this datasheet are accurate as of the date herein and are subject to change. For more information, please contact your local SolarEdge sales representative.

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/ Residential Power Optimizer

USA Domestic Content Eligible for North America

U650

	U650	Units
INPUT		
Rated Input DC Power ⁽¹⁾	650	W
Absolute Maximum Input Voltage (Voc)	60	Vdc
MPPT Operating Range	8 – 60	Vdc
Maximum Input Current (Maximum Isc of Connected PV Module)	15	Adc
Maximum Input Short Circuit Current ⁽²⁾	18.75	Adc
Maximum Efficiency	99.5	%
Weighted Efficiency	98.6	%
Overvoltage Category	II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)		
Maximum Output Current	15	Adc
Maximum Output Voltage	60	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR INVERTER OFF)		
Safety Output Voltage per Power Optimizer	1 ± 0.1	Vdc
STANDARD COMPLIANCE		
Photovoltaic Rapid Shutdown System	CSA C22.2#330, NEC 2014 – 2023	
EMC	FCC Part 15 Class B, IEC 61000-6-2, IEC 61000-6-3	
Safety	CSA C22.2#107.1, IEC 62109-1 (Class II safety), UL 1741	
Material	UL 94 V-0, UV Resistant	
RoHS	Yes	
Fire Safety	VDE-AR-E 2100-712:2013-05	
INSTALLATION SPECIFICATIONS		
Maximum Allowed System Voltage	1000	Vdc
Dimensions (W x L x H)	129 x 155 x 30 / 5.07 x 6.10 x 1.18	mm / in
Weight	720 / 1.6	gr / lb
Input Connector	MC4	
Input Wire Length	0.1 / 0.32	m / ft
Output Connector	MC4	
Output Wire Length	(+) 2.3, (-) 0.10 / (+) 7.54, (-) 0.32	m / ft
Operating Temperature Range ⁽³⁾	-40 to +85	°C
Protection Rating	IP68 / NEMA6P	
Relative Humidity	0 – 100	%

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

(2) The Maximum Input Short Circuit Current is adjusted for worst case conditions of ambient temperature, irradiance, bifacial gain, and so on, in accordance with NEC and CSA.

(3) Power derating is applied for ambient temperatures above +85°C / +185°F. Refer to the [Power Optimizers Temperature Derating](#) technical note for details.

PV System Design Using a SolarEdge Home Wave / SolarEdge Inverter ⁽⁴⁾	SolarEdge Home Wave / Hub Single Phase	Three Phase for 208V Grid	Three Phase for 277/480V Grid	Units
Minimum String Length (Power Optimizers)	8	10	18	
Maximum String Length (Power Optimizers)		25	50 ⁽⁵⁾	
Maximum Usable Power Delivered per String	5700	6000	12,750	W
Maximum Allowed Connected Power per String ⁽⁶⁾⁽⁷⁾	Inverters with Rated AC Power ≤ 5700W Inverters with Rated AC Power of 6000W Inverters with Rated AC Power ≥ 7600W	Per the inverter's maximum input DC power ⁽⁸⁾ 5700 6800, only when connected to at least two strings	One string: 7200 Two strings or more: 7800	15,000
Parallel Strings of Different Lengths or Orientations			Yes	

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

(5) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement.

(6) For the 208V grid, the maximum is permitted only when the difference in connected power between strings is 1,000W or less.

(7) For the 240V or 277/480V grids, the maximum is permitted only when the difference in connected power between strings 2,000W or less.

(8) Refer to the [Single String Design Guidelines](#) application note for more details.

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A. System Specifications and Ratings

- Maximum Voltage: 1,000 Volts
- Maximum Current: 80 Amps
- Allowable Wire: 14 AWG – 6 AWG
- Maximum Number of Input Circuits: 4
- Spacing: Please maintain a spacing of at least ½" between uninsulated live parts and fittings for conduit, armored cable, and uninsulated live parts of opposite polarity.
- Enclosure Rating: Type 3R
- Roof Slope Range: 2.5 – 12:12
- Max Side Wall Fitting Size: 1"
- Max Floor Pass-Through Fitting Size: 1"
- Ambient Operating Conditions: (-35°C) - (+75°C)
- Compliance:
 - JB-3: UL1741, CSA C22.2 No. 290
 - Approved wire connectors: must conform to UL1741
- System Marking: **Intertek Symbol and File #5025824**
- Periodic Re-inspections: If re-inspections yield loose components, loose fasteners, or any corrosion between components, components that are found to be affected are to be replaced immediately.

