PROJECT DESCRIPTION:

26 x 400 VSUN SOLAR VSUN400-108M-BB (400W) MODULES
ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES

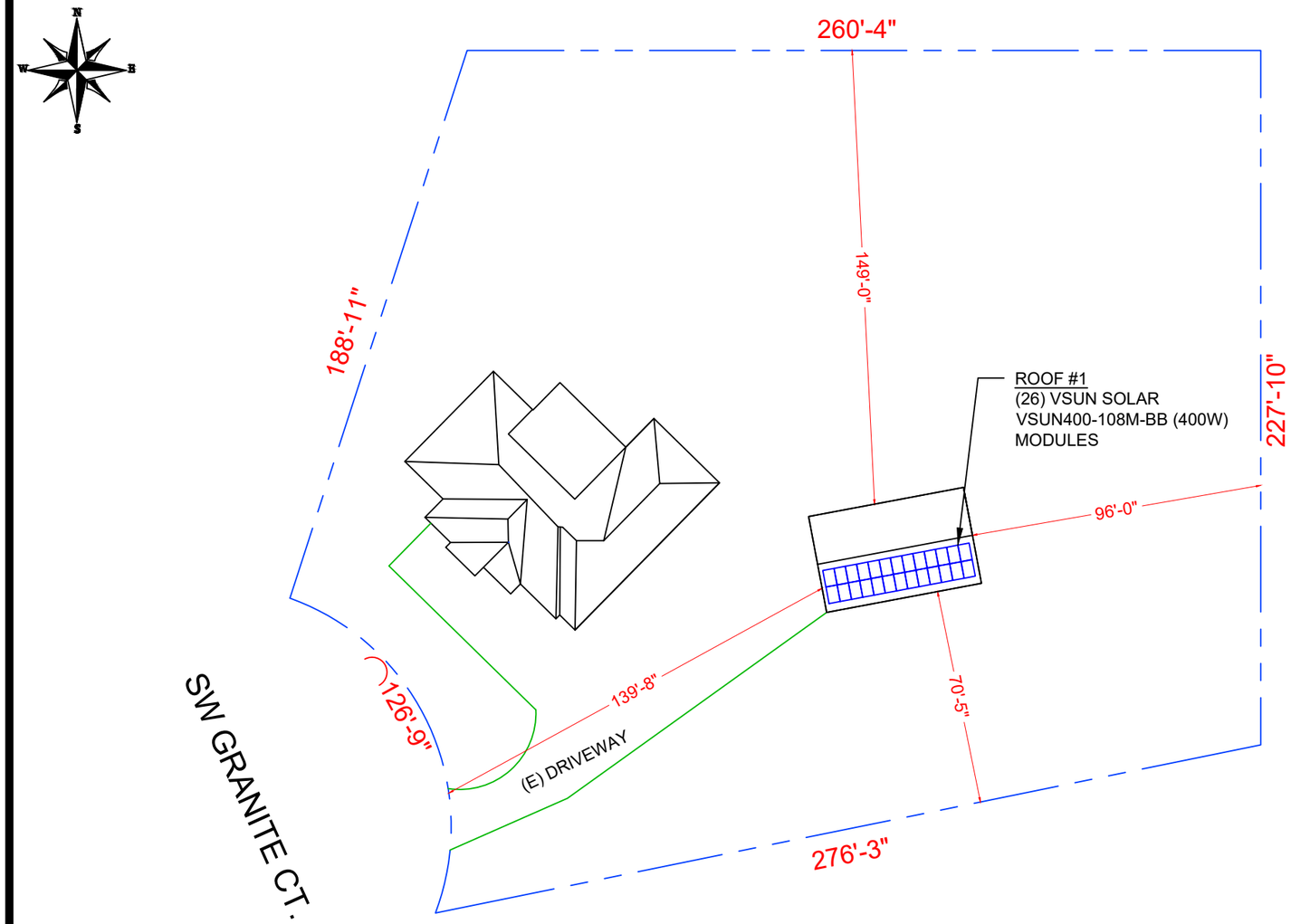
SYSTEM SIZE: 10.4 kW DC STC

EQUIPMENT SUMMARY
26 VSUN SOLAR VSUN400-108M-BB MODULES
1 TESLA POWERWALL+ INVERTER
09 TESLA MCI2 RAPID SHUTDOWN

GOVERNING CODES :
FLORIDA RESIDENTIAL CODE, 7TH EDITION 2020 (FRC)
FLORIDA PLUMBING CODE, 7TH EDITION 2020 (FPC)
FLORIDA BUILDING CODE, 7TH EDITION 2020 EDITION (FBC)
FLORIDA MECHANICAL CODE, 7TH EDITION 2020 (FMC)
2017 NATIONAL ELECTRICAL CODE
FLORIDA FIRE PREVENTION CODE, 7TH EDITION (FFPC)

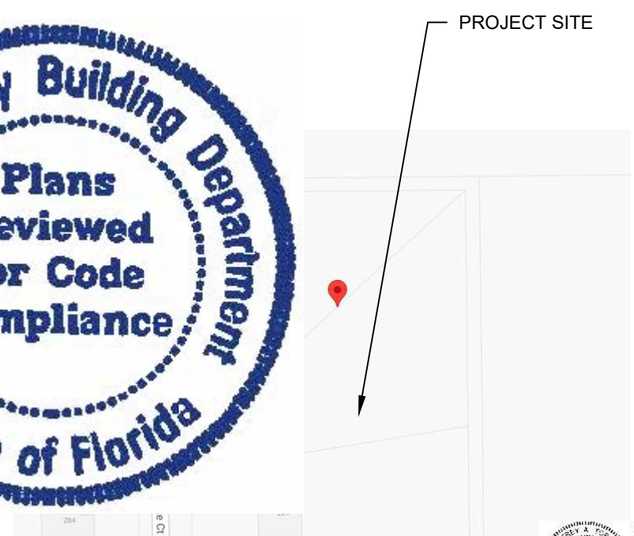
SHEET INDEX

ASCE 7-16 WIND DESIGN CRITERIA
ULTIMATE WIND SPEED: 130 MPH
NOMINAL WIND SPEED: 101 MPH
WIND EXPOSURE: B
RISK CATEGORY: II



1 PLOT PLAN WITH ROOF PLAN
A-00 SCALE: 1"=45'-0"

2 HOUSE PHOTO
A-00 SCALE: NTS



3 VICINITY MAP
A-00 SCALE: NTS

Columbia County Building Department
Plans Reviewed for Code Compliance
State of Florida

POWER PRODUCTION MANAGEMENT, INC.

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME
ROBERT COON
305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME
PLOT PLAN & VICINITY MAP

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
A-00

Signature with Seal
Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:36:58 -04'00'

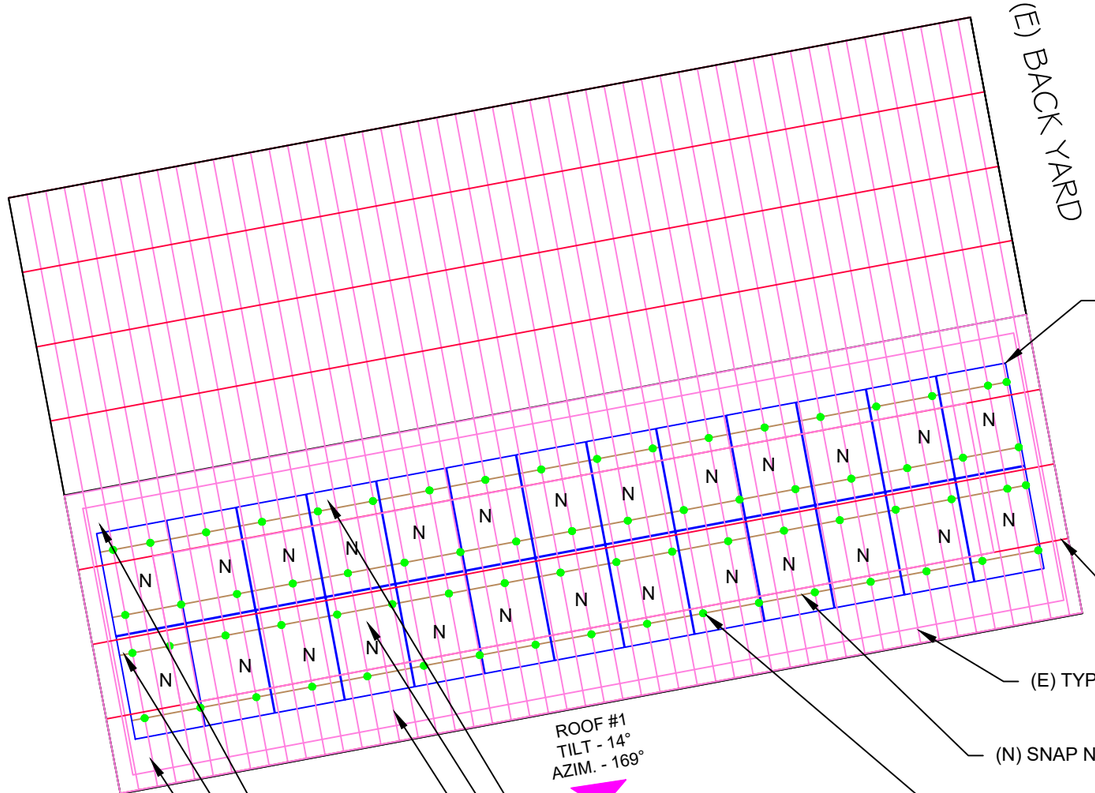
JEFFREY A. TORRES, P.E.
FL PE #80379
SUNSMART ENGINEERING, LLC
FL COA #35170
925 SUNSHINE LANE
ALTAMONTE SPRINGS, FL 32714
JEFF.TORRES@SUNSMARTENGINEERING.COM

