

PROJECT DESCRIPTION:

37 x 405 REC405AA PURE BLACK (405W) MODULES
ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES

DC SYSTEM SIZE: 14.98 kW DC STC
AC SYSTEM SIZE: 23.00 kW AC

EQUIPMENT SUMMARY
37 REC405AA PURE BLACK (405W) MODULES
02 TESLA POWERWALL 3 1707000-XX-Y INVERTER/
BATTERY
13 TESLA MCI-1 RAPID SHUTDOWN

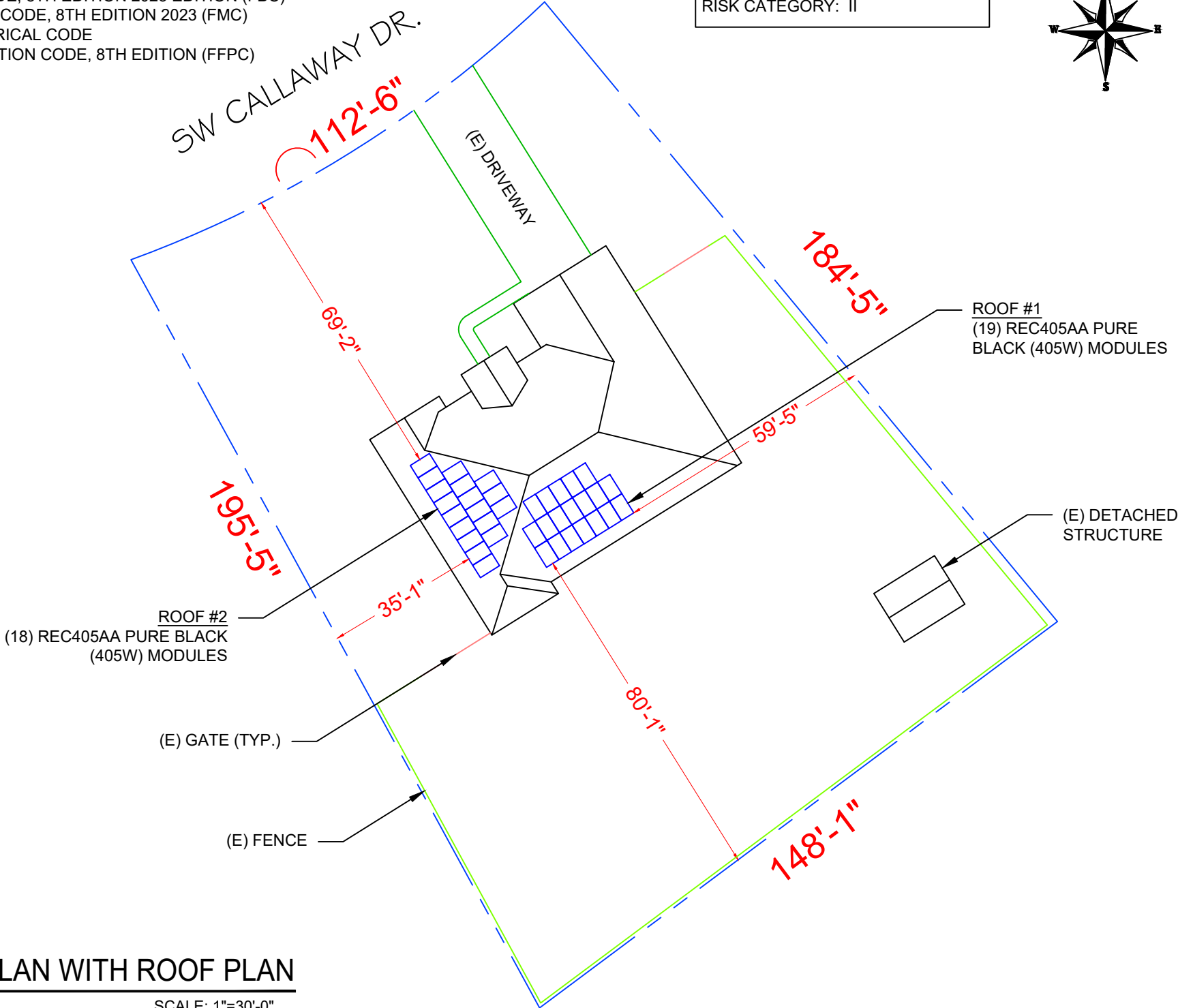
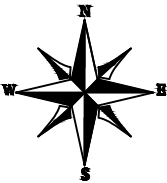
GOVERNING CODES :
FLORIDA RESIDENTIAL CODE, 8TH EDITION 2023 (FRC)
FLORIDA PLUMBING CODE, 8TH EDITION 2023 (FPC)
FLORIDA BUILDING CODE, 8TH EDITION 2023 EDITION (FBC)
FLORIDA MECHANICAL CODE, 8TH EDITION 2023 (FMC)
2020 NATIONAL ELECTRICAL CODE
FLORIDA FIRE PREVENTION CODE, 8TH EDITION (FFPC)

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A-00	PLOT PLAN & VICINITY MAP
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S-02	ATTACHMENT DETAILS
E-01	ELECTRICAL SITE PLAN
E-02	ELECTRICAL LINE DIAGRAM
E-03	WIRING CALCULATIONS
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DS-02	POWERWALL3 DATA SHEET
DS-03	RAPID SHUTDOWN DATA SHEET
DS-04	GATEWAY 2 DATA SHEET
DS-05	RAIL DATA SHEET
DS-06	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 INFORMATION GIVEN. CONTRACTOR RESPONSIBLE TO FIELD VERIFY ALL CONDITION IN THE FIELD PRIOR TO INSTALLATION OR ACCEPTS FULL RESPONSIBILITY.

ASCE 7-22 WIND DESIGN CRITERIA
ULTIMATE WIND SPEED: 130 MPH
NOMINAL WIND SPEED: 101 MPH
WIND EXPOSURE: B
RISK CATEGORY: II



2 HOUSE PHOTO
A-00 SCALE: NTS



3 VICINITY MAP
A-00 SCALE: NTS

POWER
PRODUCTION MANAGEMENT, INC.

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

REVISIONS

DESCRIPTION	DATE	REV

DATE: 05/29/2024

PROJECT NAME

JEFF THOMPSON

270 SW CALLAWAY DR.,
LAKE CITY, FL 32024

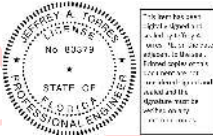
SHEET NAME
PLOT PLAN &
VICINITY MAP

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
A-00

Signature with Seal

Digitally signed
by Jeffrey A
Torres
Date:
2024.05.29
'12:41:46 -04'00

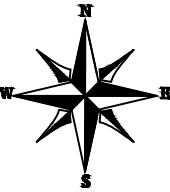


JEFFREY A. TORRES, PE
FL PE #80379
SUNSMART ENGINEERING LLC
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925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

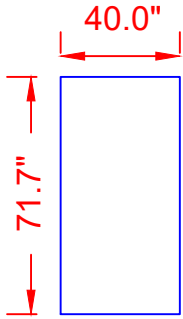
MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 37 MODULES
MODULE TYPE = REC405AA PURE BLACK (405W) MODULES
WEIGHT = 45.0 LBS / 20.5 KG.
MODULE DIMENSIONS = 71.7" x 40.0" = 19.92 SF

TOTAL ARRAY AREA = 736.92 SQ. FT.
TOTAL ROOF FACE AREA = 3710.28 SQ. FT.
736.92 / 3710.28= 19.86% OF ROOF
FACE AREA COVERED BY ARRAY



NOTE :THE TRUSS LOCATIONS AND ATTACHMENT POINTS SHOWN ON SHEET S-01 IS ONLY SHOWS AN ILLUSTRATIVE REPRESENTATION OF A TYPICAL 2"x4"TRUSS LAYOUT SPACED 24" ON CENTER WITH ATTACHMENT POINTS TO THE TRUSS. 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).