Table 1: Typical Wire Size, Torque Loads and Ratings

	1 Conductor	2 Conductor	Torque				
			Type	NM	Inch Lbs	Voltage	Current
ABB ZS6 terminal block	10-24 awg	16-24 awg	Sol/Str	0.5-0.7	6.2-8.85	600V	30 amp
ABB ZS10 terminal block	6-24 awg	12-20 awg	Sol/Str	1.0-1.6	8.85-14.16	600V	40 amp
ABB ZS16 terminal block	4-24 awg	10-20 awg	Sol/Str	1.6-2.4	14.6-21.24	600V	60 amp
ABB M6/8 terminal block	8-22 awg		Sol/Str	.08-1	8.85	600V	50 amp
Ideal 452 Red <small>WING-NUT Wire Connector Part #39</small>	8-18 awg		Sol/Str	Self-Torque	Self-Torque	600V	
Ideal 451 Yellow <small>WING-NUT Wire Connector Part #39</small>	10-18 awg		Sol/Str	Self-Torque	Self-Torque	600V	
Ideal, In-Sure <small>Push-In Connector Part #39</small>	10-14 awg		Sol/Str	Self-Torque	Self-Torque	600V	
WAGO, 2204-1201	10-20 awg	16-24 awg	Sol/Str	Self-Torque	Self-Torque	600V	30 amp
WAGO, 221-612	10-20 awg	10-24 awg	Sol/Str	Self-Torque	Self-Torque	600V	30 amp
Dottie DRC75	6-12 awg		Sol/Str	Snap-In	Snap-In		
ESP NG-53	4-6 awg		Sol/Str		45	2000V	
	10-14 awg		Sol/Str		35		
ESP NG-717	4-6 awg		Sol/Str		45	2000V	
	10-14 awg		Sol/Str		35		
Brumall 4-5,3	4-6 awg		Sol/Str		45	2000V	
	10-14 awg		Sol/Str		35		

Table 2: Minimum wire-bending space for conductors through a wall opposite terminals in mm (inches)

Wire size, AWG or kcmil (mm ²)	Wires per terminal (pole)				
	1 mm (inch)	2 mm (inch)	3 mm (inch)	4 or More mm (inch)	
14-10 (2.1-5.3)	Not Specified	-	-	-	
8 (8.4)	38.1 (1-1/2)	-	-	-	
6 (13.3)	50.8 (2)	-	-	-	



Specifications

Eaton DG221URB

Catalog Number: DG221URB

Eaton General duty non-fusible safety switch, single-throw, 30 A, 240 V, NEMA 3R, Rainproof, Painted galvanized steel, Two-pole, Two-wire

General specifications



Product Name	Catalog Number
Eaton general duty non-fusible safety switch	DG221URB
	UPC
	782113120232
Product Length/Depth	Product Height
6.88 in	10.81 in
Product Width	Product Weight
6.38 in	6 lb
Warranty	Compliances
Eaton Selling Policy 25-000, one (1) year NEC 230.62 (C) Compliant Barrier from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.	Eaton Selling Policy 25-000, one (1) year NEC 230.62 (C) Compliant Barrier from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.
	Certifications
	UL Listed
	Catalog Notes
	WARNING! Switch is not approved for service entrance unless a neutral kit is installed.