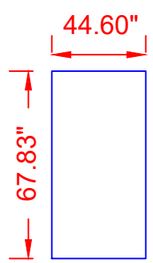
MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 26 MODULES
MODULE TYPE = VSUN SOLAR VSUN400-108M-BB (400W) MODULES
WEIGHT = 48.0 LBS / 21.8 KG.
MODULE DIMENSIONS = 67.83" x 44.60" = 21.01 SF

1. APPLICABLE CODE: 2020 FLORIDA RESIDENTIAL CODE (7TH EDITION) & ASCE 7-16 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.
2. ATTACHMENT STRENGTH OF S-5 PROTEA ATTACHMENTS ARE BASED OFF S-5'S TESTING DATA AND IT IS ASSUMED THE EXISTING TYPE R METAL ROOF IS FREE OF RUST AND CORROSION.
3. SPACING OF THE SPEEDFOOT ATTACHMENTS SHALL BE AS FOLLOWS:
GABLE NON-EXPOSED
*WIND ZONE 1, 2e, 2r, 3 = 4'-0" ON CENTER, 1'-7" CANTILEVER

4. S-5 PROTEA BRACKET ATTACHMENT SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND CONTRACTOR SHALL FOLLOW MANUFACTURER'S RECOMMENDATIONS TO WEATHER PROOF AND SEAL ALL ROOF PENETRATIONS.
5. EXISTING ROOF IS A TYPICAL GABLE ROOF FROM 7 DEGREES TO 20 DEGREES WITH A ROOF COVERING OF TYPE R METAL. MEAN ROOF HEIGHT = 15 FT WHERE THE MODULES ARE.
6. DESIGN PARAMETERS SHOWN ARE BASED ON ALLOWABLE STRESS DESIGN (ASD) NOMINAL WIND SPEED PRESSURES PER SECTION 29.4.4 FOR ROOFTOP SOLAR PANELS PARALLEL TO THE ROOF SURFACE WITH EXPOSURE "B", RISK CATEGORY II, ENCLOSED BUILDING AND h < 60'-0" PER ASCE 7-16 "MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES" AND 2020 F.B.C. (7TH EDITION). EXPOSED AND NON-EXPOSED MODULES ARE LABELED AS SHOWN.
7. ROOF SURFACE TO UNDERSIDE OF PANEL HEIGHT IS APPROXIMATELY 5 INCHES AND INCREASED UPLIFT ON THE PORTION OF MODULES WITHIN A 10 INCH CLEARANCE OF THE ROOF EDGES HAS BEEN CONSIDERED.
8. "a" DIMENSION AS DEFINED PER ASCE 7-16 SHALL BE 4 FT REGARDLESS PER THE 2020 FLORIDA RESIDENTIAL CODE (7TH EDITION).
9. SOLAR PANELS AND MOUNTING SYSTEM SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
10. MODULES SHALL BE LOCATED AS SHOWN FOR THE WIND LOAD CALCULATIONS ON SHEET S-03 TO BE VALID. THIS IS BASED ON A PARTIAL PRESSURE ANALYSIS OF THE MODULES IN A SPECIFIED LOCATION. ANY RELOCATION OF MODULES SHALL BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO RELOCATION OF MODULES.





VSUN SOLAR
VSUN400-108M-BB (400W)
MODULES

I CERTIFY THAT THE INSTALLATION OF THE MODULES IS IN COMPLIANCE WITH FBC: RESIDENTIAL CHAPTER 3. THE ADDITION OF THE SOLAR MODULES AND ALL ACCESSORIES TO THE EXISTING BUILDING WILL NOT ADVERSELY AFFECT THE STRUCTURAL INTEGRITY OF THE BUILDING AND CAN SAFELY ACCOMODATE THE NEW IMPOSED LOADS OF THE SOLAR SYSTEM.

LEGEND

ED - EDGE MODULE
E - EXPOSED MODULE
N - NON-EXPOSED MODULE
- ROOF OBSTRUCTION
- PV ROOF ATTACHMENT
- RAFTERS

1 ROOF PLAN & MODULES
S-01 SCALE: 1"=8'-0"

POWER PRODUCTION MANAGEMENT, INC.

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME
ROBERT COON
305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME
ROOF PLAN & MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
S-01

Signature with Seal
Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:37:08 -04'00'

JEFFREY A. TORRES, P.E.
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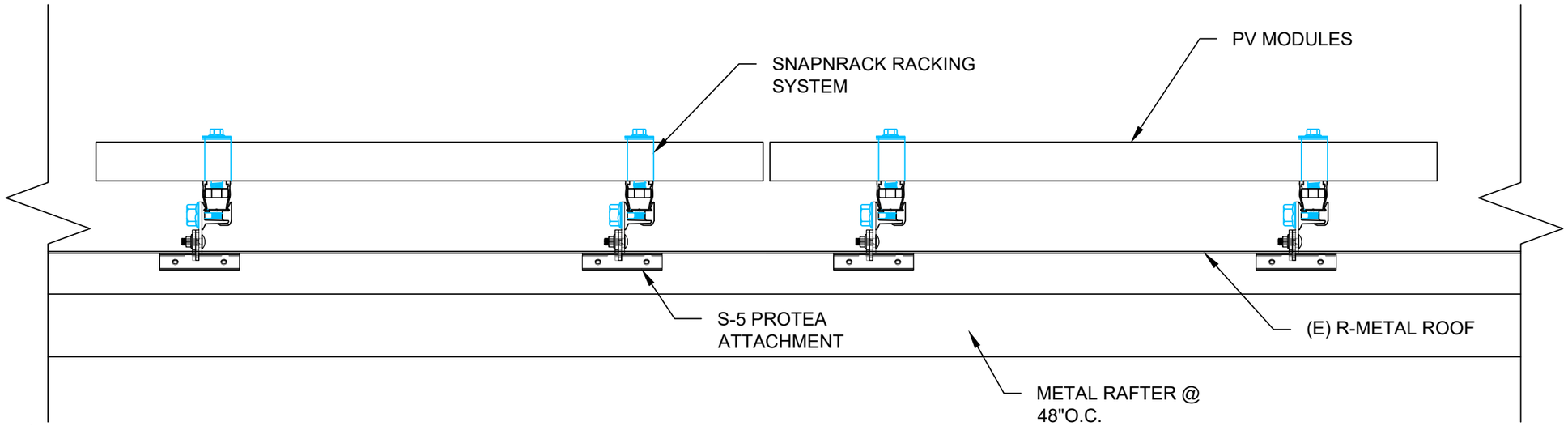
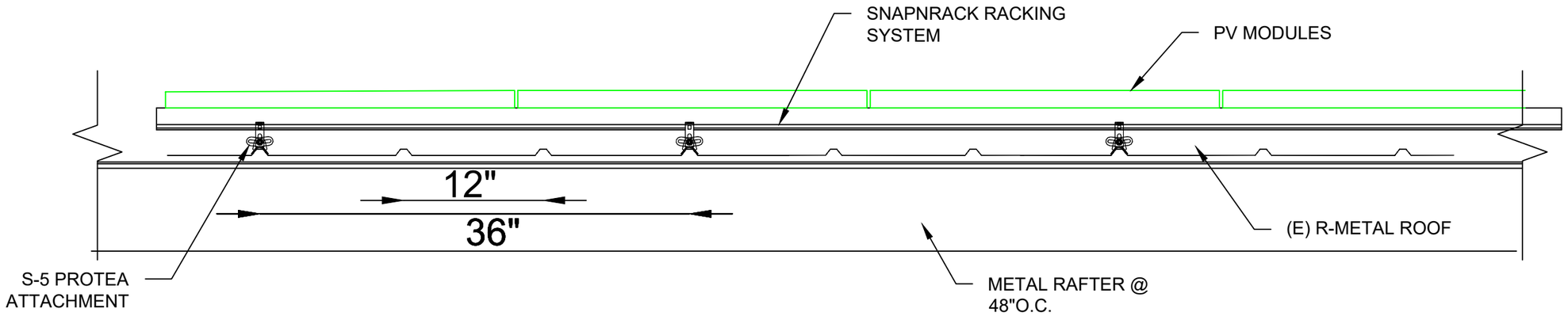


