PROJECT DESCRIPTION:

36 x 420 TRINA SOLAR: TSM-420NE09RC.05 (420W) MODULES
ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES

DC SYSTEM SIZE: 15.12 kW DC STC
AC SYSTEM SIZE: 23.00 kW AC

EQUIPMENT SUMMARY

36 TRINA SOLAR: TSM-420NE09RC.05 (420W) MODULES
02 TESLA POWERWALL 3 1707000-XX-Y INVERTER/BATTERY
18 TESLA MCI-2 RAPID SHUTDOWN
01 TESLA POWERWALL 3 EXPANSION
01 TESLA BACKUP GATEWAY 3

GOVERNING CODES :
FLORIDA RESIDENTIAL CODE, 8TH EDITION 2023 (FRC)
FLORIDA PLUMBING CODE, 8TH EDITION 2023 (FPC)
FLORIDA BUILDING CODE, 8TH EDITION 2023 EDITION (FBC)
FLORIDA MECHANICAL CODE, 8TH EDITION 2023 (FMC)
2020 NATIONAL ELECTRICAL CODE (NEC)
FLORIDA FIRE PREVENTION CODE, 8TH EDITION (FFPC)

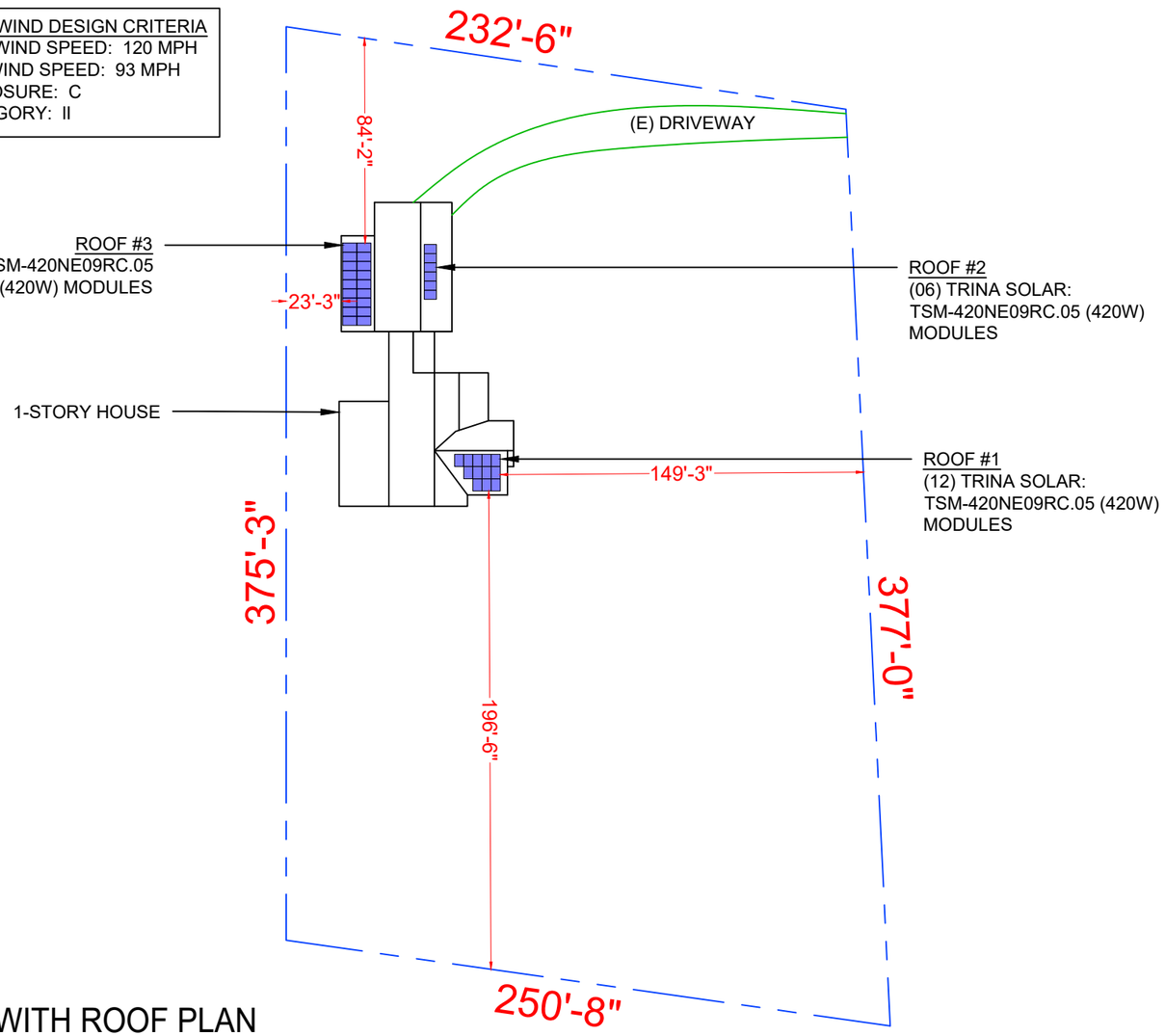
SHEET INDEX

A-00	PLOT PLAN & VICINITY MAP
S-01	ROOF PLAN & MODULES
S-02	ATTACHMENT DETAILS
S-03	STRUCTURAL CALCULATIONS
E-01	ELECTRICAL SITE PLAN & BOM
E-02	ELECTRICAL LINE DIAGRAM
E-03	WIRING CALCULATIONS
E-04	SYSTEM LABELING
DS-01	MODULE DATA SHEET
DS-02	INVERTER/BATTERY DATA SHEET
DS-03	INV./BAT. & RSD DATA SHEET
DS-04	GATEWAY 3 SHEET
DS-05	BAT.EXPANSION DATA SHEET
DS-06	RAIL DATA SHEET
DS-07	ATTACHMENT DATA SHEET

DISCLAIMER :
THE SET OF PLANS FOR THIS PROJECT IS FOR DESIGNING THE PROJECT FOR BUILDING CODE COMPLIANCE. THIS DOSE NOT EXPRESS OR IMPLY A PERFORMANCE GUARANTEE OF ANY KIND. CONTRACTOR RESPONSIBLE TO REVIEW AND APPROVE THE LAYOUT WITH THE END USER PRIOR TO INSTALLATION.

ALL DIMENSION AND CONDITION SHOWN ON THE SET OF PLANS IS BASED ON THE BEST POSSIBLE INFORMATION GIVEN. CONTRACTOR RESPONSIBLE TO FILED VERIFY ALL CONDITION IN THE FILED PRIOR TO INSTALLATION OR ACCEPTS FULL RESPONSIBLE

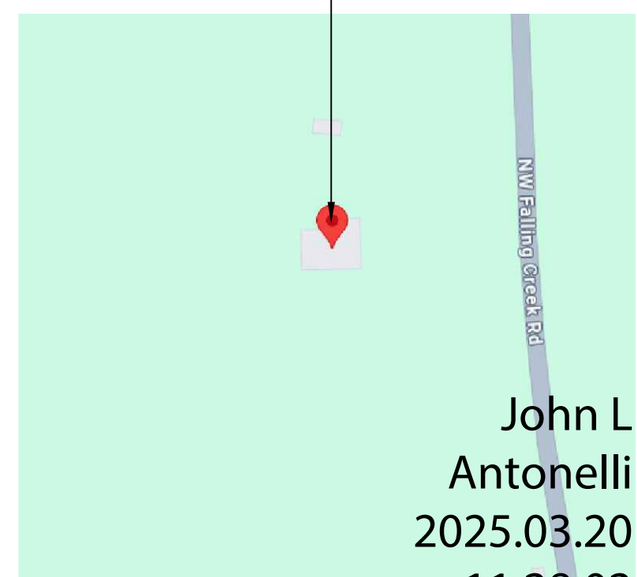
ASCE 7-22 WIND DESIGN CRITERIA
ULTIMATE WIND SPEED: 120 MPH
NOMINAL WIND SPEED: 93 MPH
WIND EXPOSURE: C
RISK CATEGORY: II



NW FALLING CREEK RD.

1 PLOT PLAN WITH ROOF PLAN
A-00 SCALE: 1'=60'-0"

2 HOUSE PHOTO
A-00 SCALE: NTS



3 VICINITY MAP
A-00 SCALE: NTS

John L Antonelli
2025.03.20
11:28:02
'00'04-

BOB HEINMILLER SOLAR SOLUTIONS, LLC.
SOLAR • AIR CONDITIONING • ELECTRICAL • GENERATORS
BOB HEINMILLER SOLAR SOLUTIONS LLC
1537 W SMITH STR.,
ORLANDO, FL 32804
EMAIL: MIKELANE@SUNPWRD.COM
PHONE NO. : (407) 310-7910

REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME
JOHN KIRKPATRICK
4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
PLOT PLAN & VICINITY MAP