Physical Attributes

Enclosure
NEMA 3R
Enclosure material
Painted galvanized steel
Fuse configuration
Non-fusible
Number Of Poles
Two-pole
Number of wires
2

Type
Non-fusible, single-throw

Performance Ratings

Amperage Rating
30A
Voltage rating
240V

Miscellaneous
Product Category
General duty safety switch

Resources

Multimedia
Double Up on Safety
Switching Devices Flex Center
Specifications and datasheets
Eaton Specification Sheet - DG221URB

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SolarEdge Home Battery 400V

USA Domestic Content Eligible*

For North America

BAT-10K1P



10
YEAR
WARRANTY



SolarEdge's USA-manufactured offering optimized for SolarEdge Home Hub Inverters

- ✓ Eligible for domestic content: SolarEdge USA-manufactured batteries* are intended to be eligible for the enhanced federal income tax credit for domestic content
- ✓ DC coupled battery featuring outstanding overall system efficiency, generating more energy to store and use for on-grid and backup** power applications
- ✓ Integrates seamlessly with the complete SolarEdge Home ecosystem using SolarEdge Home Network, offering a single source for warranty, support, and training, to streamline logistics and operations
- ✓ Solar, storage, EV charging, and smart devices all monitored and managed by a single app to an optimized production, consumption, and backup* power
- ✓ Includes multiple safety features:
 - ✓ Continuous protection through measurement and monitoring, using a mix of software and hardware measures
 - ✓ Rapid Shutdown and SafeDC™
 - ✓ Qualified by UL9540A, the latest and most stringent UL fire safety standard
 - ✓ Featuring ThermoShield™ technology: a cell-level protection mechanism
 - ✓ Simple plug and play installation, with automatic SetApp-based configuration
 - ✓ Flexible installation - wall or floor mount, indoor or outdoor
 - ✓ Wireless communication to the inverter, reducing wiring, labor, and installation

* Manufactured by SolarEdge with the intent to be eligible for inclusion under the elective safe harbor in calculating the Domestic Cost Percentage under the "Distributed BESS" category (under IRS Notice 2024-41). Batteries with part number **UBAT-10K1PSOB-03**, the Packaging, the Thermal Management System, and the Battery Management System are domestically produced and manufactured to meet the requirements of eligibility to be considered for the ITC domestic content bonus adder. SolarEdge does not provide tax and/or legal advice. You should consult with your own legal and/or tax advisor(s) regarding the eligibility of your project for the ITC or PTC, including the 10% domestic content bonus, to determine how the applicable rules apply to your particular project. The forward-looking statements in this datasheet are accurate as of the date herein and are subject to change. For more information, please contact your local SolarEdge sales representative.

** Backup applications are subject to local regulation and may require additional components and firmware upgrade.

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/ SolarEdge Home Battery 400V

USA Domestic Content Eligible, for North America

BAT-10K1P

UBAT-10K1PSOB-03

BATTERY SPECIFICATION

Usable Energy (100% depth of discharge)	9700	Wh
Continuous Output Power ⁽¹⁾	5000	W
Peak Output Power (for 10 seconds)	7500	W
Peak Roundtrip Efficiency	94.5	%
Warranty ⁽²⁾	10	Years
Voltage Range	350 – 450	Vdc
Max Continues Output Current	14.3	A
Max Short Circuit Current / Duration	1k/10	Adc/msec

ADDITIONAL FEATURES

Compatible Inverters ⁽³⁾	SolarEdge Home Hub Inverters
Batteries per Inverter ⁽⁴⁾	Up to 3
Communication Interfaces	Wireless ⁽⁵⁾ and RS485

STANDARD COMPLIANCE

Certification	Cell	UL 1642
	Battery	UL 1973, UL 9540A, UL 9540, UN 38.3
Emissions		FCC Part 15 Class B

MECHANICAL SPECIFICATIONS

Dimensions (W x H x D)	31.1 x 46.4 x 9.84 / 790 x 1179 x 250	in / mm
Weight	262 / 119	lb / kg
Mounting	Floor ⁽⁶⁾ or wall mount ⁽⁷⁾	
Ambient Operating Temperature Range ⁽⁸⁾	+14 to +122 / -10 to +50	°F / °C
Storage Temperature (limited period) ⁽⁹⁾	-22 to +140 / -30 to +60	°F / °C
Storage Temperature (Up to 12 months since shipment date)	+14 to +86 / -10 to +30	°F / °C
Enclosure Protection	IP55 / NEMA 3R - indoor and outdoor (water and dust protection)	
Maximum Altitude	6562 / 2000	ft / m
Cooling	Natural convection	
Noise (at 1m distance)	<25	dBA

(1) Charge/discharge power may differ according to temperature range.