1 STRUCTURAL ATTACMENT (SIDE VIEW)

S-02 SCALE: NTS



2 ATTACHMENT DETAIL (enlarged view)

S-02

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME

ROBERT COON

305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME

ATTACHMENT DETAILS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

S-02

Signature with Seal

Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:37:16 -04'00'

JEFFREY A. TORRES, P.E.
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BASE WIND LOAD CALCULATION

Engineering Calculations

130 MPH Solar Panel Flush Mount Wind Pressure Calculations for Residential and Low Rise Commercial Buildings

Wind Velocity Pressure Calculation per ASCE 7-16 $q_h = 0.00256 * K_z * K_{zt} * K_d * K_e * V^2$		
Ultimate Wind Speed - V (MPH)	=	130
ASD Wind Speed - V (MPH)	=	100.7
Mean roof height of where modules are located (ft)	=	15
Velocity Pressure Coefficient for Wind Exposure B - K_z	=	0.57
Topographic Factor - K_{zt}	=	1
Ground Elevation Factor - K_e	=	1
Wind Directionality Factor - K_d	=	0.85
Length of a single solar module (inches)	=	67.8
Width of a single solar module (inches)	=	44.6
Center to Center Spacing of Roof Attachment (ft)	=	3
Effective Wind Area of a Single Module (sf)	=	21.00
Effective Wind Area of a roof connection tributary area (sf)	=	11.15
ASD Wind Velocity Pressure (psf)	=	12.58

NON-EXPOSED CALCULATION

Uplift Pressures on Solar Panels - Gable Roof 7 to 20 degrees				Overhang Uplift Pressures (Edge Modules)	
P = Qh*(GCp)(Ye)(Ya) (lb/ft2)- Per Chapter 29.4		Module	Roof Connection	Module	Roof Connection
GCp - Wind Zone Group 1 (WZ1, WZ2e)	=	-2.0	-2.0	-2.5	-2.5
GCP - Wind Zone Group 2 (WZ2n, WZ2r, WZ3e)	=	-2.55	-3.10	-3.02	-3.61
GCP - Wind Zone Group 3 (WZ3r)	=	-3.02	-3.73	-3.93	-4.87
Effective Wind Area of structural element considered (sf)	=	21.00	11.15	21.00	11.15
Array Edge Factor (1.0 if modules are not exposed - 1.5 if modules are exposed)	=	1	1	1	1
Pressure Equalization Factor	=	0.671	0.829	0.671	0.829
Wind Zone Group 1 Worst Case Scenario Pressure (psf)	=	-16.88	-20.85	-21.10	-26.06
Wind Zone Group 2 Worst Case Scenario Pressure (psf)	=	-21.51	-32.32	-25.46	-37.60
Wind Zone Group 3 Worst Case Scenario Pressure (psf)	=	-25.49	-38.87	-33.14	-50.79

NON-EXPOSED CONNECTION CALCULATION

Required Pullout Capacity Check for S-5 Protea		
Per S-5 Protea Technical Data		
Allowable Uplift Force per S-5 Data (Vertical L Orientation)	=	466
Bracket Center to Center Spacing (ft)	=	3
Approximate Module Length (ft)	=	5.65
Wind Zone Group Wind Pressure (Worst Case Scenario)	=	33
Tributary Area pullout load onto roof anchor (lbs) (dead load considered)	=	264.42
Acceptable Design Value Check	=	OK

MODULE CAPACITY CHECK

Uplift Capacity of Solar Module		
Test Capacity of Module (PSF) (Portrait)	=	50
Minimum Factor of Safety Required	=	1.5
Design Capacity of Module (PSF)	=	33.3
Module with worst case partial pressure loading (PSF)	=	22
		THEREFORE OK

POWER PRODUCTION MANAGEMENT, INC.

POWER PRODUCTION MANAGEMENT INC
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GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME

ROBERT COON

305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME

STRUCTURAL CALCULATIONS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

S-03

Signature with Seal

Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:37:24 -04'00'

JEFFREY A. TORRES, P.E.
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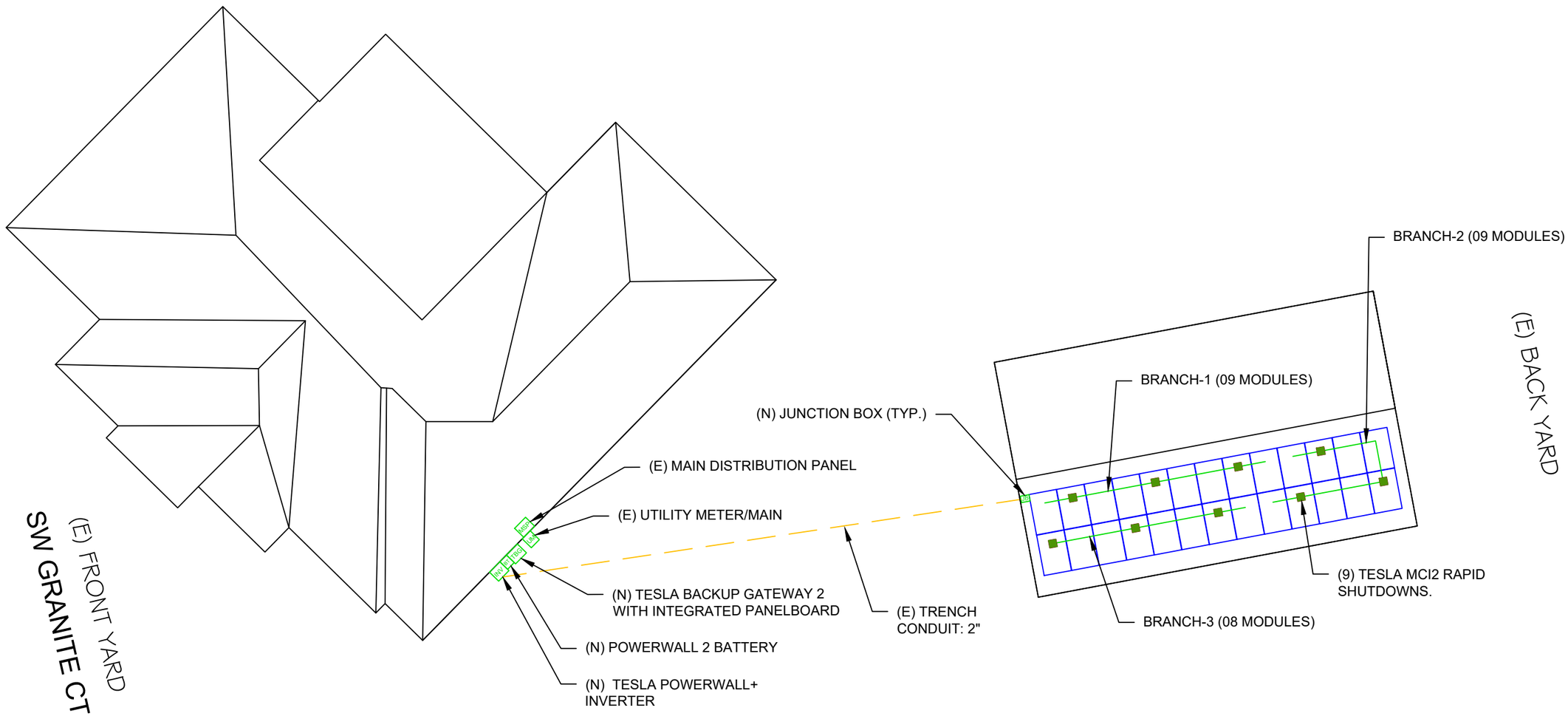
JEFF.TORRES@SUNSMARTENGINEERING.COM

SOLAR ARRAY 10.4 kW-DC STC
(26) VSUN SOLAR VSUN400-108M-BB (400W) MODULES
(02) BRANCHES OF 09 MODULE
(01) BRANCH OF 08 MODULE