REC405AA PURE BLACK
(405W) MODULES
(N) SNAP N RACK UR40 RAIL (TYP.)

(N) SNAPNRACK SPEEDSEAL FOOT PV
ROOF ATTACHMENT@ 48" O.C.

ROOF #2
(18) REC405AA PURE BLACK (405W)
MODULES

ROOF #2
TILT - 30°
AZIM. - 238°

ROOF #1
(19) REC405AA PURE BLACK (405W)
MODULES

ROOF #1
TILT - 30°
AZIM. - 148°

WIND ZONE 1 TYP

WIND ZONE 3 TYP

WIND ZONE 2 TYP

(E) TYP. TRUSS @ 24" O.C.

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 ACCOMMODATE THE
NEW IMPOSED LOADS OF
THE SOLAR SYSTEM.

LEGEND

- E - EXPOSED MODULE
- N - NON-EXPOSED MODULE
- □ - ROOF OBSTRUCTION
- - PV ROOF ATTACHMENT
- - RAFTERS

Digitally signed
by Jeffrey A
Torres
Date:
2024.05.29
'12:41:55 -04'00

Signature with Seal



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FL PE #80379
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**POWER PRODUCTION
MANAGEMENT INC**
625 NW 8TH AVE.,
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV

DATE: 05/29/2024

PROJECT NAME

JEFF THOMPSON

270 SW CALLAWAY DR.,
LAKE CITY, FL 32024

SHEET NAME

**ROOF PLAN &
MODULES**

SHEET SIZE

**ANSI B
11" X 17"**

SHEET NUMBER

S-01

1 ROOF PLAN & MODULES

S-01

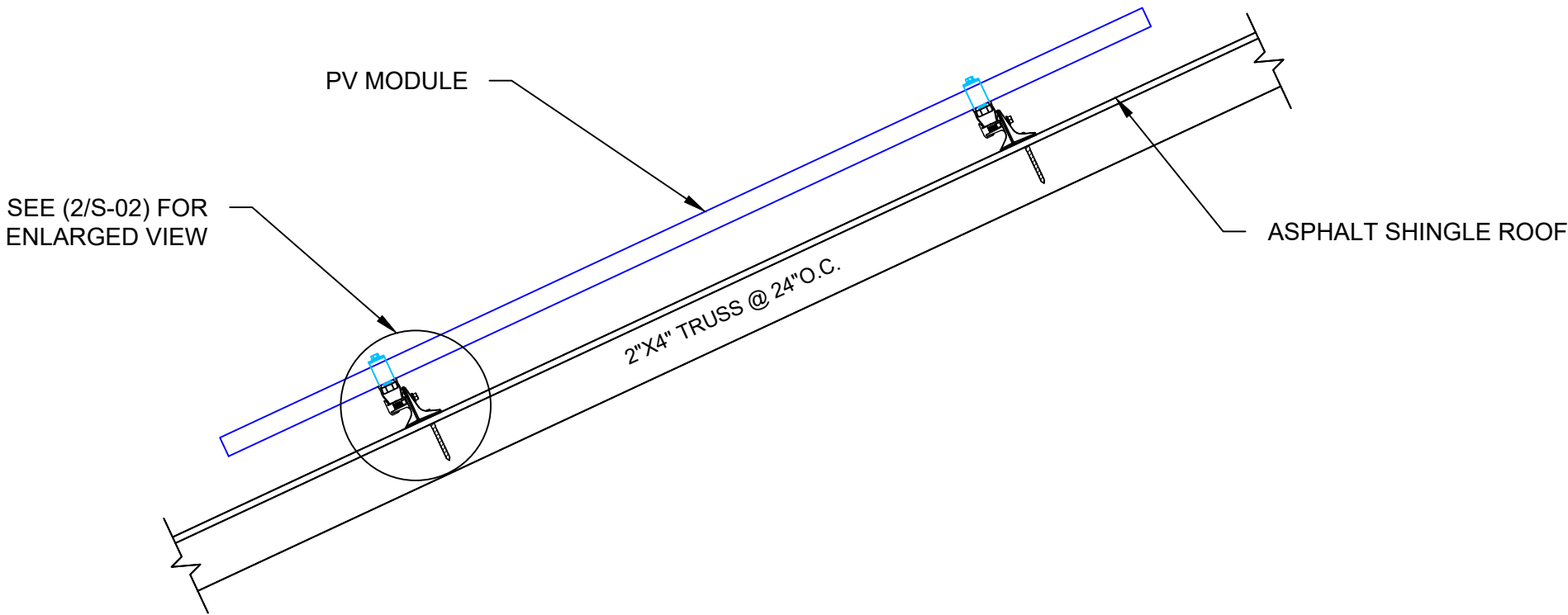
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1