(2) For warranty details, see the [SolarEdge Home Battery](#) limited product warranty.

(3) For compatible inverter information, see the [SolarEdge Home Hub Inverter for North America](#) datasheet and the [SolarEdge Home Hub Inverter for North America Assembled in North America](#) datasheet.

(4) Installations with multiple SolarEdge Home Batteries connected to a single inverter require a pair of SolarEdge branch connectors (DC + and DC -) per battery, excluding the last battery. The branch connectors should be purchased separately. For more details, see the [Connecting the Home Hub Inverter to Multiple Home Batteries](#) technical note.

(5) For additional details, see the [SolarEdge Home Network Plug-In](#) datasheet.

(6) The floor stand is purchased separately. One floor stand is required per SolarEdge Home Battery. See the [SolarEdge Home Battery \(High Voltage\) Floor Mount Stand](#) assembly guide and the Accessories P/N table below.

(7) Wall mount installation requires handles that should be purchased separately. See the Accessories P/N table below.

(8) The SolarEdge Home Battery 400V must be installed in a location where the ambient temperature falls between +32°F to +104°F for no less than 95% of the warranty period and between +14°F to +122°F for the rest of the period. For details, see the [SolarEdge Home Battery](#) limited product warranty.

(9) For details, see the [SolarEdge Home Battery 400V Transportation and Storage Guidelines](#) application note.

SolarEdge Home Battery – Accessories (purchased separately)

ACCESSORY	P/N
Floor stand	IAC-RBAT-FLRSTD-01
Branch connector set (includes 10 pairs of DC + and DC - connectors)	IAC-RBAT-USYCLB-01
Required for installations with multiple SolarEdge Home Battery batteries with a single inverter Handles	IAC-RBAT-HANDLE-01

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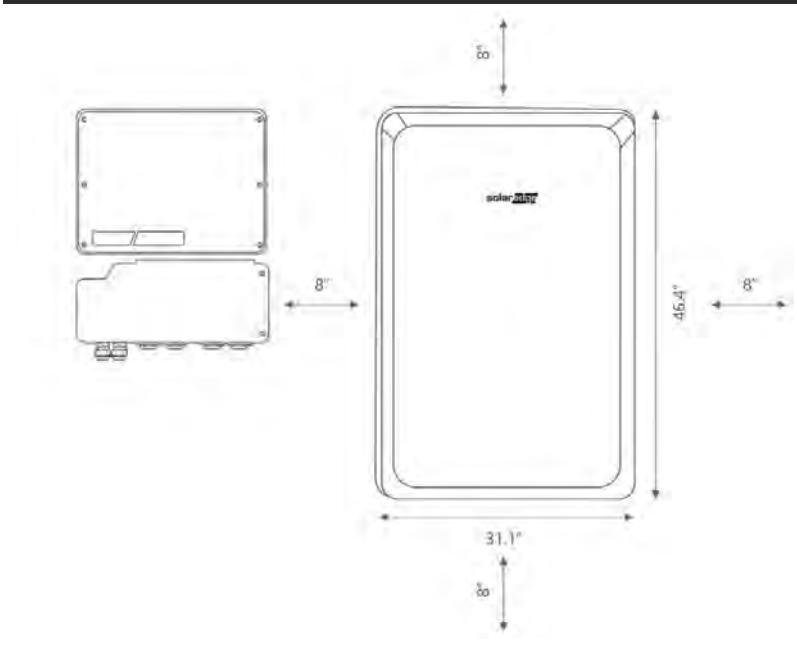
CE

/ SolarEdge Home Battery 400V

USA Domestic Content Eligible, for North America

BAT-10K1P

SolarEdge Home Battery Dimensions and Placement



SolarEdge Home Backup Interface For North America

BI-E / BI-N



Backup Interface for Flexible Backup

- Automatically provides backup power to home loads in the event of grid interruption
- Full flexibility in which loads to back up – the entire home or selected loads
- Scalable solution to support higher power and higher capacity
- Built-in PCS certified* Energy Meter readies the Backup Interface to be part of the Busbar Current Management**
- Seamless integration with the SolarEdge Home Hub Inverter to manage and monitor both PV generation and energy storage
- Generator connection support
- Built-in Auto Transformer that supports 5kW of Phase Imbalance

