PROJECT DESCRIPTION:

42 x 530 ADANI SOLAR: ASB-M10-144-530-AAA (530W) MODULES
GROUND MOUNTED SOLAR PHOTOVOLTAIC MODULES

DC SYSTEM SIZE: 18.02 kW DC STC
AC SYSTEM SIZE: 12.00 kW AC

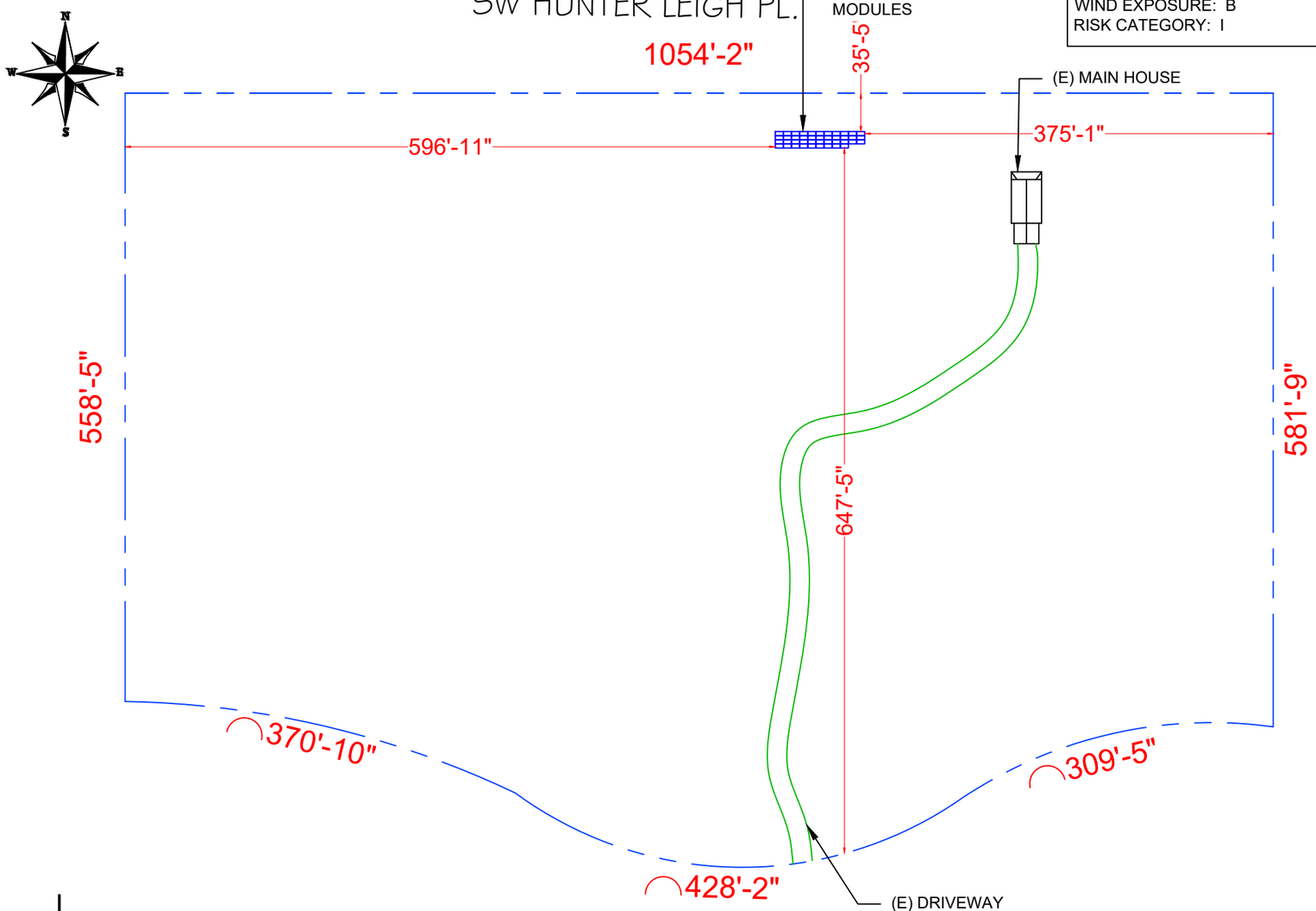
EQUIPMENT SUMMARY
42 ADANI SOLAR: ASB-M10-144-530-AAA (530W) MODULES
1 EG4 18KPV-12LV HYBRID INVERTER

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)

SHEET INDEX

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.

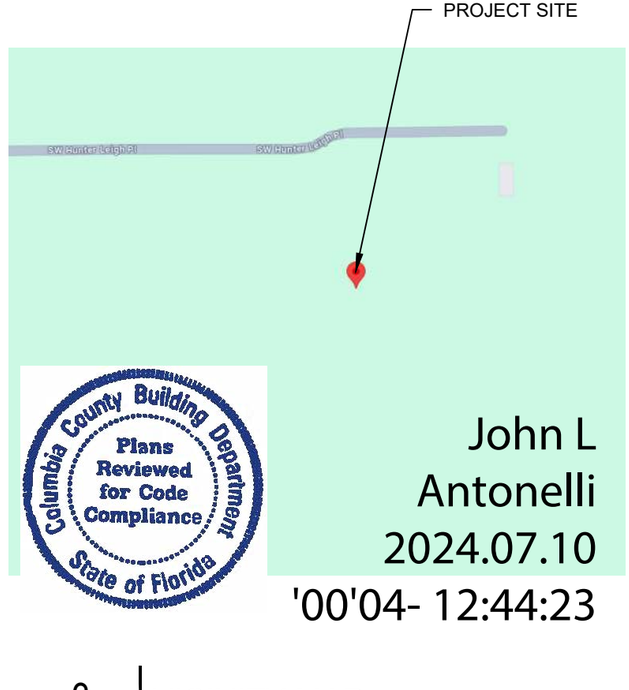
ALL DIMENSION AND CONDITION SHOWN ON THE SET OF PLANS IS BASED ON THE BEST POSSIBLE INFORMATION GIVEN. CONTRACTOR RESPONSIBLE TO FILED VERIFY ALL CONDITION IN THE FILED PRIOR TO INSTALLATION OR ACCEPTS FULL RESPONSIBLE