ATTACHMENT DETAIL

S-02

SCALE: NTS

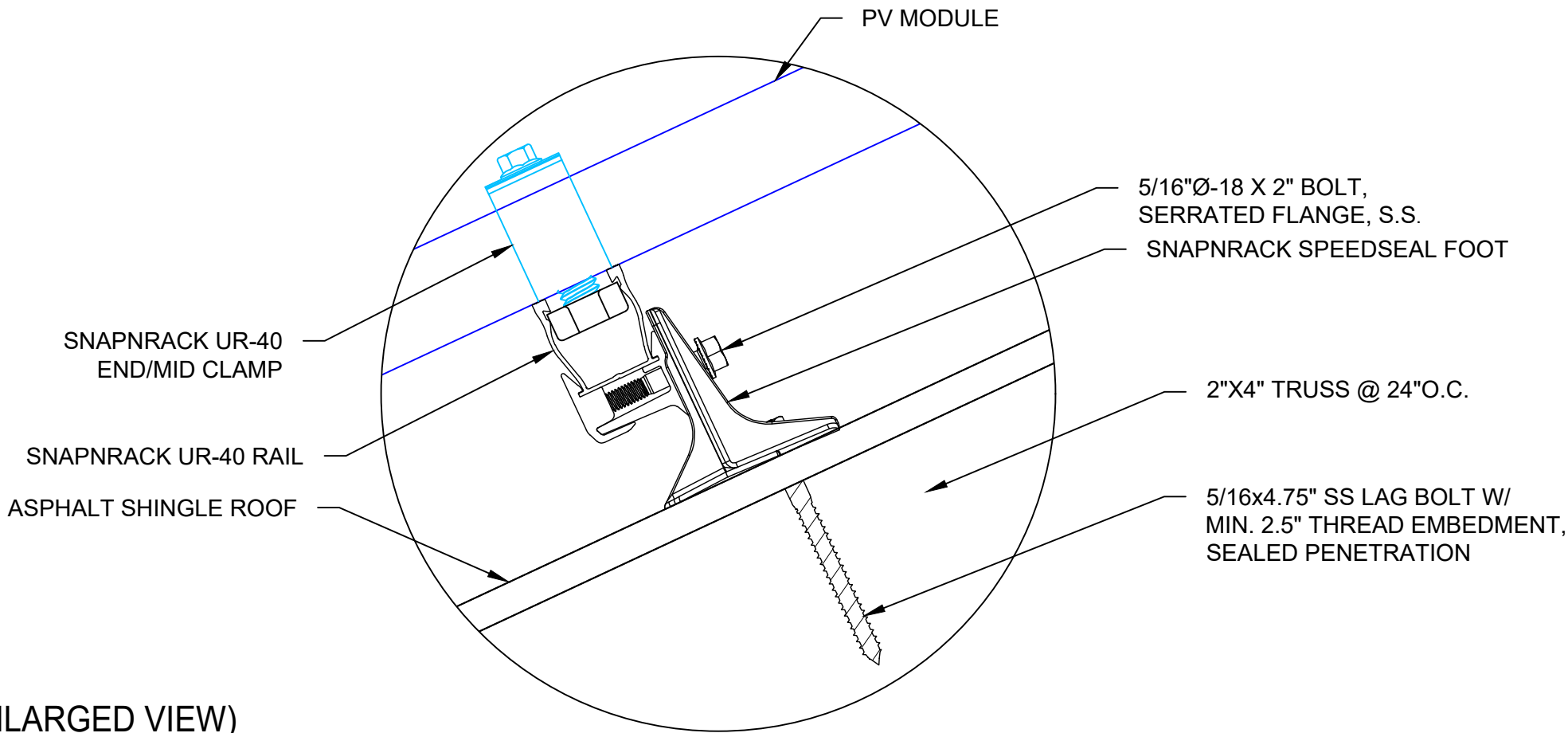


2

ATTACHMENT DETAIL (ENLARGED VIEW)

S-02

SCALE: NTS



POWER PRODUCTION
MANAGEMENT INC
625 NW 8TH AVE.,
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JEFF THOMPSON
270 SW CALLAWAY DR.,
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:
2024.05.29
'12:42:03 -04'00

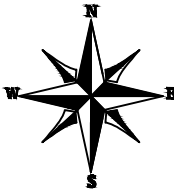


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DC SYSTEM SIZE: 14.98 kW DC STC
AC SYSTEM SIZE: 23.00 kW AC

(37) REC405AA PURE BLACK (405W) MODULES

(01) BRANCH OF 10 MODULES &
(03) BRANCHES OF 09 MODULES



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PROJECT NAME

JEFF THOMPSON

270 SW CALLAWAY DR.,
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:
2024.05.29
'12:42:11 -04'00

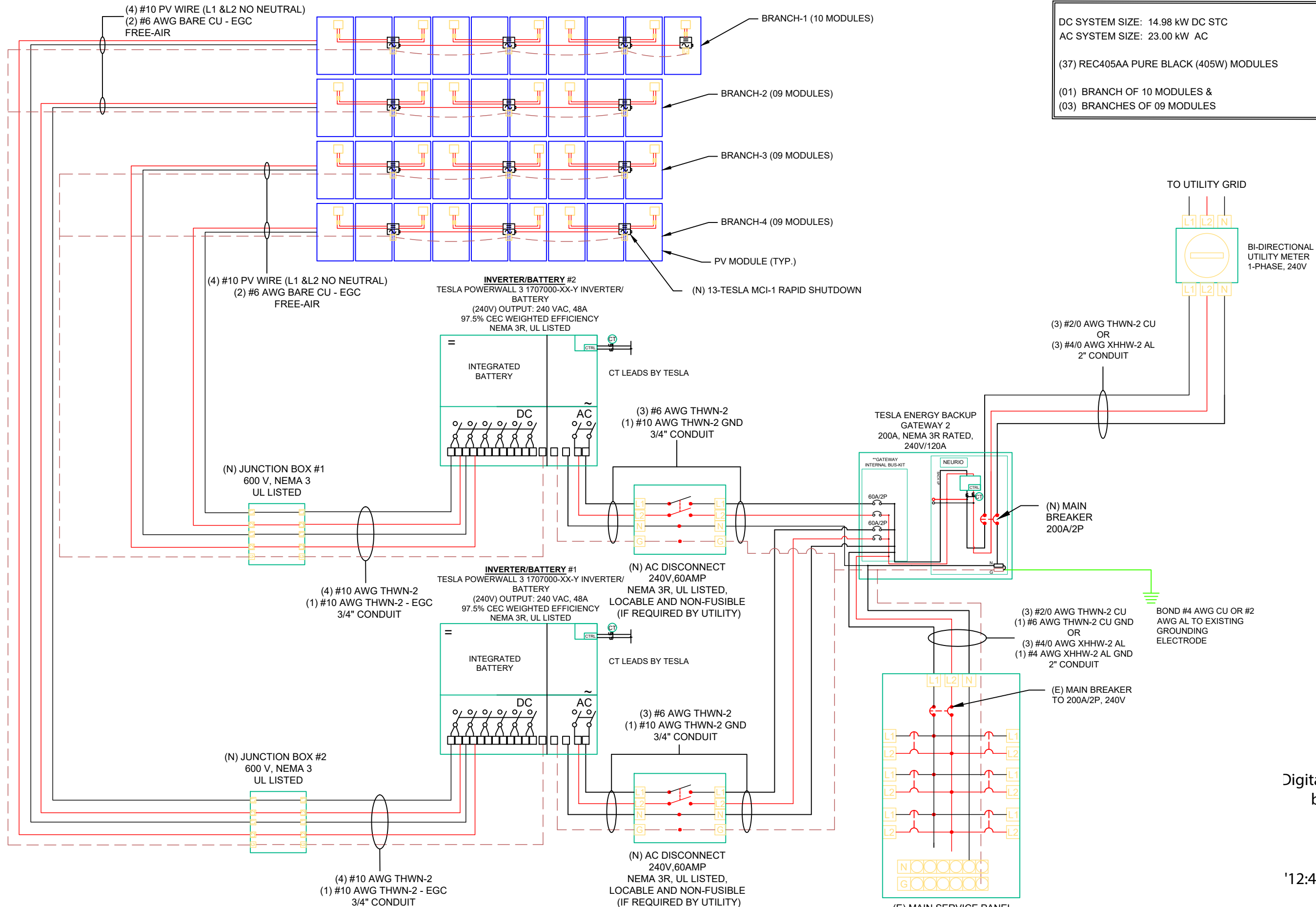


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LEGEND

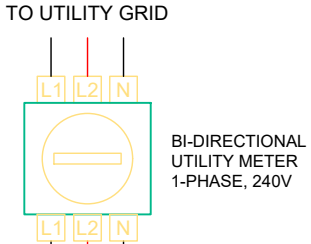
- ACD** - AC DISCONNECT
- GWY** - TESLA BACKUP GATEWAY
- BT** - TESLA POWERWALL 3 INVERTER/ BATTERY
- UM** - UTILITY METER
- JB** - JUNCTION BOX
- MSP** - MAIN SERVICE PANEL
- - RAPID SHUTDOWN
- - ROOF OBSTRUCTION
- - CONDUIT