HOME BACKUP

/ SolarEdge Home Backup Interface For North America

BI-E / BI-N

Applicable to Backup Interface with Part Number	BI-xxxxx-02 / BI-xxxxx-03		Units
Model	BI-E	BI-N	
INPUT FROM GRID			
AC Current Input	200		A
AC Output Voltage (Nominal)	240		Vac
AC Output Voltage Range	211 – 264		Vac
AC Frequency (Nominal)	60		Hz
AC Frequency Range	59.3 – 60.5		Hz
Microgrid Interconnection Device Rated Current	200		A
Service Side AC Main Circuit Breaker Rated Current	200	N/A	A
Service Side AC Main Circuit Breaker Interrupt Current	10,000	N/A	A
Grid Disconnection Switchover Time	<100		ms
OUTPUT TO MAIN DISTRIBUTION PANEL			
Maximum AC Current Output	200		A
AC L-L Output Voltage (Nominal)	240		Vac
AC L-L Output Voltage Range	211 – 264		Vac
AC Frequency (Nominal)	60		Hz
AC Frequency Range	59.3 – 60.5		Hz
Maximum Inverters AC Current Output in Backup Operation	144		A
Imbalance Compensation in Backup Operation	5000		W
AC L-N Output Voltage in Backup (Nominal)	120		V
AC L-N Output Voltage Range in Backup	105 – 132		V
AC Frequency Range in Backup	55 – 65		Hz
INPUT FROM INVERTER			
Number of Inverter Inputs	Up to 3		#
Maximum Rated AC Power in On-Grid and Backup Operation	11,400		W
Maximum Continuous Current in On-Grid and Backup Operation	48		A
Factory Installed Inverter Input AC Circuit Breaker	40/63 ⁽¹⁾		A
Upgradability	Up to 3 x 40A/63A ⁽²⁾ CB		
GENERATOR			
Maximum Rated AC Power	22,500		W
Maximum Continuous Input Current	94		Aac
Dry Contact Switch Voltage Rating	250 / 30		Vac / Vdc
Dry Contact Switch Current Rating	5		A
2-wire Start Switch	Yes		
ADDITIONAL FEATURES			
Installation Type	Suitable for use as service equipment	For main lug only	
Number of Communication Inputs	2		
Communication	RS485		
PCS Certified Energy Meter (for Import/Export) ⁽³⁾	1% accuracy		
Manual Control Over Microgrid Interconnection Device	Yes		

(1) Backup Interface with part number BI-xxxxx-03 includes one 63A circuit breaker. Backup Interface with part number BI-xxxxx-02 includes one 40A circuit breaker.

(2) 63A circuit breaker supports up to one 11.4kW inverter, and 40A circuit breaker supports up to one 7.6kW inverter. 20A, 30A, and 50A breakers can be used for inverters with lower power ratings (On-Grid and Backup Operation). The circuit breaker kits are available with the following part numbers:

- For 63A, CB-UPG-63-01
- For 40A, CB-UPG-40-01

(3) Backup Interface with part number BI-xxxxx-02 includes an Energy Meter that is NOT PCS certified.

* Only applicable to Backup Interface with part number BI-xxxxx-03. Backup Interface with part number BI-xxxxx-02 includes a built-in Auto Transformer and Energy Meter that is NOT PCS certified.