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
A-00

JOHN LOUIS ANTONELLI
LICENSE
No. 81305
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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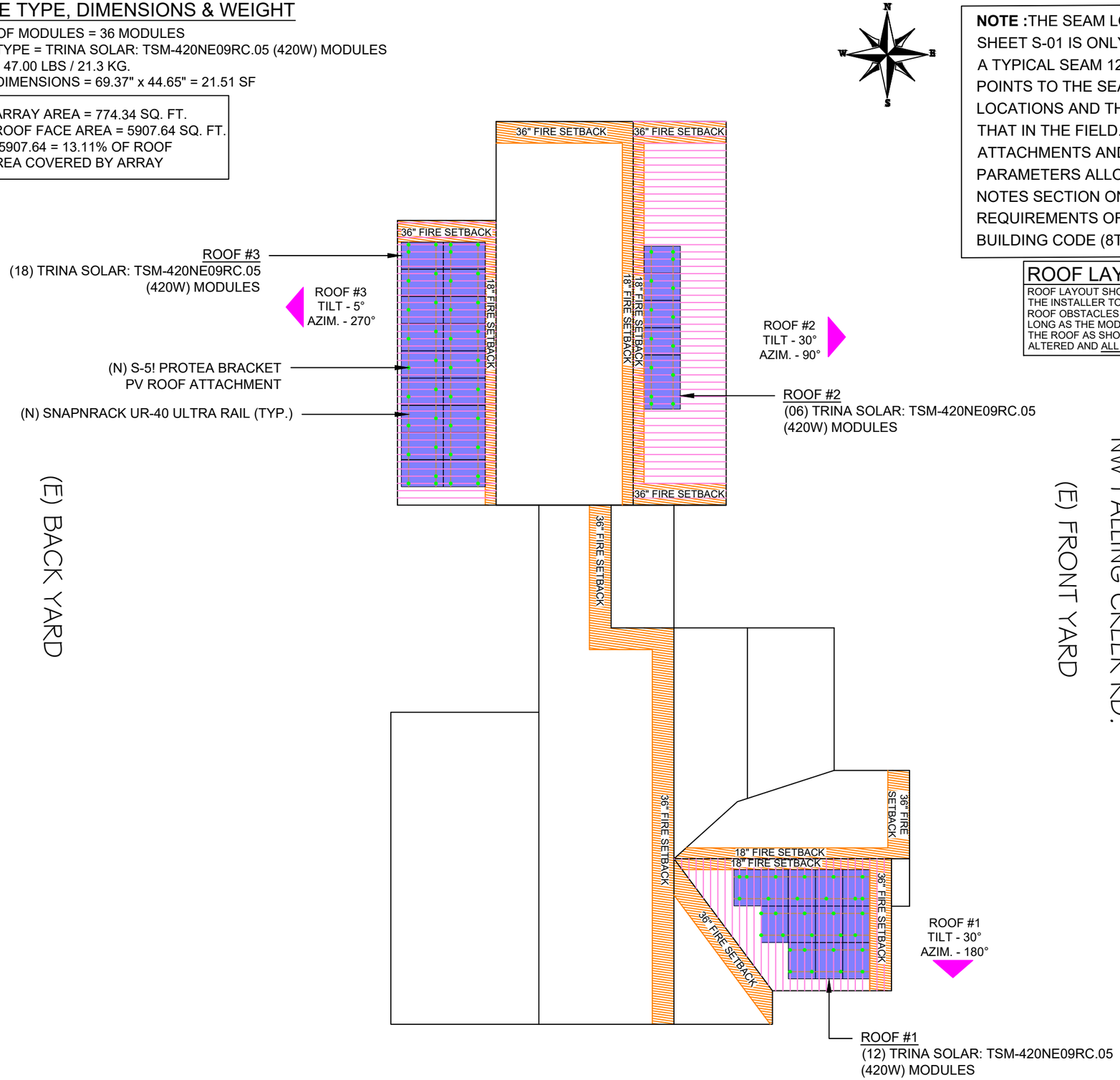
MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 36 MODULES
MODULE TYPE = TRINA SOLAR: TSM-420NE09RC.05 (420W) MODULES
WEIGHT = 47.00 LBS / 21.3 KG.
MODULE DIMENSIONS = 69.37" x 44.65" = 21.51 SF

TOTAL ARRAY AREA = 774.34 SQ. FT.
TOTAL ROOF FACE AREA = 5907.64 SQ. FT.
774.34 / 5907.64 = 13.11% OF ROOF
FACE AREA COVERED BY ARRAY

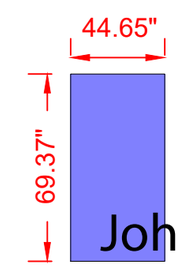
NOTE :THE SEAM LOCATIONS AND ATTACHMENT POINTS SHOWN ON SHEET S-01 IS ONLY SHOWS AN ILLUSTRATIVE REPRESENTATION OF A TYPICAL SEAM 12" APPROX. ON CENTER WITH ATTACHMENT POINTS TO THE SEAM. IT DOES NOT REPRESENT THE EXACT LOCATIONS AND THE CONTRACTOR IS RESPONSIBLE TO VERIFY THAT IN THE FIELD. AS LONG AS THE SPACING OF THE ROOF ATTACHMENTS AND THE RAIL CANTILEVER ARE WITHIN THE PARAMETERS ALLOWED AS STATED IN THE GENERAL STRUCTURAL NOTES SECTION ON SHEET S-01, IT COMPLIES WITH THE REQUIREMENTS OF MY DRAWINGS AND PER THE 2023 FLORIDA BUILDING CODE (8TH EDITION).



ROOF LAYOUT NOTES

ROOF LAYOUT SHOWN MAY BE ADJUSTED IN THE FIELD BY THE INSTALLER TO ACCOUNT FOR ISSUES CAUSED BY ROOF OBSTACLES, TRUSS ALIGNMENT, OR SHADING. SO LONG AS THE MODULES ARE MOUNTED AND SECURED TO THE ROOF AS SHOWN ON S-02 THE LAYOUT MAY BE ALTERED AND ALL ROOF ORIENTATIONS MAY BE UTILIZED.

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.



TRINA SOLAR:
TSM-420NE09RC.05
(420W) MODULES

LEGEND

- SEAM
- ROOF OBSTRUCTION
- PV ROOF ATTACHMENT
- RAIL

John L Antonelli
2025.03.20
11:28:11
'00'04-

1 ROOF PLAN & MODULES
S-01 SCALE: 1"=15'-0"

BOB HEINMILLER SOLAR SOLUTIONS, LLC.
SOLAR • AIR CONDITIONING • ELECTRICAL • GENERATORS
BOB HEINMILLER SOLAR SOLUTIONS LLC
1537 W SMITH STR.,
ORLANDO, FL 32804
EMAIL: MIKELANE@SUNPWRD.COM
PHONE NO. : (407) 310-7910

REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME
JOHN KIRKPATRICK
4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
ROOF PLAN & MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
S-01

JOHN LOUIS ANTONELLI
LICENSE
No. 81305
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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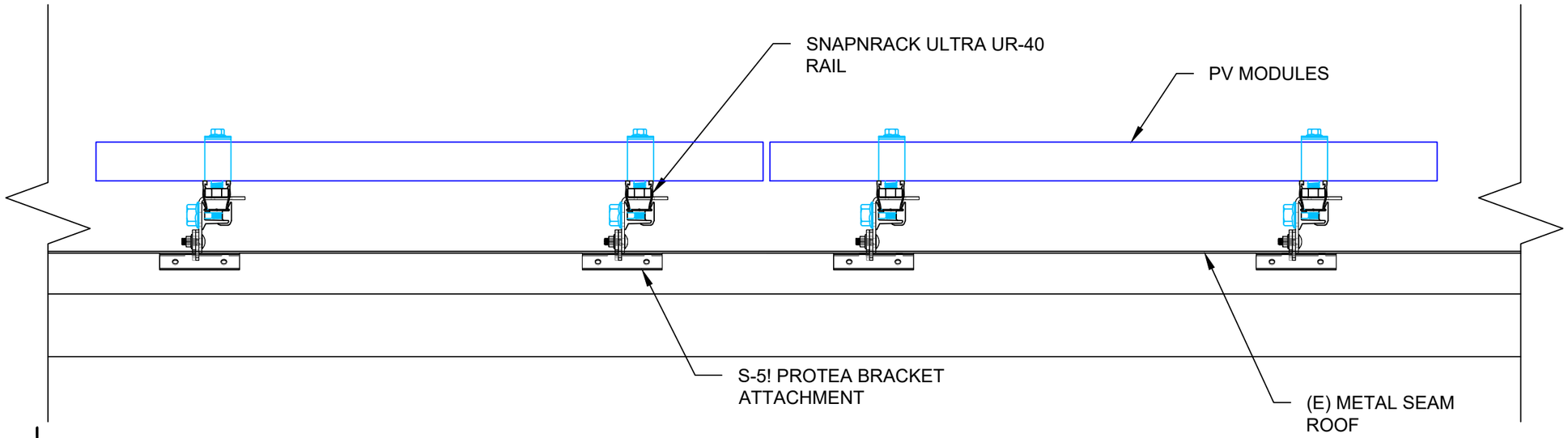
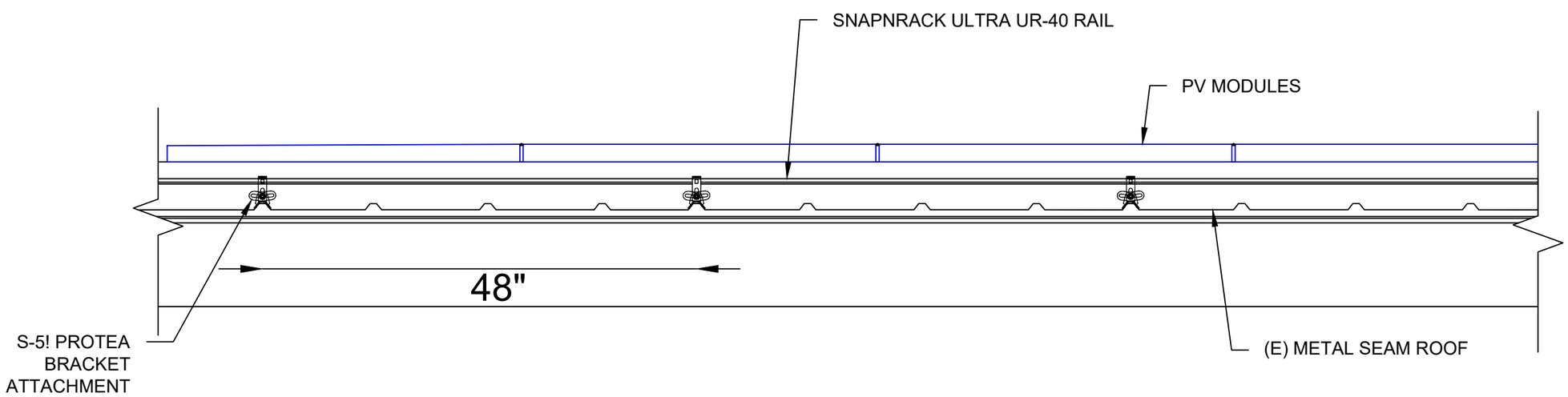


1 STRUCTURAL ATTACMENT (SIDE VIEW)

S-02 SCALE: NTS



2 ATTACHMENT DETAIL (FRONT VIEW)

S-02 SCALE: NTS

John L Antonelli
2025.03.20
11:28:17
'00'04-

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PHONE NO. : (407) 310-7910

REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME

JOHN KIRKPATRICK

4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
ATTACHMENT DETAILS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
S-02

JOHN LOUIS ANTONELLI
LICENSE
No. 81305
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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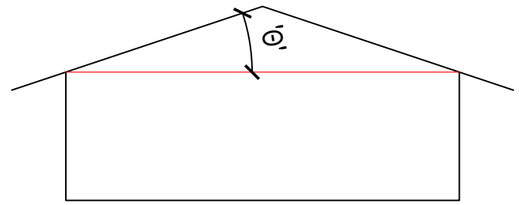
PV MODULE MOUNTING NOTES:

1. APPLICABLE CODES & STANDARDS:
   - 2023 FLORIDA BUILDING CODE (8TH EDITION)
   - 2023 FLORIDA RESIDENTIAL CODE (8TH EDITION)
   - ASCE-7-22 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.
2. ALL FASTENERS & ANCHOR BOLTS THIS SHEET SHALL BE STAINLESS STEEL OR OTHERWISE CORROSION-RESISTANT.
3. ROOF SEALANTS SHALL CONFORM TO ASTM C920 AND ASTM 6511, AND IS THE RESPONSIBILITY OF THE CONTRACTOR TO PILOT FILL ALL HOLES. CONTRACTOR SHALL ENSURE ALL ROOF PENETRATIONS TO BE INSTALLED AND SEALED PER 2023 FLORIDA RESIDENTIAL CODE (8TH EDITION) OR LOCAL GOVERNING CODE.
4. THIS SHEET REFLECTS STRUCTURAL CONNECTIONS ONLY.
5. ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER INSTRUCTIONS.