1 ELECTRICAL PLAN
E-01 SCALE: 1"=15'-0"

LEGEND

- TBG — TESLA BACKUP GATEWAY2
- BT — - POWERWALL 2 BATTERY
- UM — - UTILITY METER/MAIN
- INV — - TESLA POERWALL+ INVERTER
- JB — - JUNCTION BOX
- MSP — - MAIN DISTRIBUTION PANEL
- ○ □ — - ROOF OBSTRUCTION
- - - — - CONDUIT

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME
ROBERT COON
305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME
ELECTRICAL SITE PLAN

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-01

Signature with Seal

Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:37:32 -04'00'

JEFFREY A. TORRES, P.E.
FL PE #80379
SUNSMART ENGINEERING, LLC
FL COA #35170
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ALTAMONTE SPRINGS, FL 32714
JEFF.TORRES@SUNSMARTENGINEERING.COM

SOLAR ARRAY 10.4 kW-DC STC
(26) VSUN SOLAR VSUN400-108M-BB (400W) MODULES
(02) BRANCHES OF 09 MODULE
(01) BRANCH OF 08 MODULE

09 MODULE WITH 3 SOLAR SHUTDOWN IN BRANCH CIRCUIT #1

09 MODULE WITH 3 SOLAR SHUTDOWN IN BRANCH CIRCUIT #2

08 MODULE WITH 3 SOLAR SHUTDOWN IN BRANCH CIRCUIT #3

(9) TESLA SOLAR SHUTDOWN COMPLIANT
WHEN PAIRED & ENABLED WITH TESLA STORAGE INVERTER

(3) #10 AWG CU USE-2/PV WIRE + RED
(3) #10 AWG CU USE-2/PV WIRE - BLACK
EGC #6 BARE CU IN FREE AIR

(3) #10 AWG CU THWN-2 + RED
(3) #10 AWG CU THWN-2 - BLACK
EGC #10 AWG CU THWN-2
2" CONDUIT (CONDUIT EXISTING)

(N) INVERTER : TESLA POWERWALL+ ENERGY STORAGE INVERTER 2 AC COUPLED

DC ⎓ AC ~

FACTORY INSTALLED CABLES

(N) TESLA /AC POWERWALL +

(3) #8 AWG CU THWN-2
(1) #10 AWG CU THWN-2 GND
3/4" CONDUIT

POWER STORAGE UNIT & BATTERY BACKUP TESLA POWERWALL II

L1 L2 N G

(3) #10 AWG THWN-2
(1) #10 AWG THWN-2 GND
IN 3/4" CONDUIT RUN

BI-DIRECTIONAL UTILITY METER 1-PHASE, 240V

L1 L2 N

(E) METER MAIN COMBO: 200A, 120/240V EXISTING METER MAIN DOES NOT CONTAIN ANY LOADS. THEREFORE, OK

(E) MAIN BREAKER TO 200A/2P, 240V

(3) #2/0 AWG CU THWN-2
(1) #6 AWG CU THWN-2 GND
OR
(3) #4/0 AWG AL XHHW-2
(1) #4 AWG AL XHHW-2 GND
IN 2" CONDUIT

EXISTING GROUNDING ELECTRODE SYSTEM

(N) 50A/2P BREAKER FOR TESLA POWERWALL+

(N) 30A/2P BREAKER FOR TESLA POWERWALL 2

CTRL
L1
L2
NON-BACKUP LUGS
S1 S2
BACKUP LUGS
L1 L1 L2 L2
G N N G

(N) TESLA BACKUP GATEWAY 2, 200A MAX, NEMA 3R WITH INTEGRATED CURRENT TRANSFORMERS

(3) #2/0 AWG CU THWN-2
(1) #6 AWG CU THWN-2 GND
OR
(3) #4/0 AWG AL XHHW-2
(1) #4 AWG AL XHHW-2 GND
IN 2" CONDUIT

(E) MAIN BREAKER 200A/2P, 240V

(E) 200A SERVICE PANEL

1 ELECTRICAL LINE DIAGRAM
E-02

POWER PRODUCTION MANAGEMENT, INC.

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS		
DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME
ROBERT COON
305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME
ELECTRICAL WIRING CALCULATIONS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-02

Signature with Seal
Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:37:42 -04'00'

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JEFF.TORRES@SUNSMARTENGINEERING.COM

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	VSUN SOLAR VSUN400-108M-BB (400W) MODULES
VMP	37.2V
IMP	12.75A
VOC	31.17V
ISC	13.68A
MODULE DIMENSION	67.83"L x 44.60"W x 1.38"D (In Inch)

POWERWALL+ SPECIFICATIONS	
MANUFACTURER	TESLA
POWERWALL+ MODEL #	1850000-XX-Y
NOMINAL BATTERY ENERGY	13.5 KWH
SOLAR MODEL #	1538000-XY-Y
NOMINAL OUTPUT CURRENT	32.0 A

SOLAR SHUTDOWN SPECIFICATIONS	
MANUFACTURER	TESLA
MODEL #	TESLA TxxxS
NOMNAL INPUT DC CURRENT	12A
MAX INPUT SHORT CIRCUIT CURRENT	15A
MAXIMUM POWER CONSUMPTION	7W
MAXIMUM SYSTEM VOLTAGE	600V DC

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-5°
AMBIENT TEMP (HIGH TEMP 2%)	34°
CONDUIT MINIMUM HEIGHT FROM ROOF	0.5"
CONDUCTOR TEMPERATURE RATING	90°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.26%/°C

DC CONDUCTOR AMPACITY CALCULATIONS: ARRAY TO JUNCTION BOX :

EXPECTED WIRE TEMP (In Celsius)	34°
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	2
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a)	1.00
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY	40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	21.34A
1.25 X MAX DC OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC (310.15)(B)(2)(a)	38.40A
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY	
Result should be greater than (21.34A) otherwise less the entry for circuit conductor size and ampacity	

DC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX TO INVERTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT PER NEC 310.15(B)(2)(c)	+22°
EXPECTED WIRE TEMP (In Celsius)	34°+22° = 56°
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a)	0.71
NO. OF CURRENT CARRYING CONDUCTORS	6
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a)	0.80
CIRCUIT CONDUCTOR SIZE	10AWG
CIRCUIT CONDUCTOR AMPACITY	40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	17.10A
1.25 X MAX DC OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC (310.15)(B)(2)(a)	22.72A
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY	
Result should be greater than (17.10A) otherwise less the entry for circuit conductor size and ampacity	

AC CONDUCTOR AMPACITY CALCULATIONS: FROM INVERTER TO GENERATION PANEL

No. OF INVERTER	1
EXPECTED WIRE TEMP (In Celsius)	34°
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	3
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a)	1
CIRCUIT CONDUCTOR SIZE	6AWG
CIRCUIT CONDUCTOR AMPACITY	75A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B)	40.00A
1.25 X MAX INVERTER OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC (310.15)(B)(2)(a)	72.00
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY	
Result should be greater than (40.00A) otherwise less the entry for circuit conductor size and ampacity	

AC CONDUCTOR AMPACITY CALCULATIONS: FROM GENERATION PANEL TO BACKUP INTERFACE

No. OF INVERTER	1
EXPECTED WIRE TEMP (In Celsius)	34°
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	3
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a)	1
CIRCUIT CONDUCTOR SIZE	3AWG
CIRCUIT CONDUCTOR AMPACITY	110A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B)	80.00A
1.25 X MAX INVERTER OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC (310.15)(B)(2)(a)	105.60
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY	
Result should be greater than (80.00A) otherwise less the entry for circuit conductor size and ampacity	

ELECTRICAL NOTES

1.) ALL EQUIPMENT SHALL BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90°C WET ENVIRONMENT.
3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEM. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS , AND ACCESSORIES TO MEET APPLICABLE CODES AND STANDARDS.
6.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
7.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND ACCESSIBLE.
8.) INSTALL MODULE AND RACKING GROUNDING HARDWARE PER MANUFACTURER'S INSTRUCTION.

1 | WIRING CALCULATIONS
E-03 | SCALE: NTS

POWER PRODUCTION MANAGEMENT, INC.