** Only applicable to Backup Interface with part number BI-xxxxx-03.

/ SolarEdge Home Backup Interface

For North America

BI-E/ BI-N

Applicable to Backup Interface with Part Number	BI-xxxxx-02 / BI-xxxxx-03		Units
Model	BI-E	BI-N	
STANDARD COMPLIANCE			
Safety	UL1741; CSA 22.2 NO. 107		
	UL869A	N/A	
Emissions	FCC Part 15 Class B		
INSTALLATION SPECIFICATIONS			
Supported Inverters	StorEdge Single Phase Inverter; SolarEdge Home Hub Inverter		
AC from Grid Conduit Size / AWG Range	2" conduit / 4 – 4/0 AWG		
AC to Loads Conduit Size / AWG Range	2" conduit / 4 – 4/0 AWG		
AC Inverter Conduit Size / AWG Range	1" conduit / 14 – 4 AWG		
AC Generator Input Conduit Size / AWG Range	1" conduit / 8 – 3 AWG		
Communication Conduit Size / AWG Range	3/4" conduit / 24 – 10 AWG		
Weight	73 / 33	lb / kg	
Cooling	Fan (user replaceable)		
Noise	< 50	dBA	
Operating Temperature Range	(-) 40 to (+) 122 / (-) 40 to (+) 50	*F / *C	
Protection Rating	NEMA 3R; IP44		
Dimensions (H x W x D)	20.59 x 13.88 x 8.62 / 523.5 x 352.5 x 219	in / mm	

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.

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DISCOVER YOUR NXT U MOUNT™

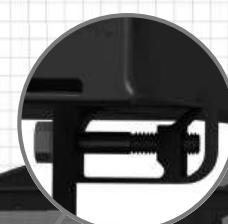
The culmination of over two decades of experience. Thoughtful design, rigorous engineering, world-class support, and a reliable supply chain are the foundation of what makes us confident that NXT U MOUNT™ is the NXT Level of DESIGN, SIMPLICITY, and VALUE.

STRONGHOLD™ RAIL CLAMP

DARK: SHCLMPD1
MILL: SHCLMPM1



Adaptable rail connection to attachments allows click-in feature compatibility with almost all of Unirac's attachments.



FlashLoc technology combined with new features: click-in rail & open slot L-Foot for the best flash-less install experience.



STRONGHOLD™ ATTACHMENT KIT

DARK: SHCPKTD1
MILL: SHCPKTM1

Rail clicks into the clamps attached to the STRONGHOLD™ base. Open slot in L-foot allows drop-in rail clamp.

Alternative attachment options:



FLASHKIT PRO
DARK: 0040550
MILL: 004055M



FLASHLOC™ DUO
DARK: 004275D
MILL: 004275M



BUTYL™ ATTACHMENT KIT

DARK: SBUTYLD1
MILL: SBUTYLM1

BUTYL™ PADS

XTRABUTL-SH
003250W

The pre-applied butyl pad removes the need for additional flashing. Just peel the liner, place the attachment, and fasten it to the roof. Butyl conforms to the screws and roof for a robust, dependable seal with no extra work!

DIRECT-TO-DECK SCREWS

003250W



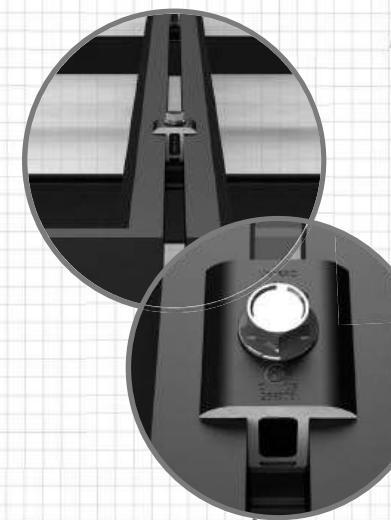
NEW NXT U MOUNT™ CLAMP

DARK: SHCLMPD2
MILL: SHCLMPM2

Clicks into rail anywhere (even where there are cables!) Self-standing clamp with spring combines as both mid and end clamp. Clamps 30-40 mm modules

1/2 inch module spacing for efficiency.

Unirac-quality bonding that works both as mid and end clamps.



NXT U MOUNT™ COMBO CLAMP

DARK: CCLAMPD1
MILL: CCLAMPM1

Clicks into rail anywhere (even where there are cables!) Self-standing clamp with spring combines as both mid and end clamp. Clamps 30-40 mm modules

1/2 inch module spacing for efficiency.

Unirac-quality bonding that works both as mid and end clamps.