DC SYSTEM SIZE: 14.98 kW DC STC
AC SYSTEM SIZE: 23.00 kW AC

(37) REC405AA PURE BLACK (405W) MODULES

(01) BRANCH OF 10 MODULES &
(03) BRANCHES OF 09 MODULES



TO UTILITY GRID

BI-DIRECTIONAL UTILITY METER
1-PHASE, 240V

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

(N) MAIN BREAKER
200A/2P

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

BOND #4 AWG CU OR #2
AWG AL TO EXISTING
GROUNDING
ELECTRODE



POWER PRODUCTION
MANAGEMENT INC
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REVISIONS		
DESCRIPTION	DATE	REV

DATE: 05/29/2024

PROJECT NAME

JEFF THOMPSON

270 SW CALLAWAY DR.,
LAKE CITY, FL 32024

SHEET NAME

ELECTRICAL
LINE DIAGRAM

SHEET SIZE

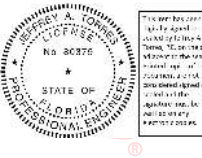
ANSI B
11" X 17"

SHEET NUMBER

E-02

Digitally signed
by Jeffrey A
Torres
Date:
2024.05.29
'12:42:19 -04'00

Signature with Seal



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FL PE #80379
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SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	REC405AA PURE BLACK (405W) MODULES
VMP	42.40V
IMP	9.56A
VOC	48.90V
ISC	10.30A
MODULE DIMENSION	71.7"L x 40.0"W x 1.20"D (In Inch)

INVERTER #1 & #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	-5°
AMBIENT TEMP (HIGH TEMP 2%)	34°
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)	34°
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	4
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a)	0.80
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY	40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)		16.07A
1.56 X ISC OF MODULE		
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC (310.15)(B)(2)(a)		30.72A
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 (16.07A) otherwise less the entry for circuit conductor size and ampacity		

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

EXPECTED WIRE TEMP (In Celsius)	34°
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	4
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)		16.07A
1.56 X ISC OF MODULE		
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC (310.15)(B)(2)(a)		30.72A
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 (16.07A) otherwise less the entry for circuit conductor size and ampacity		

AC CONDUCTOR AMPACITY CALCULATIONS:
FROM INVERTER #1 & #2 TO ACD #1 & #2 TO TESLA ENERGY
BACKUP GATEWAY 2

No. Of INVERTER	2
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	65A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B)		60.00A
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 (60.00A) otherwise less the entry for circuit conductor size and ampacity		

AC CONDUCTOR AMPACITY CALCULATIONS:
FROM TESLA ENERGY BACKUP GATEWAY 2 TO MAIN SERVICE
PANEL

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	3/0 AWG
CIRCUIT CONDUCTOR AMPACITY	200A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B)	200
MAX OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC (310.15)(B)(2)(a)	216.00
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 (200.00A) otherwise less the entry for circuit conductor size and ampacity	

AC CONDUCTOR AMPACITY CALCULATIONS:
FROM TESLA ENERGY BACKUP GATEWAY 2 TO POI

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	3/0 AWG
CIRCUIT CONDUCTOR AMPACITY	200A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B)	200
MAX OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC (310.15)(B)(2)(a)	216.00
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 (200.00A) 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.



POWER PRODUCTION
MANAGEMENT INC
625 NW 8TH AVE.,
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REVISIONS

DESCRIPTION	DATE	REV

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PROJECT NAME

JEFF THOMPSON

270 SW CALLAWAY DR.,
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: 2024.05.29
'12:42:26 -04'00



This document has been
electronically signed and
certified by Jeffrey A.
Torres, P.E., and is a legal
and correct rendition of the
original document. The
signature must be
verified by the
appropriate authority.

JEFFREY A. TORRES, PE
FL PE #80379
SUNSMART ENGINEERING LLC
FL COA #35170
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(407) 710-1147

PHOTOVOLTAIC AC DISCONNECT

NOMINAL OPERATING AC VOLATGE240 V

RATED AC OUTPUT CURRENT48.0 A

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

RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM

LABEL LOCATION:
TESLA GATEWAY - CODE REF:
NEC 690.56(C)

⚠ 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)

WARNING:PHOTOVOLTAIC
POWER SOURCE

LABEL LOCATION:
CONDUIT, COMBINER BOX
(PER CODE: NEC 690.31(G)(3)(4))

CAUTION

MULTIPLE SOURCES OF POWER

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 690.56(B), 690.4(D)

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:
ON OR NO MORE THAT 1 M (3 FT) FROM THE SERVICE DISCONNECTING
MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED.
PER CODE(S): NEC: 690.56(C)

ENERGY STORAGE
SYSTEM DISCONNECT

LABEL LOCATION:
TESLA GATEWAY
NEC 706.15(C)

ENERGY STORAGE SYSTEM

NOMINAL ESS OUTPUT VOLTAGE:240 VAC

LABEL LOCATION:
TESLA GATEWAY
PER CODE(S): NEC 2020: 706.15(C)



POWER PRODUCTION
MANAGEMENT INC
625 NW 8TH AVE.,
GAINESVILLE, FL 32604

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PROJECT NAME

JEFF THOMPSON

270 SW CALLAWAY DR.,
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:
2024.05.29
'12:42:35 -04'00



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FL PE #80379
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REC ALPHA[®]
PURE SERIES
PRODUCT SPECIFICATIONS

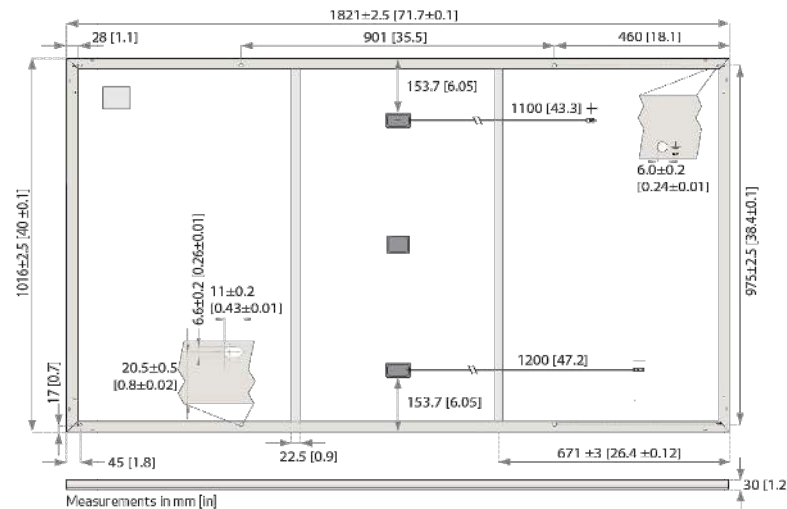
405_{WP}
20.3_{W/FT²}



SOLAR'S MOST TRUSTED



REC ALPHA PURE SERIES > PRODUCT SPECIFICATIONS



GENERAL DATA

Cell type:	132 half-cut REC heterojunction cells with lead-free, gapless technology 6 strings of 22 cells in series	Connectors:	Stäubli MC4PV-KBT4/KST4, 12AWG (4mm ²) in accordance with IEC 62852 IP68 only when connected
Glass:	0.13 in (3.2 mm) solar glass with anti-reflection surface treatment	Cable:	12 AWG (4 mm ²) PV wire, 43+47 in (1.1+1.2 m) in accordance with EN 50618
Backsheet:	Highly resistant polymer (black)	Dimensions:	71.7 x 40 x 1.2 in (1821 x 1016 x 30 mm)
Frame:	Anodized aluminum (black)	Weight:	45 lbs (20.5 kg)
Junction box:	3-part, 3 bypass diodes, IP68 rated in accordance with IEC 62790	Origin:	Made in Singapore