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME
ROBERT COON
305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME
WIRING CALCULATIONS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-03

Signature with Seal
Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:37:51 -04'00'

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ALTAMONTE SPRINGS, FL 32714
JEFF.TORRES@SUNSMARTENGINEERING.COM

WARNING:PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
DC CONDUIT & J-BOXES
PER NEC 690.31(G)(3)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
RAPID SHUTDOWN INITIATION DEVICE
PER NEC 690.56(C)(3)

⚠ WARNING

POWER SOURCE OUTPUT CONNECTION

DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
POINT OF INTERCONNECTION (WHEN APPLICABLE)
PER NEC 705.12(B)(2)(3)(b)

⚠ WARNING

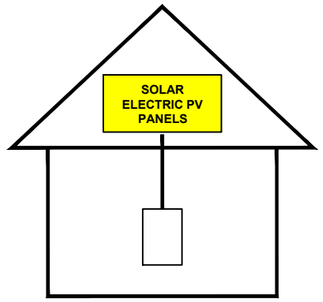
ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THE PHOTOVOLTAIC SYSTEM ARE UNDERGROUND AND MAY BE ENERGIZED

LABEL LOCATION:
DC DISCONNECT ON INVERTER AND
ROOF JUNCTION BOX PER NEC 690.35(F)

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.



LABEL LOCATION:
AT SERVICE DISCONNECTING MEANS
PER NEC 690.56(C)(1)(a)

INVERTER

PHOTOVOLTAIC DC DISCONNECT

MAXIMUM SYSTEM VOLTAGE:	600	VDC
MAXIMUM CIRCUIT CURRENT:	15	ADC
MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-TO-DC CONVERTER (IF INSTALLED):		ADC

LABEL LOCATION:
INVERTER(S), DC DISCONNECT(S).
PER CODE(S): NEC 2017: 690.53

PHOTOVOLTAIC SYSTEM AC DISCONNECT
MAXIMUM AC OPERATING CURRENT 32 AMPS
MAXIMUM AC OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT & INVERTER
(PER CODE: NEC690.54)

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME
ROBERT COON
305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME
SYSTEM LABELING

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-04

Signature with Seal

Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:38:01 -04'00'

JEFFREY A. TORRES, P.E.
FL PE #80379
SUNSMART ENGINEERING, LLC
FL COA #35170
925 SUNSHINE LANE
ALTAMONTE SPRINGS, FL 32714
JEFF.TORRES@SUNSMARTENGINEERING.COM

MADE IN VIETNAM, manufacture by VIETNAM SUNERGY JOINT STOCK COMPANY

VSUN
Innovative & Smart

VSUN405-108M-BB

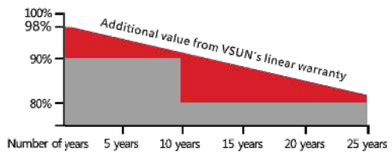
405W
Highest power output

20.75%
Module efficiency

12years
Material & Workmanship warranty

25years
Linear power output warranty

VSUN405-108M-BB VSUN400-108M-BB
VSUN395-108M-BB VSUN390-108M-BB



- MBB technology with Circular Ribbon
- Higher output power
- Half-cell Technology
- Positive tolerance offer
- Micro Gap
- Better shading tolerance
- Fire safety: Class C
- Load certificates: wind to 2400Pa and snow to 5400Pa
- Beautiful appearance with black frame and black backsheet

VSUN, a BNEF Tier-1 PV module manufacturer invested by Fuji Solar, has been committed to providing greener, cleaner and more intelligent renewable energy solutions. VSUN is dedicated to bringing reliable, customized and high-efficient products into various markets and customers worldwide.

Engineered in Japan
www.vsun-solar.com

MADE IN VIETNAM, manufacture by VIETNAM SUNERGY JOINT STOCK COMPANY

最も信頼出来る再エネパートナー

Electrical Characteristics at Standard Test Conditions(STC)

Module Type	VSUN405-108M-BB	VSUN400-108M-BB	VSUN395-108M-BB	VSUN390-108M-BB
Maximum Power - Pmax (W)	405	400	395	390
Open Circuit Voltage - Voc (V)	37.36	37.2	37.03	36.84
Short Circuit Current - Isc (A)	13.78	13.68	13.59	13.5
Maximum Power Voltage - Vmpp (V)	31.36	31.17	31	30.82
Maximum Power Current - Impp (A)	12.92	12.84	12.75	12.66
Module Efficiency	20.75%	20.49%	20.23%	19.98%

Standard Test Conditions (STC): irradiance 1,000 W/m²; AM 1,5; module temperature 25°C. Pmax Sorting : 0~5W. Measuring Tolerance: ±3%.
Remark: Electrical data do not refer to a single module and they are not part of the offer. They only serve for comparison among different module types.

Electrical Characteristics at Normal Operating Cell Temperature(NOCT)

Module Type	VSUN405-108M-BB	VSUN400-108M-BB	VSUN395-108M-BB	VSUN390-108M-BB
Maximum Power - Pmax (W)	302.1	298.4	294.7	287.3
Open Circuit Voltage - Voc (V)	35.1	34.9	34.8	34.5
Short Circuit Current - Isc (A)	11.19	11.13	11.05	10.91
Maximum Power Voltage - Vmpp (V)	29.1	28.9	28.8	28.4
Maximum Power Current - Impp (A)	10.39	10.32	10.25	10.1

Normal Operating Cell Temperature((NOCT) : irradiance 800W/m²; wind speed 1 m/s ; ambient temperature 20/℃. Measuring Tolercance: ±3%.

Temperature Characteristics

NOCT	45℃ (±2℃)
Voltage Temperature Coefficient	-0.27%/℃
Current Temperature Coefficient	+0.048%/℃
Power Temperature Coefficient	-0.32%/℃

Maximum Ratings

Maximum System Voltage [V]	1000
Series Fuse Rating [A]	30

Material Characteristics

Dimensions	1723×1133×35mm (L×W×H)
Weight	21.8kg
Frame	Black anodized aluminum profile
Front Glass	White toughened safety glass, 3.2 mm
Cell Encapsulation	EVA (Ethylene-Vinyl-Acetate)
Back Sheet	Composite film
Cells	12×9 pieces monocrystalline solar cells series strings
Junction Box	IP68, 3 diodes
Cable&Connector	Potrait: 500 mm (cable length can be customized) , 1×4 mm2, Connector: PV-ZH202B

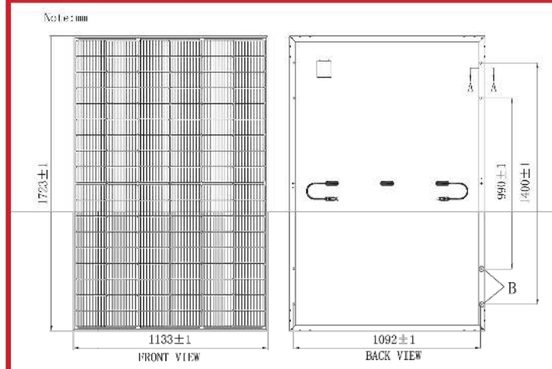
Packaging

Dimensions(L×W×H)	1760×1125×1253mm
Container20'	186
Container40'	403
Container40'HC	806

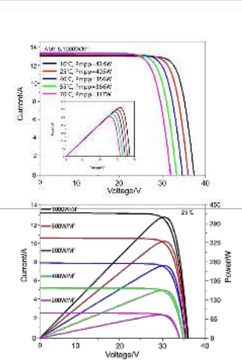
System Design

Temperature Range	-40 °C to + 85 °C
Withstanding Hail	Maximum diameter of 25 mm with impact speed of 23 m-s-1
Maximum Surface Load	5,400 Pa
Application class	class A

Dimensions



IV-Curves



POWER PRODUCTION MANAGEMENT, INC.

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS		
DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME
ROBERT COON
305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME
MODULE DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-01

Signature with Seal
Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:38:10 -04'00'

JEFFREY A. TORRES, P.E.
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JEFF.TORRES@SUNSMARTENGINEERING.COM

POWERWALL+

Powerwall+ is an integrated solar battery system that stores energy from solar production. Powerwall+ has two separate inverters, one for battery and one for solar, that are optimized to work together. Its integrated design and streamlined installation allow for simple connection to any home, and improved surge power capability brings whole home backup in a smaller package. Smart system controls enable owners to customize system behavior to suit their renewable energy needs.