SITE, MODULE, & ANCHOR INFORMATION							
Vult	120 MPH	ROOF		MODULE		ANCHOR TYPE	S-5! PROTEA BRACKET TO ROOF RIB
V	93 MPH	MEAN HEIGHT	15'-0"	WIDTH	44.65"		
RISK CAT.	II	TYPE	GABLE	LENGTH	69.37"		
EXP.	B	PITCH	7/12	MOUNTING	SHORT-AXIS		

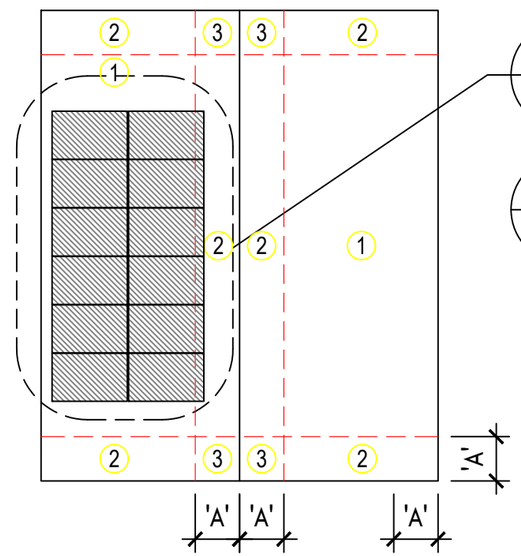
WIND LOAD & RAIL SPAN INFORMATION								
ZONE	NON-EXPOSED MODULES				EXPOSED MODULES			
	WIND LOAD (PSF)		SPAN	OVERHANG	WIND LOAD (PSF)		SPAN	OVERHANG
	(+)	(-)			(+)	(-)		
1'	---	---	---	---	---	---	---	---
1	16.0	-16.0	70.8"	28.3"	16.0	-16.0	70.8"	28.3"
2	16.0	-16.0	70.8"	28.3"	16.0	-18.5	68.3"	27.3"
3	16.0	-16.0	70.8"	28.3"	16.0	-22.1	65.3"	26.1"

- PLUS AND MINUS SIGNS SIGNIFY PRESSURES ACTING TOWARD AND AWAY FROM SURFACES, RESPECTIVELY.
- SEE DETAIL BELOW FOR WIND ZONE LOCATIONS. "---" IN TABLE INDICATE CONDITIONS WHERE INSTALLATION IS NOT ALLOWABLE OR NOT RELEVANT TO THE ROOF TYPE IN QUESTION.
- EXPOSED MODULES ARE THOSE DEFINED BY ASCE 7-22 29.4.4. SEE SHEET S-01 FOR ALL EXPOSED MODULE LOCATIONS, IF THEY EXIST.
- SCHEDULE REFLECTS COMPONENTS AND CLADDING (C&C) NOMINAL WIND PRESSURES WITH EXPOSURE AS NOTED, RISK CATEGORY AS NOTED, ENCLOSED BUILDING AND h < 60'-0" PER ASCE 7-22 AND 2023 FLORIDA BUILDING CODE.
- FOR LAG BOLTS, DEPTH REQUIRED IN WOOD MEMBER SHALL EXCLUDE ANY ROOF DECKING THICKNESS.

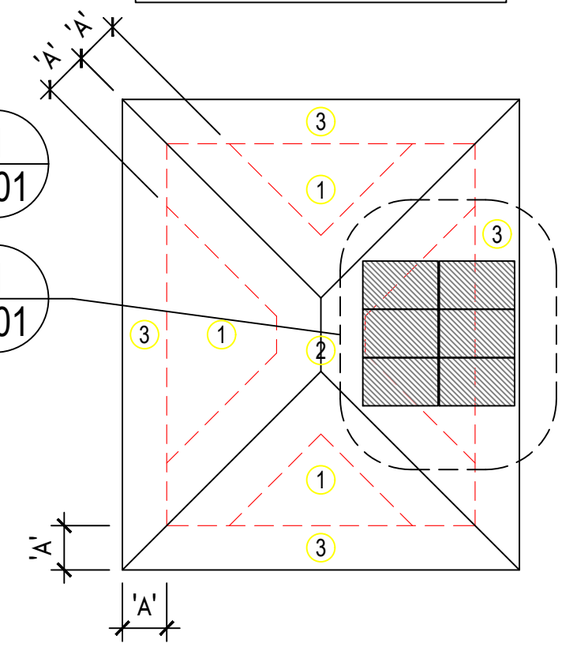


TYPICAL ROOF ELEVATION

NOTES:
1. "A" DIMENSION DEFINED PER ASCE 7-22 SHALL BE 4 FT PER FBC 2023 (8TH EDITION) FIGURE R301.2(7).
2. "Θ" DIMENSION IS ROOF PITCH, 7°-27°.



TYPICAL GABLE ROOF PLAN



TYPICAL HIP ROOF PLAN

John L Antonelli
2025.03.20 11:28:22 '00'04-

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BOB HEINMILLER SOLAR SOLUTIONS LLC
1537 W SMITH STR.,
ORLANDO, FL 32804
EMAIL: MIKELANE@SUNPWRD.COM
PHONE NO. : (407) 310-7910

REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME

JOHN KIRKPATRICK

4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
STRUCTURAL CALCULATIONS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
S-03

JOHN LOUIS ANTONELLI
LICENSE
No. 81305
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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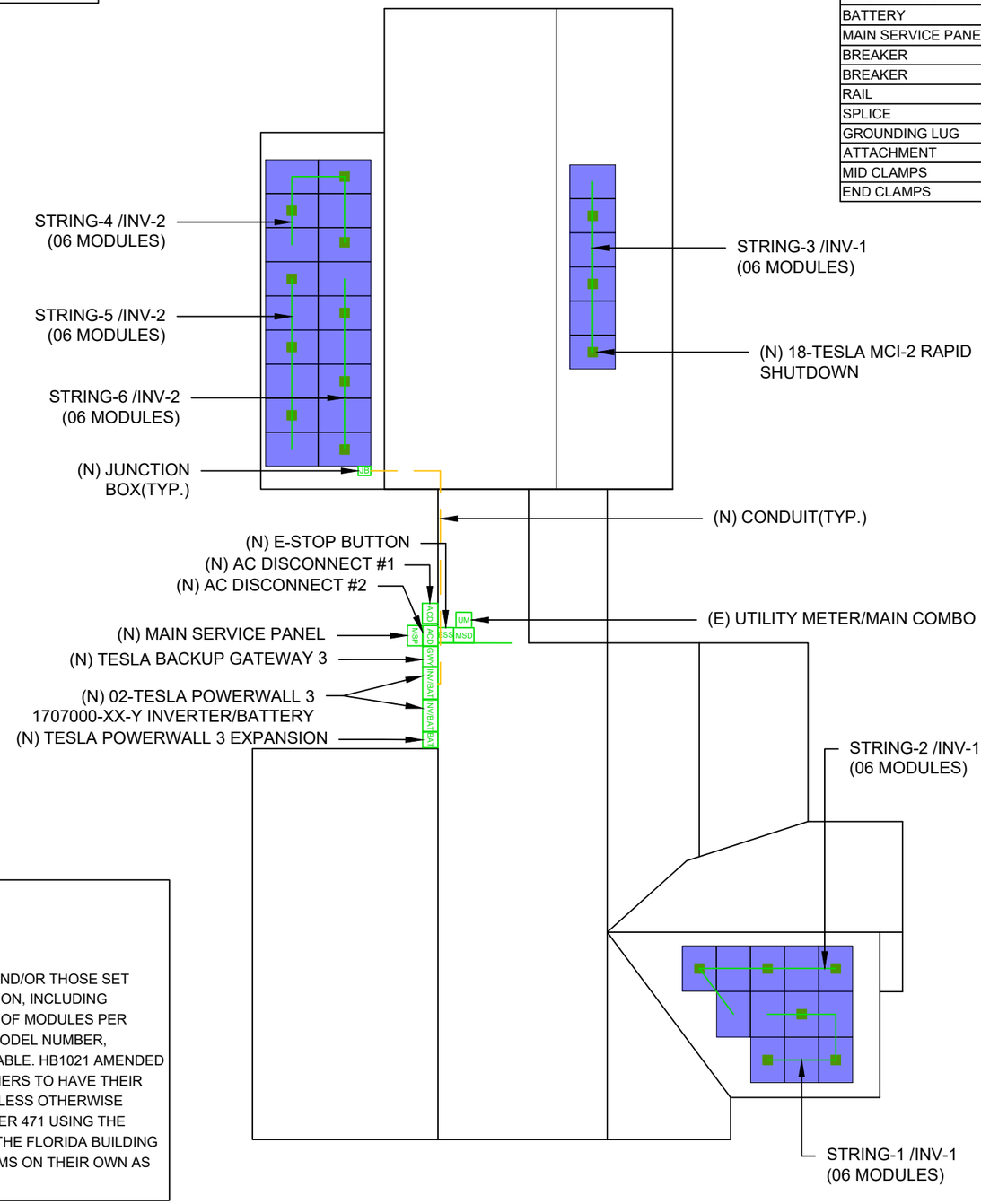
EQUIPMENT SUMMARY
DC SYSTEM SIZE: 15.12 kW DC STC
AC SYSTEM SIZE: 23.00 kW AC
36 TRINA SOLAR: TSM-420NE09RC.05 (420W) MODULES