NXT U MOUNT™ CAP KIT

ENDCAPD1

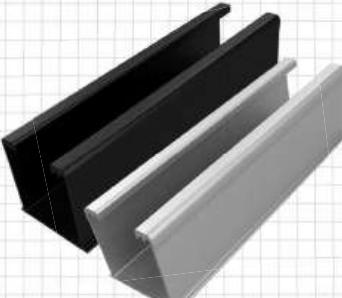
Make the install look clean with the end cap kit designed to complement the module end clamp and rail ends.

NXT U MOUNT™ RAIL

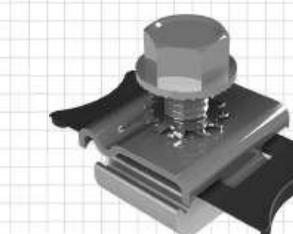
DARK: 168RLD1

MILL: 168RLM1

Strong, lightweight open channel rail with invisible, easy, unfailing and integrated wire management system.



WIRE MANAGEMENT OPTIONS



NXT U MOUNT™ MLPE & LUG CLAMP

LUGMLPE1

Structural internal splice that does not interfere with roof connection nor module connection. Pre-assembled thread cutting bolts.



NXT U MOUNT™ WIRE MANAGEMENT CLIP

WRMCLPD1

Works as either MLPE Mount or Grounding Lug connection to the rail. Why source two parts when one can do the job?



NXT U MOUNT™ N/S WIRE MGMT CLIP

WRMCNSD1

An elegant solution to help installers get to the home run. The same hardware works to provide both easy entry to rail and adjustability for cable thickness.

SOLARHOOKS



SOLARHOOKS is a complete line of versatile attachment solutions for tile roofs. Simple to install and designed for maximum convenience, **SOLARHOOKS** includes an assortment of tile hooks to solve any challenge, from universal hooks to specific shapes for flat and Spanish tiles. **SOLARHOOKS** are kitted with lag bolts for maximum convenience and have a bead blasted stainless steel finish. With **SOLARHOOKS**, you have everything you need for a quick, professional tile installation.



SIMPLE INSTALLATION

Lag bolts & EPDM washers included



VERSATILITY

Available with multiple hole patterns and slotted connections for adjustability



ASSORTMENT

Designs for Universal, Flat & Spanish tile

SOLARHOOKS

APPLICATION GUIDE



MODEL	SOLARHOOK UNIV SIDE MT CT5	SOLARHOOK FLAT SIDE MT AT1	SOLARHOOK SPANISH SIDE MT CT1	SOLARHOOK FLAT SIDE MT ST1
PART NUMBER	004CT5S	004AT1S	004CTS	004ST1S
MATERIAL	Bead Blasted 304 Stainless Steel			
APPLICATION	Best in low wind / snow regions			
USES EXISTING TILES	Yes	Yes	Yes	Yes
RAIL OR RAIL-LESS	Rail	Rail	Rail	Rail
MOUNTING METHOD	Side Mount	Side Mount	Side Mount	Side Mount
DIRECT MOUNT, NO L-FOOT REQUIRED	✓	✓	✓	✓
ADJUSTABLE	✓			
FLAT TILE	✓	✓		✓
S TILE	✓		✓	
W TILE	✓			
UNIVERSAL TILE	✓			
SIMPLE INSTALLATION	✓	✓	✓	✓
NO TILE MOD. REQUIRED	✓	✓	✓	✓
WARRANTY	25-Year	25-Year	25-Year	25-Year

THE COMPLETE TILE ROOF SOLUTION

THE COMPLETE TILE ROOF SOLUTION

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



Certificate: 70131735
Project: 80182385

Master Contract: 266909
Date Issued: 2023-11-29

Downward Design Load (lb/ft ²)	33.9
Upward Design Load (lb/ft ²)	33.9
Down-Slope Load (lb/ft ²)	16.5

Model	NXT UMOUNT	-	Flush-to-Roof is an extruded aluminum rail PV racking system that is installed parallel to the roof in landscape or portrait orientations.
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NXT UMOUNT

The system listed is designed to provide bonding/grounding, and mechanical stability for photovoltaic modules. The system is secured to the roof with the L-Foot components through the roofing material to building structure. Modules are secured to the racking system with aluminum mid clamps and aluminum end clamps. The modules are bonded to the racking system with bonding mid and end clamps with piercing points. Fire ratings of Class A with Type 1, 2, 3 (with metallic frame), 10 (with metallic frame), 19, 22, 25, 29, or 30 for steep and low slope. Tested at 5" interstitial gap which allows installation at any stand-off height.