KEY FEATURES

- Integrated battery, inverter, and system controller for a more compact install
- A suite of application modes, including self-powered, time-based control, and backup modes
- Wi-Fi, Ethernet, and LTE connectivity with easy over-the-air updates

NA 2023-01-09

POWERWALL+

PHOTOVOLTAIC (PV) AND BATTERY ENERGY STORAGE SYSTEM (BESS) SPECIFICATIONS

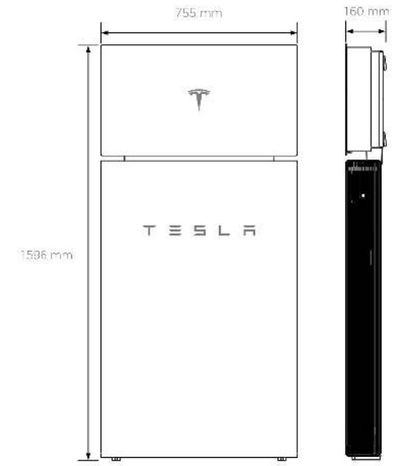
Powerwall+ Model Number	1850000-xx-y
Solar Assembly Model Number	1538000-xx-y
Nominal Battery Energy	13.5 kWh
Nominal Grid Voltage (Input / Output)	120/240 VAC
Grid Voltage Range	211.2 - 264 VAC
Frequency	60 Hz
Phase	240 VAC: 2W+N+GND
Maximum Continuous Power On-Grid	7.6 kVA full sun / 5.8 kVA no sun[1]
Maximum Continuous Power Off-Grid	9.6 kW full sun / 7 kW no sun[1]
Peak Off-Grid Power (10 s)	22 kW full sun / 10 kW no sun[1]
Maximum Continuous Current On-Grid	32 A output
Maximum Continuous Current Off-Grid	40 A output
Load Start Capability	98 - 118 A LRA[2]
PV Maximum Input Voltage	600 VDC
PV DC Input Voltage Range	60 - 550 VDC
PV DC MPPT Voltage Range	60 - 480 VDC
MPPTs	4
Input Connectors per MPPT	1-2-1-2
Maximum Current per MPPT (I_{mp})	13 A[3]
Maximum Short Circuit Current per MPPT (I_{sc})	17 A[3]
Allowable DC/AC Ratio	1.7
Overcurrent Protection Device	50 A breaker
Maximum Supply Fault Current	10 kA
Output Power Factor Rating	+/- 0.9 to 1[4]
Round Trip Efficiency	90%[1,5]
Solar Generation CEC Efficiency	97.5% at 208 V 98.0% at 240 V
Customer Interface	Tesla Mobile App
Internet Connectivity	Wi-Fi, Ethernet, Cellular (LTE/4G)[6]
PV AC Metering	Revenue grade (+/-0.5%)
Protections	Integrated arc fault circuit interrupter (AFCI), PV Rapid Shutdown
Warranty	10 years

COMPLIANCE INFORMATION

PV Certifications	UL 1699B, UL 1741, UL 3741, UL 1741 SA, UL 1741 SB, UL 1998 (US), IEEE 1547, IEEE 1547.1
Battery Energy Storage System Certifications	UL 1642, UL 1741, UL 1741 PCS, UL 1741 SA, UL 1741 SB, UL 1973, UL 9540, IEEE 1547, IEEE 1547.1, UN 38.3
Grid Connection	United States
Emissions	FCC Part 15 Class B
Environmental	RoHS Directive 2011/65/EU
Seismic	AC156, IEEE 693-2005 (high)

MECHANICAL SPECIFICATIONS

Dimensions	1596 x 755 x 160 mm (62.8 x 29.7 x 6.3 in)
Total Weight	140 kg (310 lb)[7]
Battery Assembly	118 kg (261 lb)
Solar Assembly	22 kg (49 lb)
Mounting options	Floor or wall mount



ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to 50°C (-4°F to 122°F)[8]
Recommended Temperature	0°C to 30°C (32°F to 86°F)
Operating Humidity (RH)	Up to 100%, condensing
Storage Conditions	-20°C to 30°C (-4°F to 86°F) Up to 95% RH, non-condensing State of Energy (SoE): 25% initial
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	Type 3R
Solar Assembly Ingress Rating	IP55 (Wiring Compartment)
Battery Assembly Ingress Rating	IP56 (Wiring Compartment) IP67 (Battery & Power Electronics)
Noise Level @ 1 m	< 40 db(A) optimal, < 50 db(A) maximum

[1] Values provided for 25°C (77°F), 3.3 kW charge/discharge power.
[2] Load start capability may vary.
[3] Where the DC input current exceeds an MPPT rating, jumpers can be used to allow a single MPPT to intake additional DC current up to 26 A I_{mp} / 34 A I_{sc}.
[4] Power factor rating at max real power.
[5] AC to battery to AC, at beginning of life.
[6] Cellular connectivity subject to network service coverage and signal strength.
[7] The total weight does not include the Powerwall+ bracket, which weighs additional 9 kg (20 lb).
[8] Performance may be de-rated at operating temperatures below 10°C (50°F) or greater than 43°C (109°F).

POWER PRODUCTION MANAGEMENT, INC.

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME

ROBERT COON

305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME
INVERTER DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-02

Signature with Seal

Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:38:21 -04'00'

JEFFREY A. TORRES, P.E.
FL PE #80379
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925 SUNSHINE LANE
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SOLAR SHUTDOWN DEVICE

The Tesla Solar Shutdown Device is part of the PV system rapid shutdown (RSD) function in accordance with Article 690 of the applicable NEC. When paired with the Tesla Solar Inverter, solar array shutdown is initiated by any loss of AC power.

ELECTRICAL SPECIFICATIONS

Nominal Input DC Current Rating (I_{mp})	12 A
Maximum Input Short Circuit Current (I_{sc})	15 A
Maximum System Voltage	600 V DC

RSD MODULE PERFORMANCE

Maximum Number of Devices per String	5
Control	Power Line Excitation
Passive State	Normally open
Maximum Power Consumption	7 W
Warranty	25 years

COMPLIANCE INFORMATION

Certifications	UL 1741 PVRSS PVRSA (Photovoltaic Rapid Shutdown Array)

PVRSA

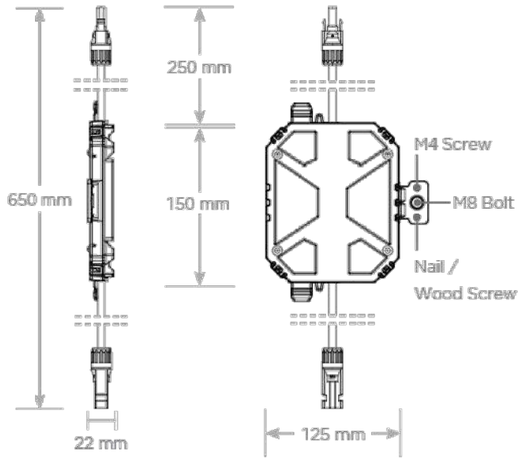
RSD Initiation Method	Loss of AC power
Compatible Equipment	Tesla Solar Inverter

ENVIRONMENTAL SPECIFICATIONS

Ambient Temperature	-40°C to 50°C (-40°F to 122°F)
Storage Temperature	-30°C to 70°C (-22°F to 158°F)
Enclosure Rating	NEMA 4 / IP65

MECHANICAL SPECIFICATIONS

Electrical Connections	MC4 Connector
Housing	Plastic
Dimensions	125 mm x 150 mm x 22 mm (5 in x 6 in x 1 in)
Weight	350 g (0.77 lb)
Mounting Options	ZEP Home Run Clip M4 Screw (#10) M8 Bolt (5/16") Nail / Wood screw



SOLAR SHUTDOWN DEVICE REQUIREMENTS PER MODULE

The following modules have been certified as part of a PV Rapid Shutdown Array (PVRSA) when installed together with the Tesla Solar Inverter and Tesla Solar Shutdown Devices. See the Tesla Solar Inverter Installation Manual for guidance on installing Tesla Solar Inverter and Solar Shutdown Devices with other modules.

Brand	Model	Required Solar Shutdown Devices
Tesla	Solar Roof V3	1 Solar Shutdown Device per 10 modules
Hanwha	Q.PEAK DUO BLK-G5	1 Solar Shutdown Device per 3 modules
Hanwha	Q.PEAK DUO BLK-G6+	1 Solar Shutdown Device per 3 modules

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME

ROBERT COON
305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME
RSD
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-03

Signature with Seal

Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:38:57 -04'00'

JEFFREY A. TORRES, P.E.
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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 pack provides 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 compact design achieves market-leading energy density and is easy to install, enabling owners to quickly realize the benefits of reliable, clean power.

PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240 V
Feed-In Type	Split Phase
Grid Frequency	60 Hz
Total Energy	14 kWh
Usable Energy	13.5 kWh
Real Power, max continuous	5 kW (charge and discharge)
Real Power, peak (10 s, off-grid/backup)	7 kW (charge and discharge)
Apparent Power, max continuous	5.8 kVA (charge and discharge)
Apparent Power, peak (10 s, off-grid/backup)	7.2 kVA (charge and discharge)
Maximum Supply Fault Current	10 kA
Maximum Output Fault Current	32 A
Overcurrent Protection Device	30 A
Imbalance for Split-Phase Loads	100%
Power Factor Output Range	+/– 1.0 adjustable
Power Factor Range (full-rated power)	+/– 0.85
Internal Battery DC Voltage	50 V
Round Trip Efficiency[1,3]	90%
Warranty	10 years

[1]Values provided for 25°C (77°F), 3.3 kW charge/discharge power.
[2]In Backup mode, grid charge power is limited to 3.3 kW.
[3]AC to battery to AC, at beginning of life.