(06) STRINGS OF 06 MODULES

BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	36	TRINA SOLAR: TSM-420NE09RC.05 (420W) MODULES
INVERTER/BATTERY	02	TESLA POWERWALL 3 1707000-XX-Y INVERTER/BATTERY
GATEWAY	1	TESLA BACKUP GATEWAY 3, NEMA 3R, UL LISTED (1841000-X1-Y)
JUNCTION BOX	2	JUNCTION BOX 600V, NEMA 3R UL LISTED
RAPID SHUTDOWN	18	TESLA MCI-2 RAPID SHUTDOWN
E-STOP BUTTON	1	EMERGENCY STOP BUTTON
AC DISCONNECT	2	60A RATED NON FUSED AC DISCONNECT
BATTERY	1	TESLA POWEWALL 3 EXPANSION (1807000-XX-Y)
MAIN SERVICE PANEL	1	200A RATED MAIN SERVICE PANEL
BREAKER	2	60A/2P BREAKER
BREAKER	2	200A/2P BREAKER
RAIL	20	SNAPNRACK UR-40 ULTRA RAIL,168"
SPLICE	12	SPLICE KIT
GROUNDING LUG	12	GROUNDING LUG
ATTACHMENT	84	S-5! PROTEA BRACKET PV ROOF ATTACHMENT
MID CLAMPS	60	MID CLAMPS
END CLAMPS	24	END CLAMPS

(E) BACK YARD



(E) FRONT YARD

NW FALLING CREEK RD.

ELECTRICAL CERTIFICATION
STATEMENT:

SUBJECT PV SYSTEM HAS BEEN
DESIGNED TO MEET THE REQUIREMENTS OF THE NEC 2020, AND/OR THOSE SET FORTH BY THE FLORIDA SOLAR ENERGY CENTERCERTIFICATION, INCLUDING MAXIMUM NUMBER OF MODULE STRINGS, MAXIMUM NUMBER OF MODULES PER STRING, MAXIMUM OUTPUT, MODULE MANUFACTURER AND MODEL NUMBER, INVERTER MANUFACTURER AND MODEL NUMBER, AS APPLICABLE. HB1021 AMENDED F.S. 377.05 IN 2017 REMOVED THE REQUIREMENT FOR DESIGNERS TO HAVE THEIR SYSTEM DESIGNS CERTIFIED BY FSEC. THE VERBIAGE " ... UNLESS OTHERWISE CERTIFIED BE AN ENGINEER LICENSED PURSUANT TO CHAPTER 471 USING THE STANDARDS CONTAINED IN THE MOST RECENT VERSION OF THE FLORIDA BUILDING CODE." ALLOWS LICENSED ENGINEERS TO DESIGN PV SYSTEMS ON THEIR OWN AS THEY DO IN ALL OTHER TRADES.

LEGEND

- RAPID SHUTDOWN
- ESS - EMERGENCY STOP BUTTON
- MSP - MAIN SERVICE PANEL
- UM MSD - UTILITY METER/MAIN COMBO
- BAT - EXPANSION BATTERY
- INV/BAT - INVERTER/BATTERY
- ACD - AC DISCONNECT
- GWY - GATEWAY
- JB - JUNCTION BOX
- ROOF OBSTRUCTION
- CONDUIT

1
E-01

ELECTRICAL SITE PLAN
SCALE:1"=15'-0"

BOB HEINMILLER SOLAR SOLUTIONS, LLC.
SOLAR • AIR CONDITIONING • ELECTRICAL • GENERATORS
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1537 W SMITH STR.,
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EMAIL: MIKELANE@SUNPWRD.COM
PHONE NO. : (407) 310-7910

REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME
JOHN KIRKPATRICK
4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
ELECTRICAL SITE PLAN & BOM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-01

JOHN LOUIS ANTONELLI
LICENSE
No. 81305
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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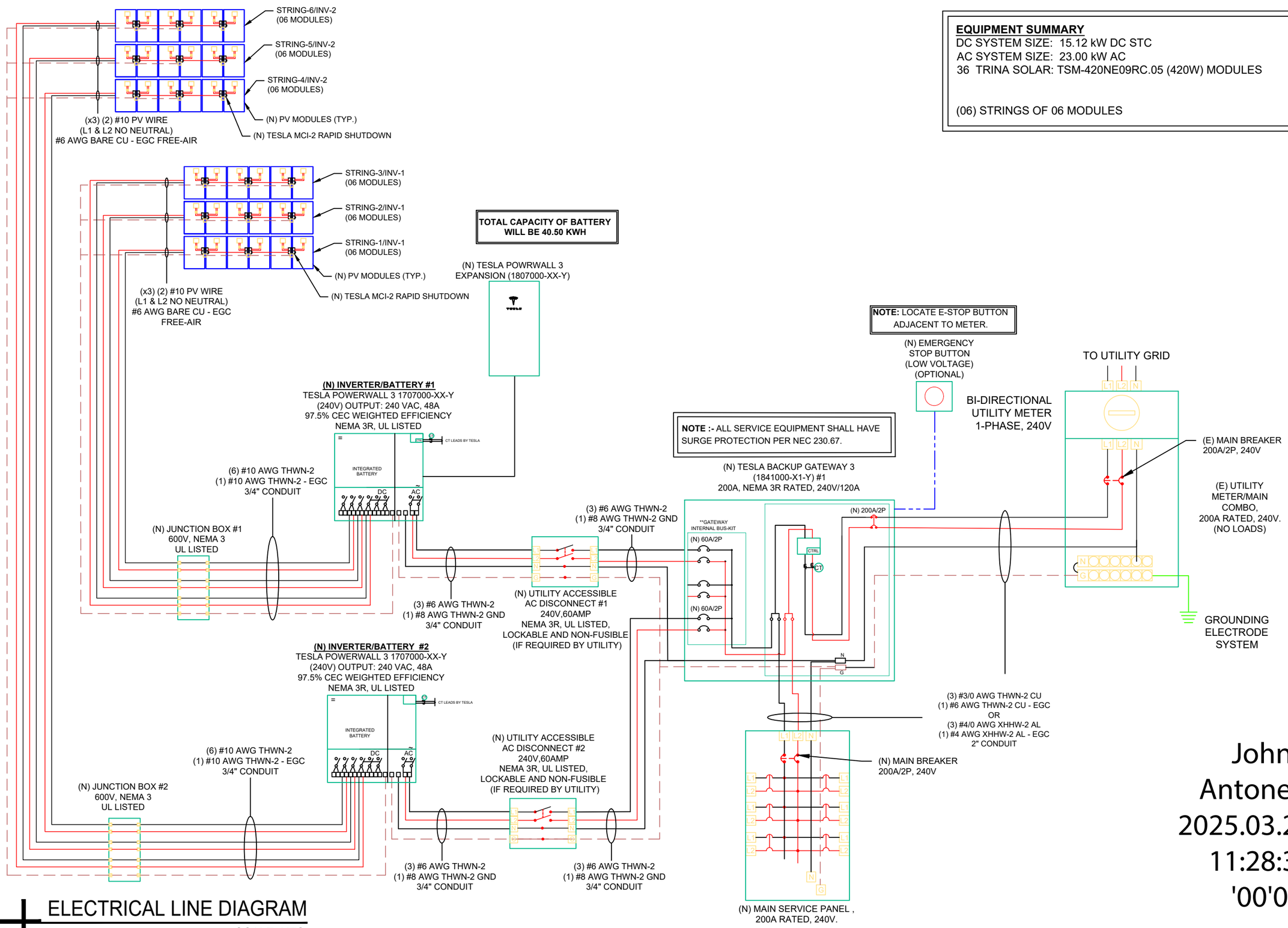

EQUIPMENT SUMMARY
DC SYSTEM SIZE: 15.12 kW DC STC
AC SYSTEM SIZE: 23.00 kW AC
36 TRINA SOLAR: TSM-420NE09RC.05 (420W) MODULES

(06) STRINGS OF 06 MODULES

John L Antonelli
2025.03.20
11:28:34
'00'04-

1 ELECTRICAL LINE DIAGRAM
E-02 SCALE: NTS

BOB HEINMILLER SOLAR SOLUTIONS LLC
1537 W SMITH STR.,
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EMAIL: MIKELANE@SUNPWRD.COM
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REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME
JOHN KIRKPATRICK
4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-02

Signature with Seal
JOHN LOUIS ANTONELLI
LICENSE
No. 81305
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	TRINA SOLAR: TSM-420NE09RC.05 (450W) MODULES
VMP	42.80V
IMP	9.80A
VOC	50.9V
ISC	10.43A
MODULE DIMENSION	69.37"L x 44.65"W x 1.18"D (In Inch)

INVERTER/BATTERY #1 TO #2 SPECIFICATIONS	
MANUFACTURER / MODEL #	TESLA POWERWALL 3 1707000-XX-Y INVERTER/BATTERY
NOMINAL AC POWER	11500W
NOMINAL OUTPUT VOLTAGE	240VAC
NOMINAL OUTPUT CURRENT	48A

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-4°
AMBIENT TEMP (HIGH TEMP 2%)	31°
CONDUIT MINIMUM HEIGHT FROM ROOF	0.5"
CONDUCTOR TEMPERATURE RATING	90°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.24%/C

DC CONDUCTOR AMPACITY CALCULATIONS: ARRAY TO JUNCTION BOX #1 & #2

EXPECTED WIRE TEMP (In Celsius)	31°
TEMP. CORRECTION PER TABLE (310.15)(B)(1)	0.96
# OF CURRENT CARRYING CONDUCTORS	N/A
# OF C.C. CONDUCTORS CORRECTION PER NEC 310.15(C)(1)	1.00
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY	40A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A) & (B)	16.27A
1.56 x ISC OF MODULES	
DERATED CIRCUIT CONDUCTOR AMPACITY	40.00A
Result should be greater than (16.27A)	

DC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX #1 & #2 TO INVERTER/BATTERY #1 & #2

EXPECTED WIRE TEMP (In Celsius)	31°
TEMP. CORRECTION PER TABLE (310.15)(B)(1)	0.96
# OF CURRENT CARRYING CONDUCTORS	6
# OF C.C. CONDUCTORS CORRECTION PER NEC 310.15(C)(1)	0.80
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY	40A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A) & (B)	16.27A
1.56 x ISC OF MODULES	
DERATED CIRCUIT CONDUCTOR AMPACITY	30.72A
Result should be greater than (16.27A)	

AC CONDUCTOR AMPACITY CALCULATIONS: FROM INVERTER/BATTERY #1 & #2 TO ACD #1 & #2 TO GATEWAY

EXPECTED WIRE TEMP (In Celsius)	31°
TEMP. CORRECTION PER TABLE (310.15)(B)(1)	0.96
# OF CURRENT CARRYING CONDUCTORS	3
# OF C.C. CONDUCTORS CORRECTION PER NEC 310.15(C)(1)	1.00
CIRCUIT CONDUCTOR SIZE	6 AWG
CIRCUIT CONDUCTOR AMPACITY	65A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A) & (B)	60.00A
MAX CURRENT	
DERATED CIRCUIT CONDUCTOR AMPACITY	72.00A
Result should be greater than (60.00A)	

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.