The grounding of the system is intended to comply with the latest edition of the National Electrical Code, to include NEC 250 & 690. Local codes compliance is required, in addition to national codes. All grounding/bonding connections are to be torqued in accordance with the Installation Manual and the settings used during the certification testing for the current edition of the project report.

Latest Install Manual revision: PUB2023NOV10

UL 2703 Mechanical Load ratings for tested module area 21.86 sq ft:

NXT Systems without DTD Butyl Attachment P30817211, Rail Splice P30808218, or Rail Clamp P30817214	
Downward Design Load (lb/ft²)	113.7
Upward Design Load (lb/ft²)	51.1
Down-Slope Load (lb/ft²)	16.8

NXT Systems with DTD Butyl Attachment P30817211, Rail Splice P30808218, or Rail Clamp P30817214	
Downward Design Load (lb/ft²)	51.1
Upward Design Load (lb/ft²)	51.1



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Down-Slope Load (lb/ft²)	16.8
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UL 2703 and TIL Mechanical Load ratings tested module area 27.76 sq ft:

NXT Systems without DTD Butyl Attachment P30817211, Rail Splice P30808218, or Rail Clamp P30817214	
Downward Design Load (lb/ft²)	50.1
Upward Design Load (lb/ft²)	22.2
Down-Slope Load (lb/ft²)	8.0

NXT Systems with DTD Butyl Attachment P30817211, Rail Splice P30808218, or Rail Clamp P30817214	
Downward Design Load (lb/ft²)	39.47
Upward Design Load (lb/ft²)	22.2
Down-Slope Load (lb/ft²)	8.0

UL 2703 and TIL Mechanical Load ratings tested module area 29.49 sq ft:

NXT Systems with all components included in PUB2023NOV10 Install Manual	
Downward Design Load (lb/ft²)	37.06
Upward Design Load (lb/ft²)	20.97
Down-Slope Load (lb/ft²)	7.53

Model	SM Ascender	-	One or two row elevated or non-elevated roof system is an extruded aluminum rail PV racking system that is installed to the roof in portrait orientation.
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SM Ascender

The system listed is designed to provide bonding/grounding, and mechanical stability for photovoltaic modules. The system is secured to the roof with the L-Foot components through the roofing material to building structure. Modules are secured to the racking system with aluminum mid clamps and aluminum end clamps. Fire rating of Class A when installed over non-combustible roofing materials.

January 8, 2024

Unirac, Inc.
1411 Broadway Boulevard NE
Albuquerque, New Mexico 87102
TEL: (505) 242-6411
FAX: (505)242-6512

Re.: Innova Technologies No.: 124-099-1000
Unirac NXT U-Mount Design Tool – Arizona

Attn: Engineering Services

Innova Technologies Inc. has reviewed Unirac's NXT U-Mount design tool and analysis, including the U-Builder online tool. NXT U-mount is a proprietary system to support Photovoltaic (PV) panels on a roof top structure.

All analysis and information in the NXT design tool's formulas and tables comply with the following:

- 2009-2021 International Building Code, by International Code Council Inc. With SEAOC PV2 provisions.
- ASCE/SEI 7-05 through 7-16 Minimum Design Loads and Other Structures, by American Society of Civil Engineers.
- 2005 through 2020 Aluminum Design Manual, by the Aluminum Association.

This letter certifies that the structural analysis of the racking members and their direct components comply with the above codes and methodologies. This Design tool does not review the existing roof structure, or the PV panels themselves.

The U-Builder tool should be used under review of a registered design professional where required by the authority having jurisdiction.

For more information, see the construction drawings, and manufacturer installation instructions.

Best Regards,



Carlos Banchik
President & Principal
Innova Technologies, Inc.