COMPLIANCE INFORMATION

Certifications	UL 1642, UL 1741, UL 1973, UL 9540, IEEE 1547, UN 38.3
Grid Connection	Worldwide Compatibility
Emissions	FCC Part 15 Class B, ICES 003
Environmental	RoHS Directive 2011/65/EU
Seismic	AC156, IEEE 693-2005 (high)

MECHANICAL SPECIFICATIONS

Dimensions[1]	1150 mm x 755 mm x 147 mm (45.3 in x 29.6 in x 5.75 in)
Weight[1]	114 kg (251.3 lbs)
Mounting options	Floor or wall mount

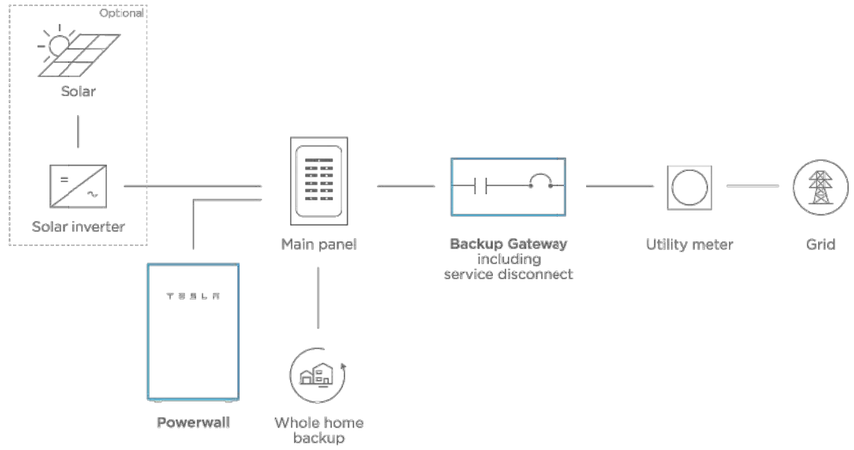
[1]Dimensions and weight differ slightly if manufactured before March 2019. Contact Tesla for additional information.

ENVIRONMENTAL SPECIFICATIONS

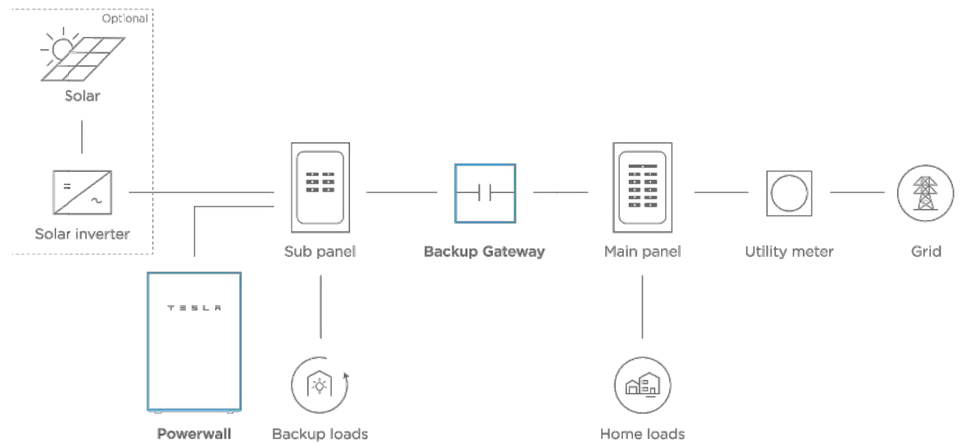
Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Recommended Temperature	0°C to 30°C (32°F to 86°F)
Operating Humidity (RH)	Up to 100%, condensing
Storage Conditions	-20°C to 30°C (-4°F to 86°F) Up to 95% RH, non-condensing State of Energy (SoE): 25% initial
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R
Ingress Rating	IP67 (Battery & Power Electronics) IP56 (Wiring Compartment)
Wet Location Rating	Yes
Noise Level @ 1m	< 40 dBA at 30°C (86°F)

TYPICAL SYSTEM LAYOUTS

WHOLE HOME BACKUP



PARTIAL HOME BACKUP



POWER PRODUCTION MANAGEMENT, INC.

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME
ROBERT COON
305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME
BATTERY DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-04

Signature Not Valid Seal
Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:39:07 -04'00'

JEFFREY A. TORRES, P.E.
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SUNSMART ENGINEERING, LLC
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925 SUNSHINE LANE
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JEFF.TORRES@SUNSMARTENGINEERING.COM

POWERWALL
Backup Gateway 2

The Backup Gateway 2 for Tesla Powerwall provides energy management and monitoring for solar self-consumption, time-based control, and backup.

The Backup Gateway 2 controls connection to the grid, automatically detecting outages and providing a seamless transition to backup power. When equipped with a main 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 backup energy reserves from any mobile device with the Tesla app.

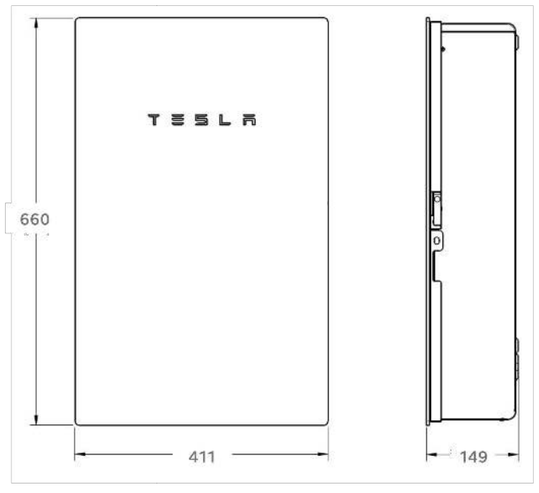
PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240V
Feed-In Type	Split Phase
Grid Frequency	60 Hz
Current Rating	200 A
Maximum Input Short Circuit Current	10 kA[1]
Overcurrent Protection Device	100-200A; Service Entrance Rated[1]
Overvoltage Category	Category IV
AC Meter	Revenue accurate (+/– 0.2 %)
Primary Connectivity	Ethernet, Wi-Fi
Secondary Connectivity	Cellular (3G, LTE/4G)[2]
User Interface	Tesla App
Operating Modes	Support for solar self-consumption, time-based control, and backup
Backup Transition	Automatic disconnect for seamless backup
Modularity	Supports up to 10 AC-coupled Powerwalls
Optional Internal Panelboard	200A 6-space / 12 circuit Eaton BR Circuit Breakers
Warranty	10 years

[1] When protected by Class J fuses, Backup Gateway 2 is suitable for use in circuits capable of delivering not more than 22kA symmetrical amperes.
[2] The customer is expected to provide internet connectivity for Backup Gateway 2; cellular should not be used as the primary mode of connectivity. Cellular connectivity subject to network operator service coverage and signal strength.

MECHANICAL SPECIFICATIONS

Dimensions	660 mm x 411 mm x 149 mm (26 in x 16 in x 6 in)
Weight	20.4 kg (45 lb)
Mounting options	Wall mount, Semi-flush mount



COMPLIANCE INFORMATION

Certifications	UL 67, UL 869A, UL 916, UL 1741 PCS CSA 22.2 0.19, CSA 22.2 205
Emissions	FCC Part 15, ICES 003

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Operating Humidity (RH)	Up to 100%, condensing
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R

POWER PRODUCTION MANAGEMENT, INC.