John L Antonelli
2025.03.20 11:31:12 '00'04-

1 | WIRING CALCULATIONS
E-03
SCALE: NTS

BOB HEINMILLER SOLAR SOLUTIONS LLC
1537 W SMITH STR.,
ORLANDO, FL 32804
EMAIL: MIKELANE@SUNPWRD.COM
PHONE NO. : (407) 310-7910

REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME
JOHN KIRKPATRICK
4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
WIRING CALCULATIONS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-03

JOHN LOUIS ANTONELLI LICENSE No. 81305 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by John Louis Antonelli, P.E. on the date adjacent to the seal.

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

PHOTOVOLTAIC

240 V

AC DISCONNECT

LABEL LOCATION:
AC DISCONNECT
CODE REF: NEC 690.13(B), 690.15, 705.20

PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
EMT/CONDUIT RACEWAY
SOLADECK/JUNCTION BOX
CODE REF : NEC 690.31(D)(2) / Roll: 596-00999 / 10-Pk: 596-01007

MAXIMUM DC VOLTAGE

600 VDC

OF PV SYSTEM

CODE REF: NEC 690.53
Roll: 596-01001 / 10-Pk: 596-01009

SOLAR PV DC CIRCUIT

LABEL LOCATION:
EMT/CONDUIT RACEWAY
SOLADECK/JUNCTION BOX
CODE REF: NEC 690.31(D)(2)
Roll: 596-00998 / 10-Pk: 596-01006

ENERGY STORAGE SYSTEM DISCONNECT

LABEL LOCATION ENERGY STORAGE SYSTEMS:
CODE REF: NEC 706.15(C)
Roll: 596-01004 / 10-Pk: 596-01041

⚠ WARNING

INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE.

LABEL LOCATION:
A PERMANENT WARNING LABEL SHALL BE APPLIED TO THE DISTRIBUTION EQUIPMENT ADJACENT TO THE BACK-FED BREAKER FROM THE INVERTER.
NEC 705.12(B)(3)(2)

⚠ WARNING

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

LABEL LOCATION:
PERMANENT WARNING LABELS SHALL BE APPLIED TO DISTRIBUTION EQUIPMENT
NEC 705.12(B)(3)(3)

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

LABEL LOCATION:
MAIN SERVICE DISCONNECT
CODE REF: NEC 690.13(B)
Roll: 596-00243 / 10-Pk: 596-00675

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
AC DISCONNECT
CODE REF: NEC 690.12(D)(2)
Roll: 596-01003 / 10-Pk: 596-01040

PHOTOVOLTAIC AC DISCONNECT

NOMINAL OPERATING AC VOLATGE	240 V
RATED AC OUTPUT CURRENT	48 A

LABEL LOCATION:
MAIN SERVICE PANEL
SUBPANEL
AC DISCONNECT #1 & #2
CODE REF: NEC 690.54

EMERGENCY CONTACT
BOB HEINMILLER SOLAR
(407) 310-7910

⚠ WARNING

ELECTRIC SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
NEC 690.13(B) & NEC 690.15(C)

LABEL LOCATION:
WHERE ALL TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A WARNING SIGN SHALL BE MOUNTED ON OR ADJACENT TO THE DISCONNECTING MEANS.
NEC 690.13(B) & NEC 690.15(C)

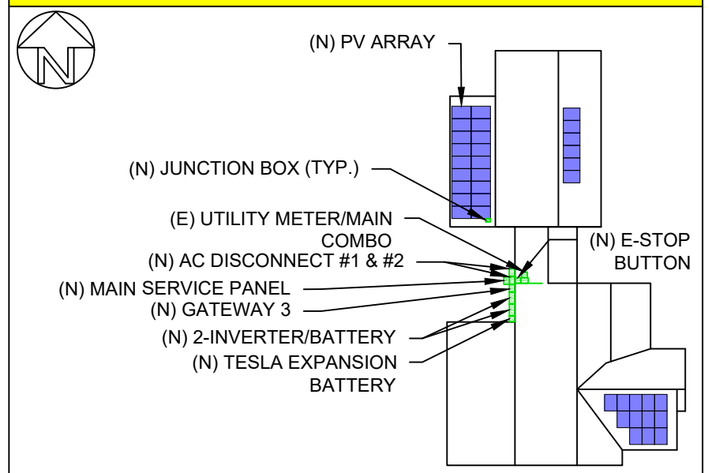
PHOTOVOLTAIC SYSTEM DC DISCONNECT

OPERATING VOLTAGE	240	VDC
OPERATING CURRENT	15	A
MAX SYSTEM VOLTAGE	600	VDC
SHORT CIRCUIT CURRENT	19	A

LABEL LOCATION:
DC DISCONNECT, INVERTER
FOR MAKING DC BACKUP SYSTEM
/ROll: 596-00240

CAUTION

MULTIPLE SOURCES OF POWER

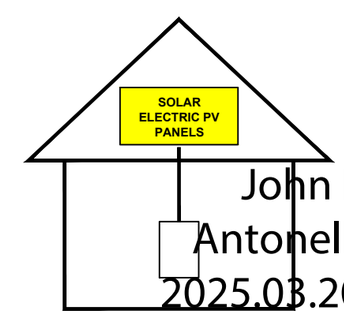


4998 NW FALLING CREEK RD., WHITE SPRINGS, FL 32096

LABEL LOCATION:
MAIN SERVICE DISCONNECT / MAIN DISTRIBUTION PANEL, PV DISCONNECT LOCATION NO MORE THAT 1 M (3 FT) FROM THE SERVICE DISCONNECT PER CODE NEC 705.10 & NEC 710.10
Roll: 558-00358 OR 558-00346

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.



John L Antonelli
2025.03.20 11:31:17 -00'04'

LABEL LOCATION:
ON OR NO MORE THAT 1 M (3 FT) FROM THE SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED.
PER CODE: IFC 605.11.3.1(1) & 690.12(D)
Roll: 596-00885 / 10-Pk: 596-00888

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ORLANDO, FL 32804
EMAIL: MIKELANE@SUNPWRD.COM
PHONE NO. : (407) 310-7910

REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME

JOHN KIRKPATRICK

4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
SYSTEM LABELING

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-04

JOHN LOUIS ANTONELLI
LICENSE
No. 81305
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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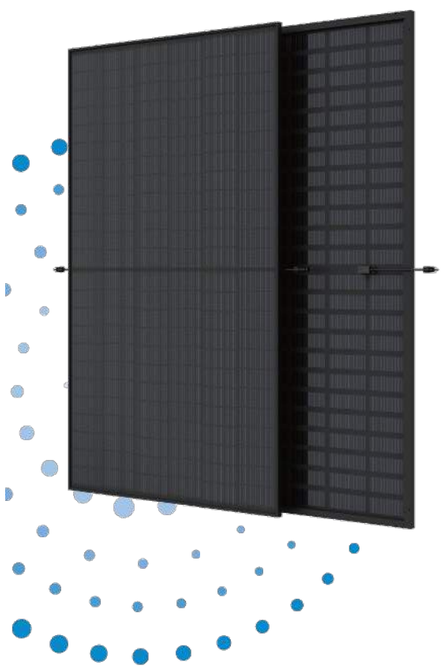
Mono Multi Solutions

Vertex S+

BACKSHEET MONOCRYSTALLINE MODULE

PRODUCT: TSM-NE09RC.05
PRODUCT RANGE: 400-430W

430W	0~+5W	21.5%
MAXIMUM POWER OUTPUT	POSITIVE POWER TOLERANCE	MAXIMUM EFFICIENCY



Small in size, bigger on power

- Up to 430W, 21.5% module efficiency with high density interconnect technology
- Reduce installation cost with higher power bin and efficiency
- Boost performance in warm weather with low temperature coefficient and operating temperature

High Reliability

- Innovative non-destructive cutting for improved mechanical resistance and strength
- Excellent fire rating, weather resistance, salt spray, sand dust, ammonia performance which is fully applicable in coastal, high temperature, humidity area and harsh environment

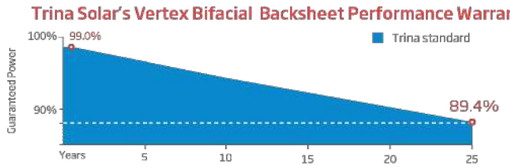
Ultra-low Degradation, longer warranty, higher output

- First-year degradation 1% and annual degradation at 0.4%
- Up to 25 years product warranty and 25 years power warranty