ELECTRICAL DATA

Product Code*: RECxxxAA Pure

	385	390	395	400	405
Power Output - P _{MAX} (Wp)	385	390	395	400	405
Watt Class Sorting - (W)	0/+5	0/+5	0/+5	0/+5	0/+5
Nominal Power Voltage - V _{MPP} (V)	41.2	41.5	41.8	42.1	42.4
Nominal Power Current - I _{MPP} (A)	9.35	9.40	9.45	9.51	9.56
Open Circuit Voltage - V _{OC} (V)	48.5	48.6	48.7	48.8	48.9
Short Circuit Current - I _{SC} (A)	10.18	10.19	10.20	10.25	10.30
Power Density (W/sq ft)	19.3	19.6	19.8	20.1	20.3
Panel Efficiency (%)	20.8	21.1	21.3	21.6	21.9
Power Output - P _{MAX} (Wp)	293	297	301	305	309
Nominal Power Voltage - V _{MPP} (V)	38.8	39.1	39.4	39.7	40.0
Nominal Power Current - I _{MPP} (A)	7.55	7.59	7.63	7.68	7.72
Open Circuit Voltage - V _{OC} (V)	45.7	45.8	45.9	46.0	46.1
Short Circuit Current - I _{SC} (A)	8.16	8.20	8.24	8.28	8.32

Values at standard test conditions (STC: air mass AM1.5, irradiance 1075 W/sq ft (1000 W/m²), temperature 77°F (25°C), based on a production spread with a tolerance of P_{MAX}, V_{OC} & I_{SC} ±3% within one watt class. Nominal module operating temperature (NMOT: air mass AM1.5, irradiance 800 W/m², temperature 68°F (20°C), windspeed 3.3 ft/s (1 m/s). *Where xxx indicates the nominal power class (P_{MAX}) at STC above.

PRODUCT SPECIFICATIONS

CERTIFICATIONS

IEC 61215:2016, IEC 61730:2016, UL 61730	
IEC 62804	PID
IEC 61701	Salt Mist
IEC 62716	Ammonia Resistance
UL 61730	Fire Type Class 2
IEC 62782	Dynamic Mechanical Load
IEC 61215-2:2016	Hailstone (35mm)
IEC 62321	Lead-free acc. to RoHS EU 863/2015
ISO 14001:2004, ISO 9001:2015, OHSAS 18001:2007, IEC 62941	



WARRANTY

	Standard	RECProTrust
Installed by an REC Certified Solar Professional	No	Yes
System Size	All	≤25 kW 25-500 kW
Product Warranty (yrs)	20	25
Power Warranty (yrs)	25	25
Labor Warranty (yrs)	0	25
Power in Year 1	98%	98%
Annual Degradation	0.25%	0.25%
Power in Year 25	92%	92%

See warranty documents for details. Conditions apply

MAXIMUM RATINGS

Operational temperature:	-40 ... +185°F (-40 ... +85°C)
Maximum system voltage:	1000 V
Maximum test load (front):	+7000 Pa (146 lbs/sq ft)*
Maximum test load (rear):	-4000 Pa (83.5 lbs/sq ft)*
Max series fuse rating:	25 A
Max reverse current:	25 A

* See installation manual for mounting instructions. Design load = Test load / 1.5 (safety factor)

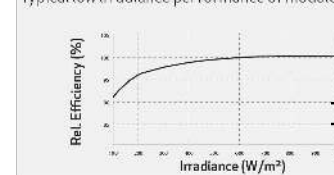
TEMPERATURE RATINGS*

Nominal Module Operating Temperature:	44°C (±2°C)
Temperature coefficient of P _{MAX} :	-0.26 %/°C
Temperature coefficient of V _{OC} :	-0.24 %/°C
Temperature coefficient of I _{SC} :	0.04 %/°C

*The temperature coefficients stated are linear values

LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC:



Digitally signed
by Jeffrey A
Torres

Date: 2024.05.29
19:43:04 -0400



Founded in 1996, REC Group is an international pioneering solar energy company dedicated to empowering consumers with clean, affordable solar power. As Solar's Most Trusted, REC is committed to high quality, innovation, and a low carbon footprint in the solar materials and solar panels it manufactures. Headquartered in Norway with operational headquarters in Singapore, REC also has regional hubs in North America, Europe, and Asia-Pacific.

POWER
PRODUCTION MANAGEMENT, INC.

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

REVISIONS

DESCRIPTION	DATE	REV

DATE: 05/29/2024

PROJECT NAME

JEFF THOMPSON

270 SW CALLAWAY DR.,
LAKE CITY, FL 32024

SHEET NAME
MODULE
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-01

Signature with Seal



JEFFREY A. TORRES, PE
FL PE #80379
SUNSMART ENGINEERING LLC
FL COA #35170
925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

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 11.5 kW AC of continuous power per unit. It has the ability to start heavy loads up to 185 A LRA, meaning a single unit can support the power needs of most homes. Powerwall 3 is designed for mass production, fast and efficient installations, easy 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
Overcurrent Protection Device	Configurable up to 60 A
Solar to Battery to Home/Grid Efficiency	89% ^{1,2}
Solar to Home/Grid Efficiency	97.5% ³
Supported Islanding Devices	Backup Gateway 2, Backup Switch
Connectivity	Wi-Fi (2.4 and 5 GHz), Dual-port switched Ethernet, Cellular (LTE/4G ⁴)
Hardware Interface	Dry contact relay, Rapid Shutdown (RSD) certified switch and 2-pin connector, RS-485 for meters
AC Metering	Revenue Grade (+/- 0.5%)
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

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	150 — 480 V DC
MPPTs	6
Maximum Current per MPPT (I _{mp})	13 A ⁵
Maximum Short Circuit Current per MPPT (I _{sc})	15 A ⁵

Battery Technical Specifications

Nominal Battery Energy	13.5 kWh AC ²
Maximum Continuous Discharge Power	11.5 kW AC
Maximum Continuous Charge Power	5 kW AC
Output Power Factor Rating	0 - 1 (Grid Code configurable)
Maximum Continuous Current	48 A
Maximum Output Fault Current	10 kA
Load Start Capability (1 s)	185 A LRA
Power Scalability	Up to 4 Powerwall 3 units supported

¹Typical solar shifting use case.
²Values provided for 25°C (77°F), at beginning of life. 3.3 kW charge/discharge power.
³Tested using CEC weighted efficiency methodology.
⁴Cellular connectivity subject to network service coverage and signal strength.
⁵Where 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 26 A I_{MP} / 30 A I_{SC}.