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME
ROBERT COON
305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME
GATEWAY 2
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-05

Signature with Seal

Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:39:17 -04'00'

JEFFREY A. TORRES, P.E.
FL PE #80379
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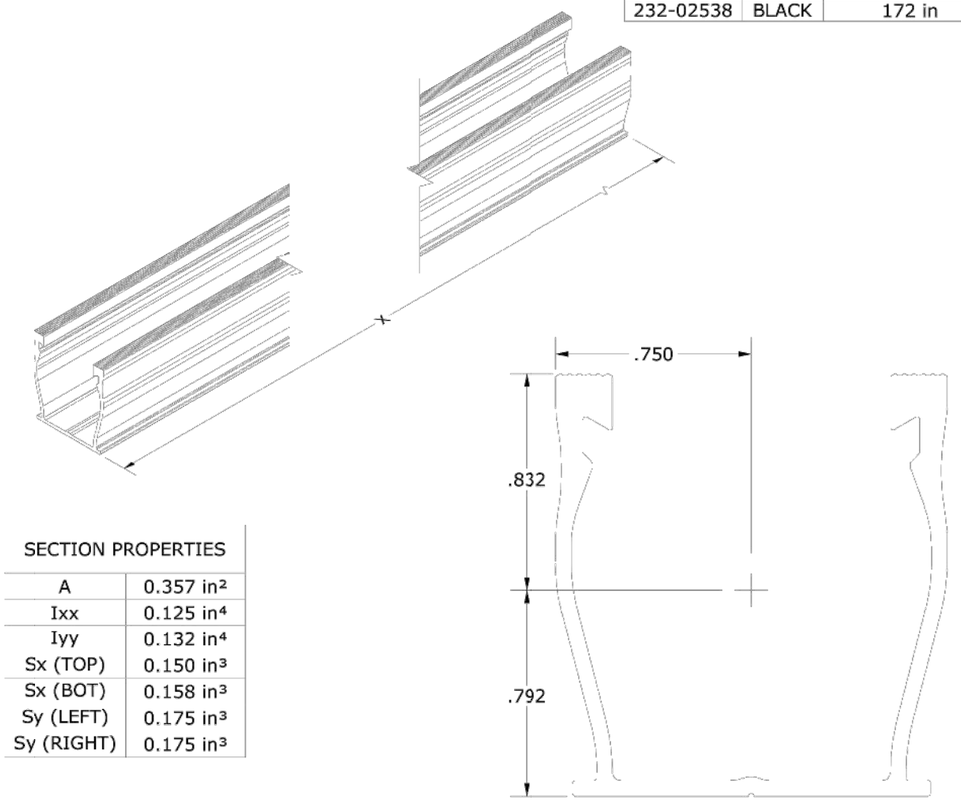
FL COA #35170
925 SUNSHINE LANE
ALTAMONTE SPRINGS, FL 32714
JEFF.TORRES@SUNSMARTENGINEERING.COM

DESCRIPTION: SNAPNRACK, TDS, UR-40 RAIL	DOC NUMBER: SNR-DC-01352	SnapNrack
PART NUMBER(S): 232-02536, 232-02537, 232-02538	DRAWN BY: H.WULFEKOETTER	SUNRUN INSTALLATION SERVICES INC.
UNITS: IN, LB, DEG [MM, KG, DEG] / SHEET: 1:1	REV: D / DATE: 1/23/2023	225 BUSH STREET, SUITE 1400 • SAN FRANCISCO, CA 94104 USA PHONE (877) 732-2860 • CONTACT@SNAPNRACK.COM

UR-40 RAIL PROPERTIES

SKU	FINISH	RAIL LENGTH
232-02536	MILL	172 in
232-02537	SILVER	172 in
232-02538	BLACK	172 in



SECTION PROPERTIES

A	0.357 in²
Ixx	0.125 in⁴
Iyy	0.132 in⁴
Sx (TOP)	0.150 in³
Sx (BOT)	0.158 in³
Sy (LEFT)	0.175 in³
Sy (RIGHT)	0.175 in³

MATERIALS:	6000 SERIES ALUMINUM
DESIGN LOAD (LBS):	N/A
ULTIMATE LOAD (LBS):	N/A
TORQUE SPECIFICATION:	N/A FT-LBS
CERTIFICATION:	UL 2703, FILE E359313
WEIGHT (LBS):	5.85 - 5.99

POWER PRODUCTION MANAGEMENT, INC.

POWER PRODUCTION MANAGEMENT INC
625 NW 8TH AVE
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	05-18-2023	01

PROJECT NAME

ROBERT COON

305 SOUTHWEST GRANITE COURT
LAKE CITY, FL, 32024

SHEET NAME
RAIL DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-06

Signature with Seal

Digitally signed by Jeffrey A Torres
Date: 2023.05.18 10:39:27 -04'00'

JEFFREY A. TORRES, P.E.
FL PE #80379
SUNSMART ENGINEERING, LLC
FL COA #35170
925 SUNSHINE LANE
ALTAMONTE SPRINGS, FL 32714
JEFF.TORRES@SUNSMARTENGINEERING.COM

S-5!®

The Right Way!™

NEW

NOW AVAILABLE IN ALUMINUM

ProteaBracket™

ProteaBracket™

A versatile bracket for mounting solar PV to trapezoidal roof profiles

ProteaBracket™ is now made in aluminum. Still the most versatile trapezoidal metal roof attachment solution on the market, the S-5! ProteaBracket just got better!

The bracket features an adjustable attachment base and module attachment options to accommodate different roof profile dimensions and mounting options.

Our pre-applied EPDM gasket with peel and stick adhesive makes installation a snap, ensuring accurate and secure placement the first time.

With no messy sealants, faster installation, and a weather-proof fit, ProteaBracket offers you the most versatile solar attachment solution available.

ProteaBracket* can be used for rail mounting or "direct-attach" with S-5! PVKIT™

*When ProteaBracket is used in conjunction with the S-5! PVKIT, an additional nut is required during installation.

Features and Benefits

- 34% lighter - saves on shipping
- Stronger L-Foot™
- Load-tested for engineered application
- Corrosion-resistant materials
- Adjustable - Fits rib profiles up to 3"
- Peel-and-Stick prevents accidental shifting during installation
- Fully pre-assembled
- 25-year warranty*

*See www.S-5.com for details.

888-825-3432 | www.S-5.com | MADE IN USA

The right way to attach solar PV to trapezoidal roof profiles!

S-5!®

The Right Way!™

ProteaBracket™ is the perfect solar attachment solution for most trapezoidal rib, exposed-fastened metal roof profiles!

ProteaBracket™ is compatible with common metal roofing materials and comes with a pre-applied EPDM gasket on the base.

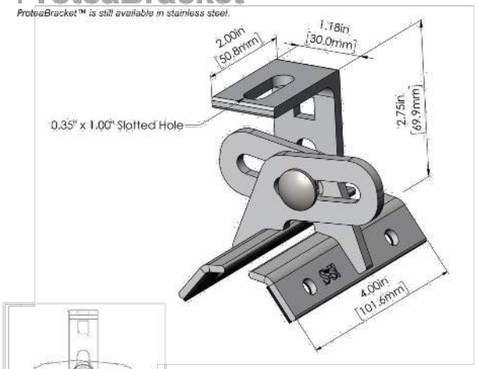
Note: All four pre-punched holes must be used to achieve tested strength. Fasteners are provided.

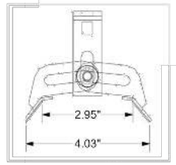
For design assistance, ask your distributor, or visit **www.S-5.com** for the independent lab test data that can be used for load-critical designs and applications. Also, please visit our website for more information including metallurgical compatibilities and specifications.

S-5!® holding strength is unmatched in the industry.

ProteaBracket™

ProteaBracket™ is still available in stainless steel.

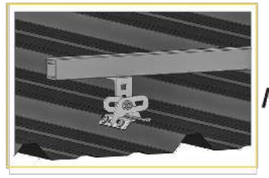




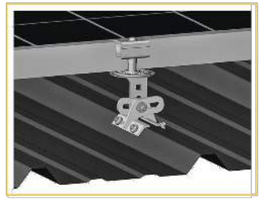
ProteaBracket fits profiles up to 3 inches

Multiple Attachment Options:

Side Mount Rail



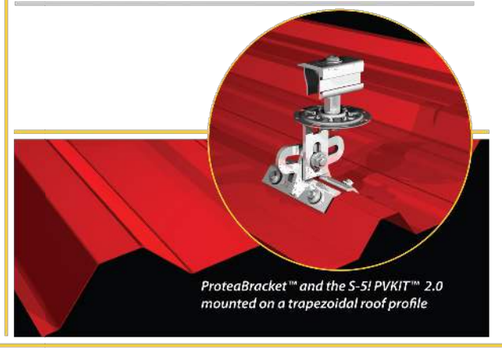
Bottom Mount Rail



w/ S-5! PVKIT™ (rail-less)

INSTALLATION:

No surface preparation needed. (1) Wipe away excess oil and debris. **(2)** Peel off adhesive release paper. **(3)** Align and mount bracket directly onto crown of panel. **(4)** Secure ProteaBracket through pre-punched holes, using piercing-point S-5! screws.



ProteaBracket™ and the S-5! PVKIT™ 2.0 mounted on a trapezoidal roof profile

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

Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, bolt torque, patents, and trademarks, visit the S-5! website at www.S-5.com.

Distributed by

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SHEET SIZE
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SHEET NUMBER
DS-07

Signature with Seal

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