Universal solution for residential and C&I rooftops

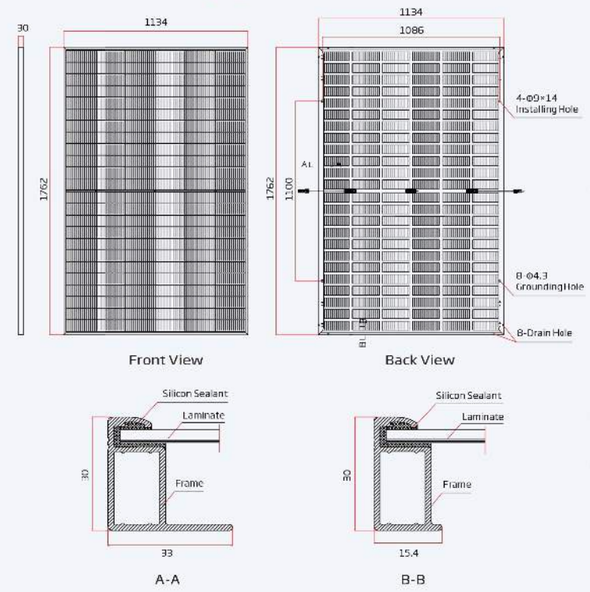
- Easy for integration, designed for compatibility with existing mainstream inverters and diverse mounting systems
- Perfect size and low weight for handling and installation
- Most valuable solution on low load capacity rooftops (weight similar to backsheet version)
- Mechanical performance up to 6000 Pa positive load and 4000 Pa negative load

Trina Solar's Vertex Bifacial Backsheet Performance Warranty

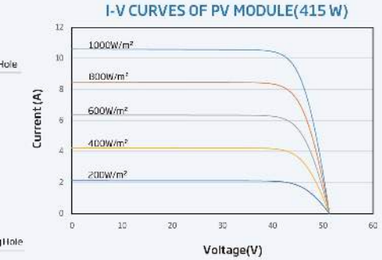


Vertex S+ BACKSHEET MONOCRYSTALLINE MODULE

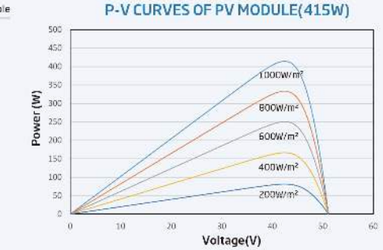
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE(415 W)



P-V CURVES OF PV MODULE(415W)



ELECTRICAL DATA (STC)

Peak Power Watts-PMAX (Wp)*	400	405	410	415	420	425	430
Power Tolerance-PMAX (W)				0 ~ +5			
Maximum Power Voltage-VMPP (V)	41.3	41.7	42.1	42.5	42.8	43.2	43.6
Maximum Power Current-IMPP (A)	9.68	9.71	9.73	9.77	9.80	9.84	9.87
Open Circuit Voltage-Voc (V)	49.2	49.6	50.1	50.5	50.9	51.4	51.8
Short Circuit Current-Isc (A)	10.30	10.33	10.37	10.40	10.43	10.47	10.50
Module Efficiency η m (%)	20.0	20.3	20.5	20.8	21.0	21.3	21.5

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM1.5. *Measuring tolerance: ±3%.

Electrical characteristics with different power bin (reference to 10% Irradiance ratio)

Total Equivalent power -Pmax (Wp)	426	431	437	442	447	453	458
Maximum Power Voltage-VMPP (V)	41.3	41.7	42.1	42.5	42.8	43.2	43.6
Maximum Power Current-IMPP (A)	10.31	10.34	10.36	10.41	10.44	10.48	10.51
Open Circuit Voltage-Voc (V)	49.2	49.6	50.1	50.5	50.9	51.4	51.8
Short Circuit Current-Isc (A)	10.97	11.00	11.04	11.08	11.11	11.15	11.18
Irradiance ratio (rear/front)				10%			

Power Bifaciality:65±10%.

ELECTRICAL DATA (NOCT)

Maximum Power-PMAX (Wp)	312	308	312	316	319	324	328
Maximum Power Voltage-VMPP (V)	38.6	39.0	39.3	39.7	40.0	40.4	40.7
Maximum Power Current-IMPP (A)	7.88	7.91	7.93	7.96	7.98	8.01	8.04
Open Circuit Voltage-Voc (V)	46.6	47.0	47.5	47.8	48.2	48.7	49.1
Short Circuit Current-Isc (A)	8.30	8.32	8.36	8.38	8.41	8.44	8.46

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Topcon Bifacial
No. of cells	144cells
Module Dimensions	1762×1134×30 mm (69.37×44.65×1.18 inches)
Weight	21.3kg (47.0 lb)
Front Glass	3.2 mm (0.12inches), High Transmission, Tempered Glass
Encapsulant material	POE/EVA
BackSheet	Black Grid Transparent Backsheet
Frame	30mm (1.18 inches) Anodized Aluminium Alloy, Black
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm² (0.006 inches²) Landscape:N 1100 mm/ P1100 mm(43.31/43.31 inches)
Connector	MC4 EVO2
Fire Type	Type 1 or Type2

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of PMAX	- 0.30%/°C
Temperature Coefficient of Voc	- 0.24%/°C
Temperature Coefficient of Isc	0.04%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating	25 A

WARRANTY

25 year Product Workmanship Warranty
25 year Power Warranty
1% first year degradation
0.4% Annual Power Attenuation
(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box: 36 pieces
Modules per 40' container: 792 pieces
Pallet dimensions (L x W x H): 1800 x 1135 x 1259 mm
Pallet weight: 829 kg (1827 lb)

Comprehensive Products and System Certificates

IEC61215/IEC61730/IEC61701/IEC62716/UL61730
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
ISO45001: Occupational Health and Safety Management System

Trinasolar

Trinasolar

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

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Version number: TSM_NA_EN_2023_A

www.trinasolar.com

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EMAIL: MIKELANE@SUNPWRD.COM
PHONE NO. : (407) 310-7910

REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME

JOHN KIRKPATRICK
4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
MODULE DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-01

Signature with Seal

Powerwall 3

Power Everything

Powerwall 3 is a fully integrated solar and battery system, designed to accelerate the transition to sustainable energy. Customers can receive whole home backup, cost savings, and energy independence by producing and consuming their own energy while participating in grid services. Once installed, customers can manage their system using the Tesla App to customize system behavior to meet their energy goals.

Powerwall 3 achieves this by supporting up to 20 kW DC of solar and providing up to 11.5 kW AC of continuous power per unit. It has the ability to start heavy loads rated up to 185 LRA, meaning a single unit can support the power needs of most homes. Powerwall 3 Expansions make it easier and more affordable to scale up customers' systems to meet their current or future needs. Powerwall 3 is designed for fast and efficient installations, modular system expansion, and simple connection to any electrical service.

Powerwall 3 Technical Specifications

System Technical Specifications

Model Number	1707000-xx-y			
Nominal Grid Voltage (Input & Output)	120/240 VAC			
Grid Type	Split phase			
Frequency	60 Hz			
Nominal Battery Energy	13.5 kWh AC[1]			
Nominal Output Power (AC)	5.8 kW	7.6 kW	10 kW	11.5 kW
Maximum Apparent Power	5,800 VA	7,600 VA	10,000 VA	11,500 VA
Maximum Continuous Current	24 A	31.7 A	41.7 A	48 A
Overcurrent Protection Device[2]	30 A	40 A	60 A	60 A
Configurable Maximum Continuous Discharge Power Off-Grid (PV Only, -20°C to 25°C)	15.4 kW[3]			
Maximum Continuous Charge Current / Power (Powerwall 3 only)	20.8 A AC / 5 kW			
Maximum Continuous Charge Current / Power (Powerwall 3 with up to (3) Expansion units)	33.3 A AC / 8 kW			
Output Power Factor Rating	0 - 1 (Grid Code configurable)			
Maximum Output Fault Current (1 s)	160 A			
Maximum Short-Circuit Current Rating	10 kA			
Load Start Capability	185 LRA			
Solar to Battery to Home/Grid Efficiency	89%[1,4]			
Solar to Home/Grid Efficiency	97.5%[5]			
Power Scalability	Up to 4 Powerwall 3 units supported			
Energy Scalability	Up to 3 Expansion units (for a maximum total of 7 units)			
Supported Islanding Devices	Gateway 3, Backup Switch, Backup Gateway 2			
Connectivity	Wi-Fi (2.4 and 5 GHz), Ethernet, Cellular (LTE/4G[6])			
Hardware Interface	Dry contact relay, Rapid Shutdown (RSD) certified switch and 2-pin connector, RS-485 for meters			
AC Metering	Revenue Grade (+/- 0.5%, ANSI C12.20)			
Protections	Integrated arc fault circuit interrupter (AFCI), Isolation Monitor Interrupter (IMI), PV Rapid Shutdown (RSD) using Tesla Mid-Circuit Interrupters			
Customer Interface	Tesla Mobile App			
Warranty	10 years			

[1] Values provided for 25°C (77°F), at beginning of life. 3.3 kW charge/discharge power.

[2] See Powerwall 3 Installation Manual for fuse requirements if using fuse for overcurrent protection.

[3] 15.4kW off-grid maximum continuous discharge power is only available if on-grid rating is 11.5 kW. If enabled, Powerwall 3 must be installed with an 80 A breaker and appropriately sized conductors.

[4] Typical solar shifting use case.

[5] Tested using CEC weighted efficiency methodology.

[6] The customer is expected to provide internet connectivity for Powerwall 3; cellular should not be used as the primary mode of connectivity. Cellular connectivity subject to network operator service coverage and signal strength.

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REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME

JOHN KIRKPATRICK

4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME

INVERTER/BATTERY DATA SHEET

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

DS-02

Signature with Seal

Powerwall 3 Technical Specifications

Solar Technical Specifications

Maximum Solar STC Input	20 kW
Withstand Voltage	600 V DC
PV DC Input Voltage Range	60 — 550 V DC
PV DC MPPT Voltage Range	60 — 480 V DC
MPPTs	6
Maximum Current per MPPT (I_{mp})	15 A [7,8]
Maximum Short Circuit Current per MPPT (I_{sc})	19 A [8]

[7] Only applicable to Powerwall 3 units with 15 A I_{MP} on the product label. Otherwise, Powerwall 3 has an I_{MP} of 13 A.

[8] When PV strings are combined on the roof and the DC input current exceeds the MPPT rating, a jumper can be used to combine two MPPTs into a single input to intake DC current up to 30 A I_{MP} / 38 A I_{SC} (or 26 A I_{MP} / 30 A I_{SC} if Powerwall 3 is labeled with 13 A I_{MP} / 15 A I_{SC}).