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

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 05/29/2024

PROJECT NAME

JEFF THOMPSON

270 SW CALLAWAY DR.,
LAKE CITY, FL 32024

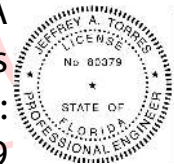
SHEET NAME
POWERWALL3
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-02

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by Jeffrey A
Torres
Date:
2024.05.29
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Signature with Seal



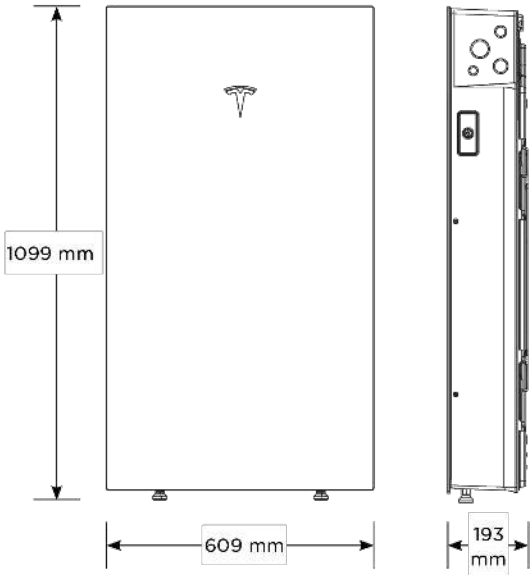
JEFFREY A. TORRES, PE
FL PE #80379
SUNSMART ENGINEERING LLC
FL COA #35170
925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

Powerwall 3 Technical Specifications

Environmental Specifications	Operating Temperature	-20°C to 50°C (-4°F to 122°F) ⁶
	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) IP45 (Wiring Compartment)
	Pollution Rating	PD3
Compliance Information	Operating Noise @ 1 m	<50 db(A) typical <62 db(A) maximum
	Certifications	UL 1642, UL 1699B, UL 1741, UL 1741 SA, UL 1741 SB, UL 1741 PCS, UL 3741, UL 1973, UL 1998, UL 9540, IEEE 1547-2018, 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)
	Fire Testing	Meets the unit level performance criteria of UL 9540A
	Dimensions	1099 x 609 x 193 mm (43.25 x 24 x 7.6 in)

⁶ Performance may be de-rated at operating temperatures above 40°C (104°F).

Mechanical Specifications	Weight	130 kg (287 lb)
	Mounting Options	Floor or wall mount
	Dimensions	1099 x 609 x 193 mm (43.25 x 24 x 7.6 in)



Solar Shutdown Device Technical Specifications

The Solar Shutdown Device is a Mid-Circuit Interrupter (MCI) and is part of the PV system rapid shutdown (RSD) function in accordance with Article 690 of the applicable NEC. When paired with Powerwall 3, solar array shutdown is initiated by any loss of AC power.

Electrical Specifications	Model	MCI-1	MCI-2
	Nominal Input DC Current Rating (I _{MP})	13 A	13 A
	Maximum Input Short Circuit Current (I _{SC})	19 A	17 A
	Maximum System Voltage (PVHCS)	600 V DC	1000 V DC ⁷

⁷ Maximum System Voltage is limited by Powerwall to 600 V DC.

RSD Module Performance	Maximum Number of Devices per String	5	5
	Control	Power Line Excitation	Power Line Excitation
	Passive State	Normally Open	Normally Open
	Maximum Power Consumption	7 W	7 W
	Warranty	25 years	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	NEMA 4X / IP65

Mechanical Specifications	Electrical Connections	MC4 Connector	MC4 Connector
	Housing	Plastic	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



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

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 05/29/2024

PROJECT NAME

JEFF THOMPSON
270 SW CALLAWAY DR.,
LAKE CITY, FL 32024

SHEET NAME
RAPID SHUTDOWN DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-03

Digitally signed by
Jeffrey A Torres
Date: 2024.05.29
'12:43:04 -04'00

See Powerwall 3 Installation Manual



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FL PE #80379
SUNSMART ENGINEERING LLC
FL COA #35170
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Backup Gateway 2

Backup Gateway 2 controls connection to the grid when paired with Powerwall 3, automatically detecting outages and providing seamless transition to backup power. Backup Gateway 2 also provides energy metering for solar self-consumption, time-based control, and backup operation.

In this system configuration, Powerwall 3 acts as the Site Controller, with the Backup Gateway 2 Site Controller disabled.

Performance Specifications	Model Number	1232100-xx-y	User Interface	Tesla App
	AC Voltage (Nominal)	120/240 V	Operating Modes	Support for solar self-consumption, time-based control, and backup
	Feed-in Type	Split phase	Backup Transition	Automatic disconnect for seamless backup
	Grid Frequency	60 Hz	Modularity	Supports up to 10 AC-coupled Powerwalls
	Current Rating	200 A	Optional Internal Panelboard	200 A 6-space / 12 circuit breakers Siemens QP or Square D HOM breakers rated 10 - 80A or Eaton BR breakers rated 10 - 125A
	Maximum Supply Short Circuit Current	10 kA ⁸	Warranty	10 years
	Overcurrent Protection Device	100 - 200 A, Service entrance rated ⁹	¹⁰ When protected by Class J fuses, Backup Gateway 2 is suitable for use in circuits capable of delivering not more than 22kA symmetrical amperes.	
	Overvoltage Category	Category IV	¹¹ 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.	
	Internal Primary AC Meter	Revenue accurate (+/- 0.2%)		
	Internal Auxiliary AC Meter	Revenue accurate (+/- 2%)		
	Primary Connectivity	Ethernet, Wi-Fi		
	Secondary Connectivity	Cellular (3G, LTE/4G) ¹⁰		

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 0.19, CSA 22.2 205
	Emissions	FCC Part 15, ICES 003

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

660 mm

411 mm

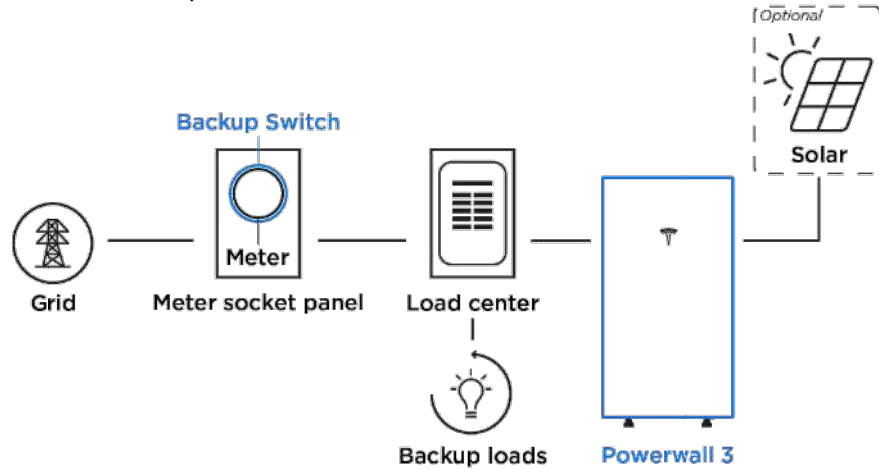
149 mm

TESLA

Powerwall 3 Example System Configurations

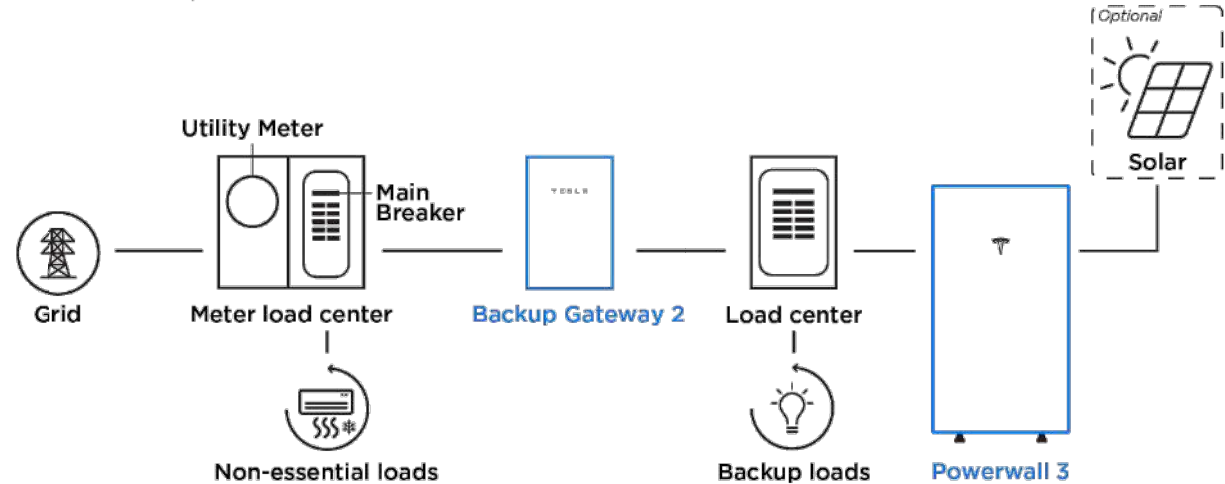
Powerwall 3 with Backup Switch

Whole Home Backup



Powerwall 3 with Backup Gateway 2

Partial Home Backup



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MANAGEMENT INC
625 NW 8TH AVE.,
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV

DATE: 05/29/2024

PROJECT NAME

JEFF THOMPSON
270 SW CALLAWAY DR.,
LAKE CITY, FL 32024

SHEET NAME

GATEWAY 2
DATA SHEET

SHEET SIZE

ANSI B
11" X 17"

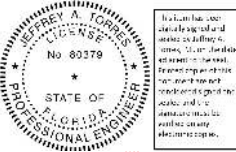
SHEET NUMBER

DS-04

Signature with Seal

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signed by
Jeffrey A Torres

Date:
2024.05.29
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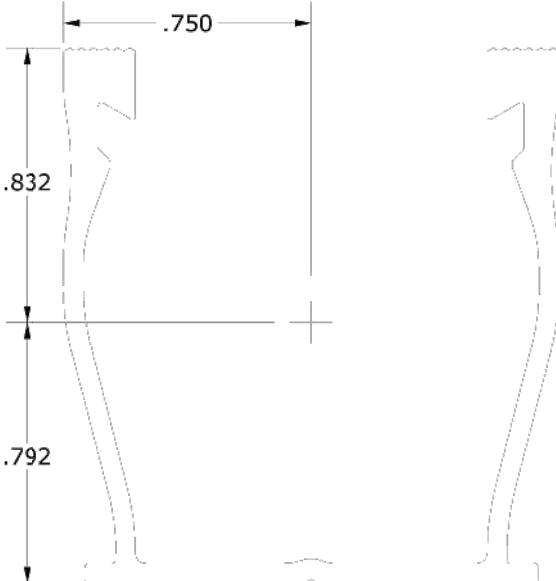
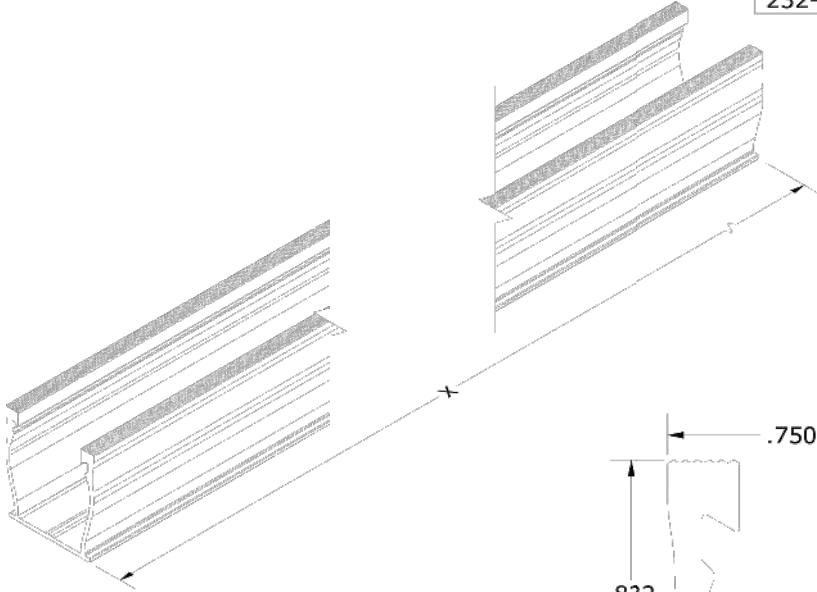


JEFFREY A. TORRES, PE
FL PE #80379
SUNSMART ENGINEERING LLC
FL COA #35170
925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

DESCRIPTION: SNAPNRACK, TDS, UR-40 RAIL		DOC NUMBER: SNR-DC-01352		
PART NUMBER(S): 232-02536, 232-02537, 232-02538		DRAWN BY: H.WULFEKOETTER		
UNITS: IN, LB, DEG [MM, KG, DEG]		REV: D	DATE: 1/23/2023	
SHEET: 1:1		SUNRUN INSTALLATION SERVICES INC. 225 BUSH STREET, SUITE 1400 • SAN FRANCISCO, CA 94104 USA PHONE (877) 732-2860 • CONTACT@SNAPNRACK.COM THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND PROPRIETARY. ANY REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF SUNRUN SOUTH LLC.		

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 in ²
Ixx	0.125 in ⁴
Iyy	0.132 in ⁴
Sx (TOP)	0.150 in ³
Sx (BOT)	0.158 in ³
Sy (LEFT)	0.175 in ³
Sy (RIGHT)	0.175 in ³

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
625 NW 8TH AVE.,
GAINESVILLE, FL 32601

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 05/29/2024

PROJECT NAME

JEFF THOMPSON
270 SW CALLAWAY DR.,
LAKE CITY, FL 32024

SHEET NAME
RAIL
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-05

Signature with Seal

Digitally
signed by
Jeffrey A Torres
Date:
2024.05.29
'12:43:20 -04'00



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FL COA #35170
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ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

DESCRIPTION:

SNAPNRACK, ULTRA RAIL SPEEDSEAL™ FOOT

PART NUMBER(S):