Environmental Specifications

Operating Temperature	–20°C to 50°C (–4°F to 122°F) [9]
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	–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 Rating	NEMA 3R
Ingress Rating	IP67 (Battery & Power Electronics) IP55 (Wiring Compartment)
Pollution Rating	PD3
Operating Noise @ 1 m	< 50 db(A) typical < 62 db(A) maximum

[9] Performance may be de-rated at operating temperatures above 40°C (104°F).

Compliance Information

Certifications	UL 1741, UL 9540, UL 9540A, UL 3741, UL 1741 PCS, UL 1741 SA, UL 1741 SB, UL 1973, UL 1699B, UL 1998, CSA C22.2 No. 0.8, CSA C22.2 No. 107.1, CSA C22.2 No. 330, CSA 22.3 No. 9, IEEE 1547, IEEE 1547A, IEEE 1547.1, CA Rule No.21
Grid Connection	United States and Canada
Emissions	FCC Part 15 Class B, ICES 003
Environmental	RoHS Directive 2011/65/EU
Seismic	AC156, IEEE 693-2005 (high)
Fire Testing	Meets the unit level performance criteria of UL 9540A

Solar Shutdown Device Technical Specifications

The Solar Shutdown Device is a Mid-Circuit Interrupter (MCI) and is integral to the rapid shutdown (RSD) function required for rooftop PV systems in accordance with Article 690 of the NEC. When paired with Powerwall 3, solar array shutdown is initiated by an External System Shutdown Switch or the On/Off Enable switch located on Powerwall 3. Systems not subject to rapid shutdown requirements must still install one or more MCIs for functional purposes; see the Powerwall 3 installation manual for details.

Electrical Specifications

Model	MCI-1	MCI-2	MCI-2 High Current
Nominal Input DC Current Rating (I_{MP})	13 A	13 A	15 A
Maximum Input Short Circuit Current (I_{SC})	19 A	17 A	19 A
Maximum System Voltage	600 V DC	1000 V DC [15]	1000 V DC [15]
Maximum Disconnect Voltage [16]	600 V DC	165 V DC	165 V DC

[15] Maximum System Voltage is limited by Powerwall to 600 V DC.

[16] Maximum Disconnect Voltage is the maximum voltage allowed across each MCI in the open position (Rapid Shutdown Initiated). An individual MCI-2 has a voltage rating of 165V but in combination (connected in the same string) their voltage ratings are additive.

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

Environmental Specifications

Operating Temperature	-40°C to 50°C (-40°F to 122°F)	-45°C to 70°C (-49°F to 158°F)
Storage Temperature	–30°C to 70°C (–22°F to 158°F)	–30°C to 70°C (–22°F to 158°F)
Enclosure Rating	NEMA 4X / IP65	

Mechanical Specifications

Electrical Connections	MC4 Connector	
Housing	Plastic	
Dimensions	125 x 150 x 22 mm (5 x 6 x 1 in)	173 x 45 x 22 mm (6.8 x 1.8 x 1 in)
Weight	350 g (0.77 lb)	120 g (0.26 lb)
Mounting Options	ZEP Home Run Clip M4 Screw (#10) M8 Bolt (5/16") Nail / Wood screw	Wire Clip

Compliance Information

Certifications	UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)
RSD Initiation Method	External System Shutdown Switch or Powerwall 3 Enable Switch

UL 3741 PV Hazard Control (and PVRSA) Compatibility

See UL 3741 Application Addendum

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PROJECT NAME

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4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
INV./BAT. & RSD DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-03

Signature with Seal

Gateway 3

Tesla Gateway 3 controls connection to the grid in a Powerwall system, automatically detecting outages and providing seamless transition to backup power. It provides energy monitoring that is used by Powerwall for solar self-consumption, time-based control, and backup operation.

Performance Specifications

Model Number	1841000-x1-y
Nominal Grid Voltage	120/240 V AC
Grid Configuration	Split phase
Grid Frequency	60 Hz
Continuous Current Rating	200 A
Maximum Supply Short Circuit Current	22 kA with Square D or Eaton main breaker 25 kA with Eaton main breaker [17]
IEC Protective Class	Class I
Overvoltage Category	Category IV

[17] Only Eaton CSR or BWH main breakers are 25 kA rated.

AC Meter	+/- 0.5%
Communication	CAN
User Interface	Tesla App
Backup Transition	Automatic disconnect for seamless backup
Overcurrent Protection Device	100–200 A Service entrance rated Eaton CSR, BWH, or BW, or Square D QOM breakers
Internal Panelboard	200 A 8-space/16 circuit breakers Eaton BR, Siemens QP, or Square D HOM breakers rated to 10–125A
Warranty	10 years

Environmental Specifications

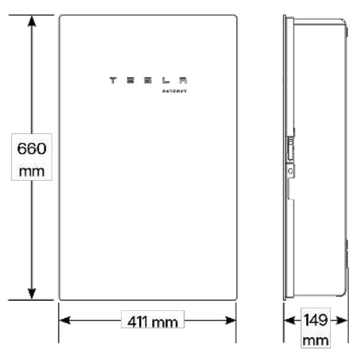
Operating Temperature	–20°C to 50°C (–4°F to 122°F)
Operating Humidity (RH)	Up to 100%, condensing
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R

Compliance Information

Certifications	UL 67, UL 869A, UL 916, UL 1741 PCS, CSA 22.2 107.1, CSA 22.2 29
Emissions	FCC Part 15, Class B, ICES 003

Mechanical Specifications

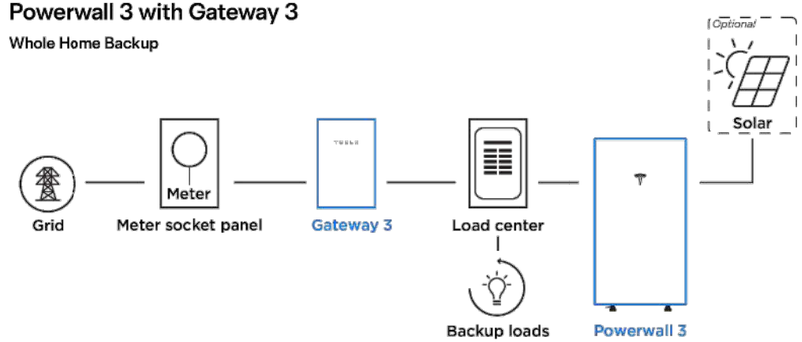
Dimensions	660 x 411 x 149 mm (26 x 16 x 6 in)
Weight	16.3 kg (36 lb)
Mounting options	Wall mount



Powerwall 3 Example System Configurations

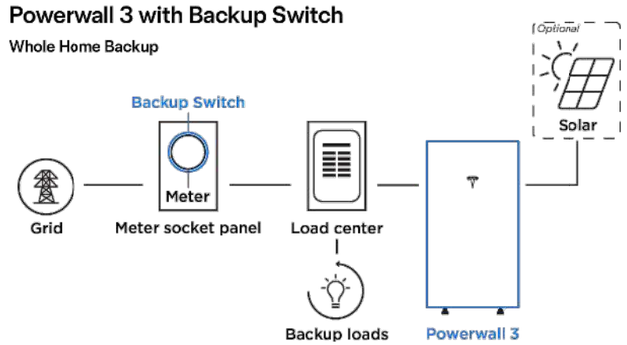
Powerwall 3 with Gateway 3

Whole Home Backup



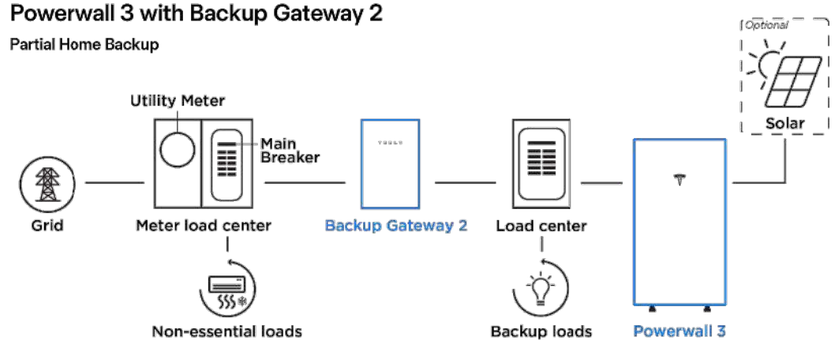
Powerwall 3 with Backup Switch

Whole Home Backup



Powerwall 3 with Backup Gateway 2

Partial Home Backup



BOB HEINMILLER SOLAR SOLUTIONS LLC
1537 W SMITH STR.,
ORLANDO, FL 32804
EMAIL: MIKELANE@SUNPWRD.COM
PHONE NO. : (407) 310-7910

REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME

JOHN KIRKPATRICK

4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME

GATEWAY 3
DATA SHEET

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

DS-04

Signature with Seal

Powerwall 3 Expansion Technical Specifications

Battery Technical Specifications

Model Number	1807000-xx-y
Nominal Battery Energy	13.5 kWh
Voltage Range	52 - 92 V DC [11]

[11] Powerwall 3 Expansion units are connected in parallel and are not field serviceable.

Environmental Specifications

Operating Temperature	−20°C to 50°C (−4°F to 122°F) [12]
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	−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 Rating	NEMA 3R
Ingress Rating	IP67
Pollution Rating	PD3

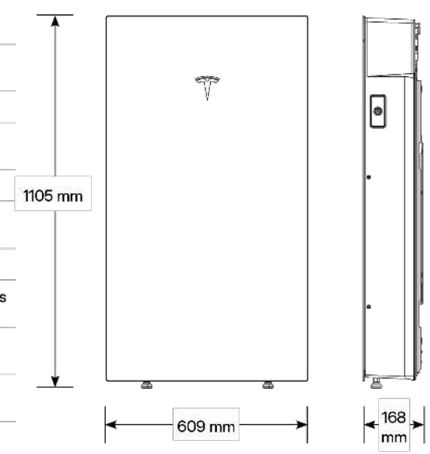
[12] Performance may be de-rated at operating temperatures above 40°C (104°F).

Compliance Information

Certifications	UL 1973, UL 9540

Mechanical Specifications

Dimensions	1105 x 609 x 168 mm (43.5 x 24 x 6.6 in) [13]
Total Weight of Wall-Mounted Expansion Unit	118.5 kg (261.2 lb)
Weight of Expansion Unit	110 kg (242.5 lb)
Weight of Glass Front Cover	6.5 kg (14.5 lb)
Weight of Wall Bracket	1.9 kg (4.2 lb)
Weight of Expansion Accessories	0.7 kg (1.5 lb)
Mounting Options	Floor or wall mount
Stacking Capability (Floor Mount Only)	Up to (3) Expansion units behind a Powerwall 3
Compatibility with Other Systems	Only compatible with Powerwall 3
Connection to Powerwall 3 or Expansions	Powerwall 3 Expansion harness [14]



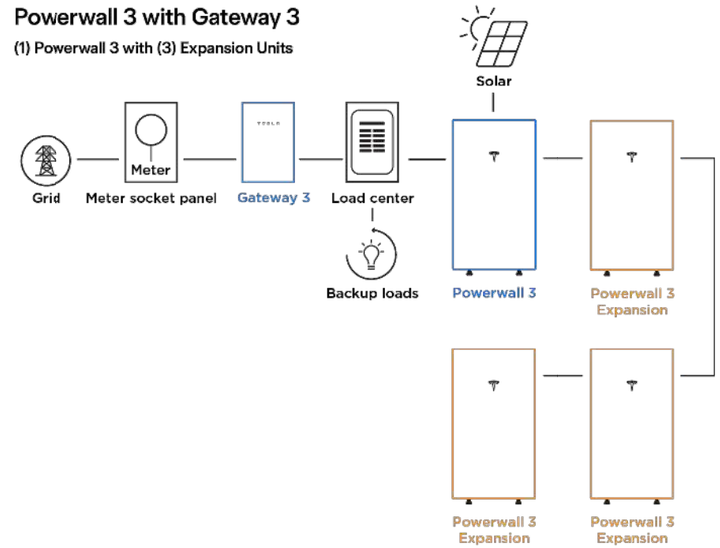
[13] These dimensions include the glass front cover being installed on Powerwall 3 Expansion.

[14] The Powerwall 3 Expansion harness is a listed component of the UL 9540 certification.

Powerwall 3 Example System Configurations

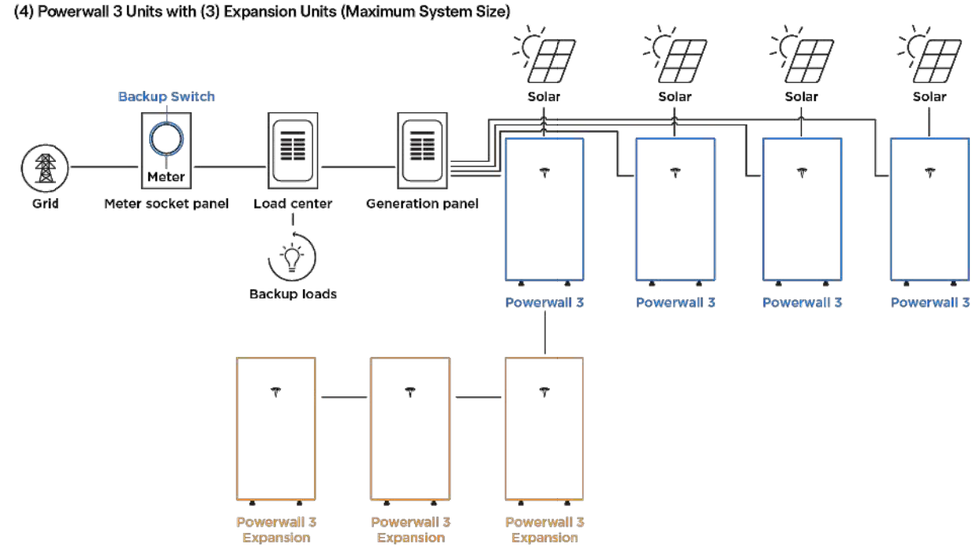
Powerwall 3 with Gateway 3

(1) Powerwall 3 with (3) Expansion Units



Powerwall 3 with Backup Switch

(4) Powerwall 3 Units with (3) Expansion Units (Maximum System Size)



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REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME

JOHN KIRKPATRICK

4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
BAT. EXPANSION DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-05

Signature with Seal

SnapNrack
Solar Mounting Solutions

Ultra Rail

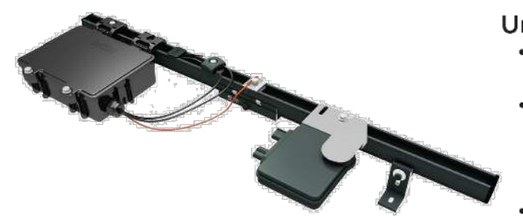
UR-40
UR-60

SnapNrack Ultra Rail System

A sleek, straightforward rail solution for mounting solar modules on all roof types. Ultra Rail features two rail profiles; UR-40 is a lightweight rail profile that is suitable for most geographic regions and maintains all the great features of SnapNrack rail, while UR-60 is a heavier duty rail profile that provides a larger rail channel and increased span capabilities. Both are compatible with all existing mounts, module clamps, and accessories for ease of install.

The Entire System is a Snap to Install

- New Ultra Rail Mounts include snap-in brackets for attaching rail
- Compatible with all the SnapNrack Mid Clamps and End Clamps customers love
- Universal End Clamps and snap-in End Caps provide a clean look to the array edge



Unparalleled Wire Management

- Open rail channel provides room for running wires resulting in a long-lasting quality install
- Industry best wire management offering includes Junction Boxes, Universal Wire Clamps, MLPE Attachment Kits, and Conduit Clamps
- System is fully bonded and listed to UL 2703 Standard

The Ultimate Value in Rooftop Solar

- Industry leading Wire Management Solutions
- Mounts available for all roof types
- Single Tool Installation
- All SnapNrack Module Clamps & Accessories are compatible with both rail profiles

Heavy Duty UR-60 Rail

- UR-60 rail profile provides increased span capabilities for high wind speeds and snow loads
- Taller, stronger rail profile includes profile-specific rail splice and end cap
- All existing mounts, module clamps, and accessories are retained for the same great install experience

Start Installing Ultra Rail Today

RESOURCES	snapnrack.com/resources
DESIGN	snapnrack.com/configurator
WHERE TO BUY	snapnrack.com/where-to-buy

Quality. Innovative. Superior.

SnapNrack Solar Mounting Solutions are engineered to optimize material use and labor resources and improve overall installation quality and safety.

877-732-2860 www.snapnrack.com contact@snapnrack.com

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REVISIONS

DESCRIPTION	DATE	REV

DATE: 03/10/2025

PROJECT NAME

JOHN KIRKPATRICK

4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
RAIL
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-06

Signature with Seal

S-5!®

The Right Way

The right way to attach almost anything to metal roofs!

ProteaBracket™

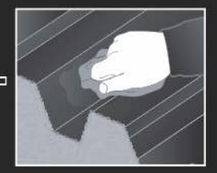
ProteaBracket™ is the most versatile attachment solution on the market, fitting most metal trapezoidal sheet profiles with and without intermediate insulation. It features an adjustable attachment base and multiple solar module attachment options (illustrated on back) to accommodate varying widths and heights. There are no messy sealants to apply and no chance for leaks; the ProteaBracket comes with factory-applied, adhesive rubber sealant to ensure quick installation and a weather-proof fit.

The ProteaBracket is mounted directly onto the crown of the panel, straddling the profile. No surface preparation is necessary; simply wipe away excess oil and debris, align, and apply. Secure ProteaBracket through all 6 pre-punched holes.

ProteaBracket is the perfect match for the S-5-PV Kit, for a solar attachment solution that is both economical and easy to use.

S-5!® ProteaBracket™ is a versatile bracket that adjusts easily to most trapezoidal roof profiles.

S-5! PV kits have an M8 bolt and are suitable for use with all S-5! clamps.

1


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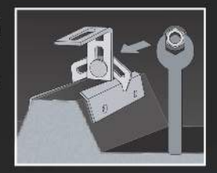

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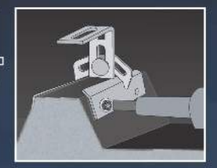


ProteaBracket™

S-5!® The Right Way

ProteaBracket™ is the perfect solar attachment solution for most trapezoidal exposed-fastened metal roof profiles. No messy sealants to apply: the factory-applied adhesive rubber sealant weather-proofs and makes installation easy.

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

Each **ProteaBracket™** comes with a factory-applied, adhesive rubber sealant on the base. A structural A2 stainless steel bimetal attachment bracket, ProteaBracket is compatible with most common metal roofing materials.

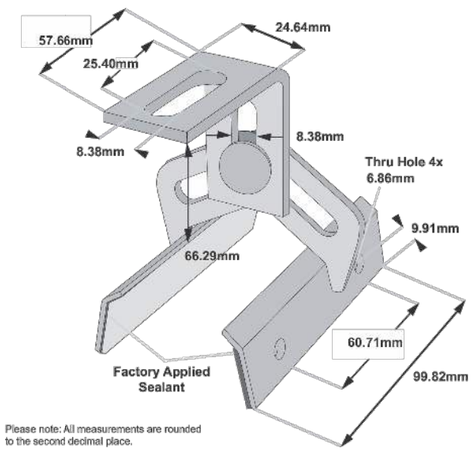
All four pre-punched holes must be used to achieve tested strength. For design assistance, contact Safintra South Africa (and see our website **www.safintra.co.za**), or visit **www.S-5.com** for the independent lab test data that can be used for load-critical designs and applications. Also, please visit S-5! website for more information including metallurgical compatibilities and specifications.

Multiple Attachment Options:

ProteaBracket™ with Top Rail option for PV attachment

ProteaBracket™ with S-5-PV Kit option (if not using a rail)

ProteaBracket™



Please note: All measurements are rounded to the second decimal place.

FLUTELINE

VERSATILE

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

S-5! Brackets and clamps are not tested for performance as part of a Fall Arrest or Personal Safety system. These applications need to be tested as a dynamic system and warranties or test results must be issued by the system provider.
Safintra, Safal Group and its subsidiaries provide no warranties or any assurances in this application, and will accept no claims of any nature whatsoever arising out of any such applications.

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

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S-5! Aggressively protects its patents, trademarks and copyrights.

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SAFINTRA
world class roofing systems

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DESCRIPTION	DATE	REV

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4998 NW FALLING CREEK RD.,
WHITE SPRINGS, FL 32096

SHEET NAME
ATTACHMENT DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-07

Signature with Seal