242-02163, 242-02167

DRAWN BY:

mwatkins

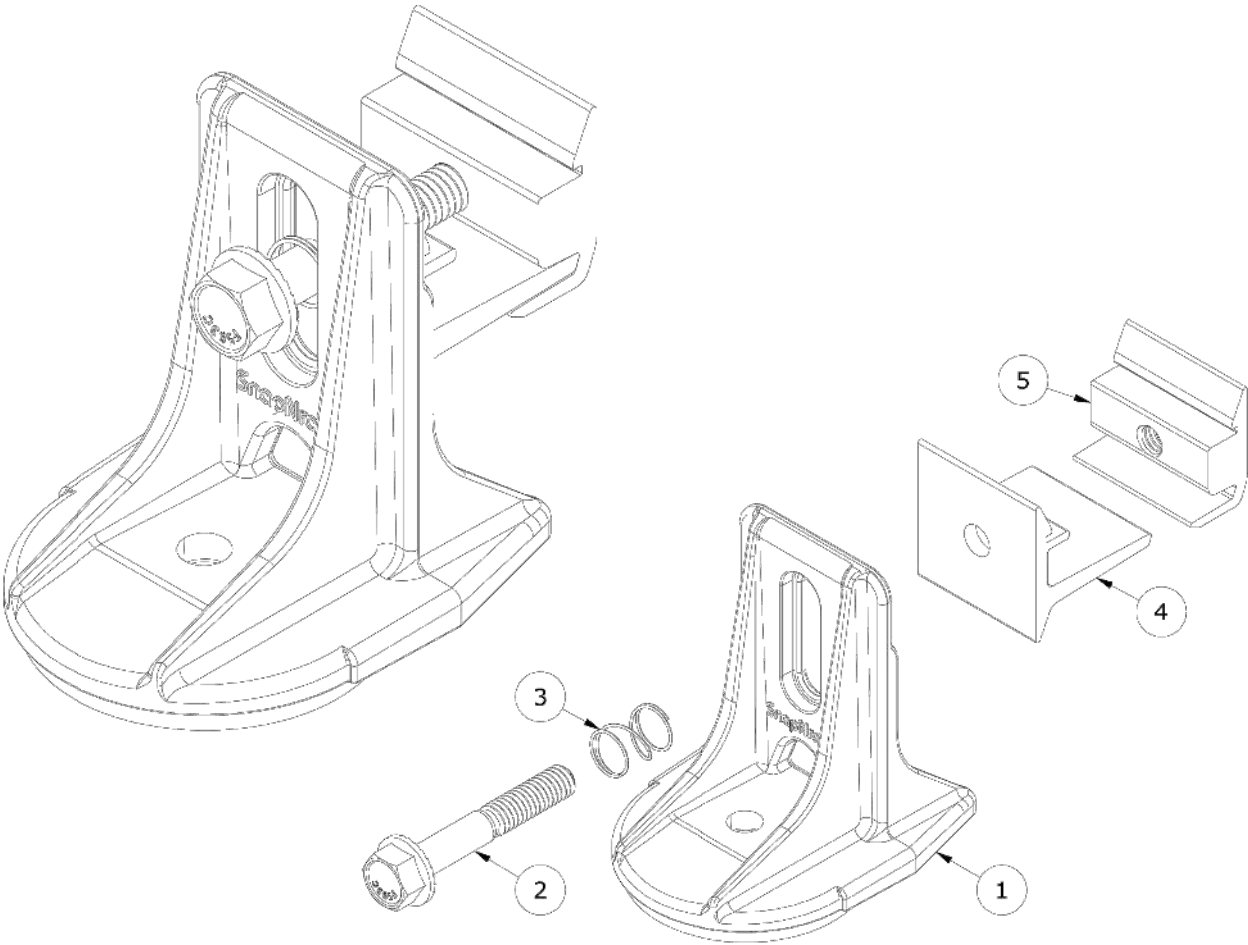
REVISION:

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SnapNrac™
Solar Mounting Solutions

595 MARKET STREET, 28TH FLOOR • SAN FRANCISCO, CA 94105 USA
PHONE (415) 580-8900 • FAX (415) 580-8902

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PARTS LIST		
ITEM	QTY	DESCRIPTION
1	1	SNAPNRACK, SPEEDSEAL FOOT, BASE, SEALING, SILVER / BLACK
2	1	BOLT, FLANGE, SERRATED, 5/16IN-18 X 2IN, SS
3	1	SNAPNRACK, RL UNIVERSAL, MOUNT SPRING, SS
4	1	SNAPNRACK, ULTRA RAIL MOUNT THRU PRC, CLEAR / BLACK
5	1	SNAPNRACK, ULTRA RAIL MOUNT TAPPED PRC, CLEAR / BLACK

MATERIALS:	DIE CAST A380 ALUMINUM, 6000 SERIES ALUMINUM, STAINLESS STEEL		
DESIGN LOAD (LBS):	802 UP, 1333 DOWN, 357 SIDE	OPTIONS:	
ULTIMATE LOAD (LBS):	2118 UP, 4006 DOWN, 1331 SIDE	CLEAR / BLACK	
TORQUE SPECIFICATION:	12 LB-FT		
CERTIFICATION:	UL 2703, FILE E359313; WIND-DRIVEN RAIN TEST FROM SUBJECT UL 2582		
WEIGHT (LBS):	0.45		

DESCRIPTION:

SNAPNRACK, ULTRA RAIL SPEEDSEAL™ FOOT

PART NUMBER(S):

242-02163, 242-02167

DRAWN BY:

mwatkins

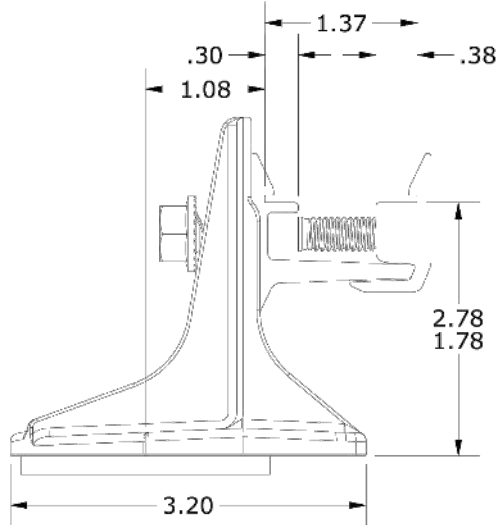
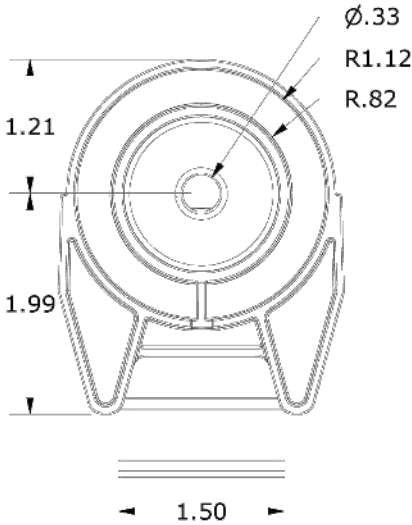
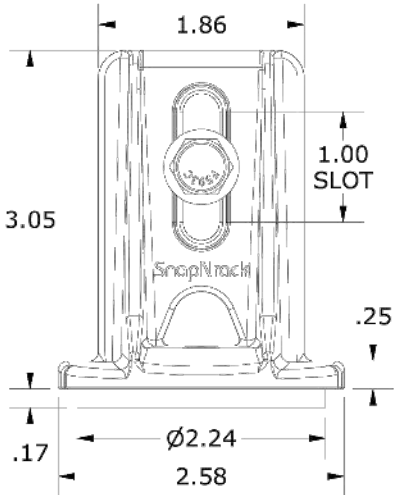
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PRODUCTION MANAGEMENT, INC.

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

REVISIONS

DESCRIPTION	DATE	REV

DATE: 05/29/2024

PROJECT NAME

JEFF THOMPSON
270 SW CALLAWAY DR.,
LAKE CITY, FL 32024

SHEET NAME

ATTACHMENT
DATA SHEET

SHEET SIZE

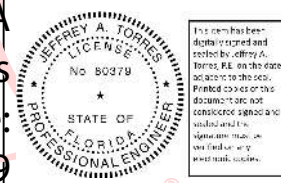
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11" X 17"

SHEET NUMBER

DS-06

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Torres
Date:
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