1 PLOT PLAN WITH GROUND PLAN
A-00 SCALE: 1"=120'-0"

ASCE 7-22 WIND DESIGN CRITERIA
ULTIMATE WIND SPEED: 120 MPH
NOMINAL WIND SPEED: 101 MPH
WIND EXPOSURE: B
RISK CATEGORY: I

2 HOUSE PHOTO
A-00 SCALE: NTS



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

John L Antonelli
2024.07.10
'00'04- 12:44:23

3 VICINITY MAP
A-00 SCALE: NTS

SOLAR CONSULTANTS LLC
6110 SW 13TH STREET,
GAINESVILLE, FL 32608
PHONE#: (352)-377-8866

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 07/09/2024

PROJECT NAME
HAYES RESIDENCE
355 SW HUNTER LEIGH PLACE,
LAKE CITY, FL 32024

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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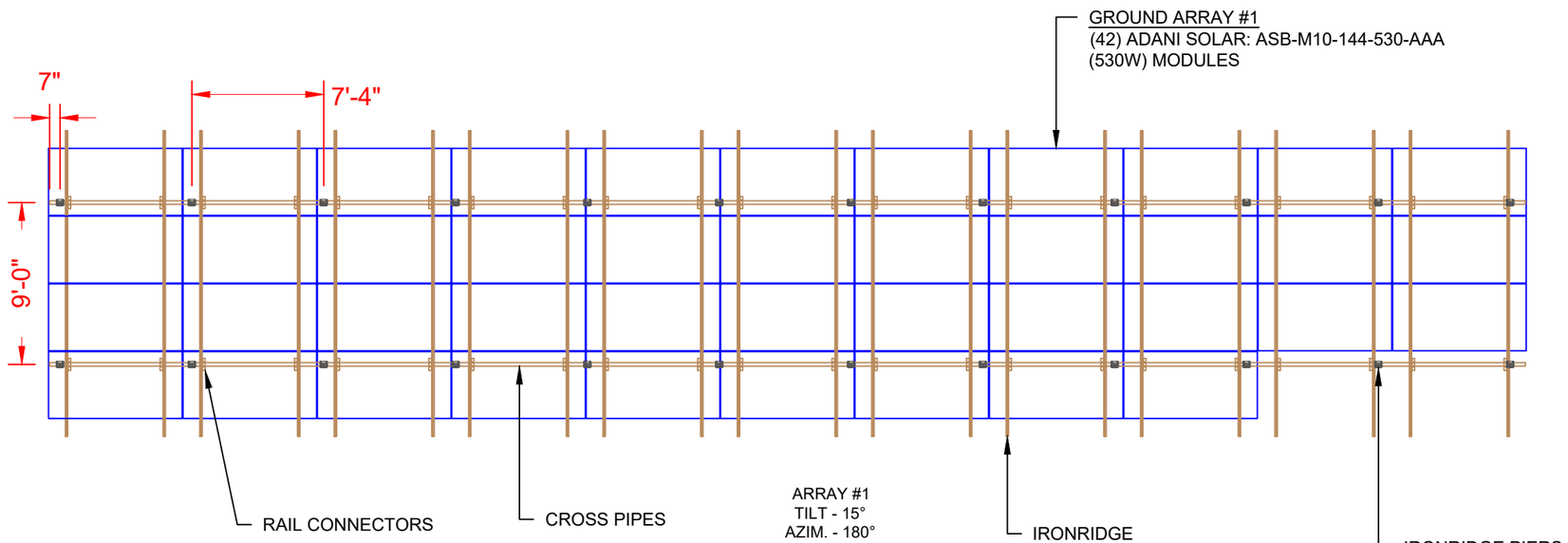
JOHN L. ANTONELLI, PE
FL PE #81305
SUNSMART ENGINEERING LLC
FL COA #35170
925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 42 MODULES
MODULE TYPE = ADANI SOLAR: ASB-M10-144-530-AAA (530W) MODULES
WEIGHT = 63.49 LBS / 28.80 KG.
MODULE DIMENSIONS = 89.21" x 44.60" = 27.63 SF

SW HUNTER LEIGH PL

(E) FRONT YARD



ONLY (34) MODULES BEING WIRED TO INVERTER AT THIS TIME, REMAINING (8) WILL BE INSTALLED FOR FUTURE USE ONLY

(E) BACK YARD

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

John L Antonelli
2024.07.10
'00'04-12:44:38

ADANI SOLAR:
ASB-M10-144-530-AAA
(530W) MODULES

SOLAR CONSULTANTS LLC
6110 SW 13TH STREET,
GAINESVILLE, FL 32608
PHONE#: (352)-377-8866

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 07/09/2024

PROJECT NAME
HAYES RESIDENCE
355 SW HUNTER LEIGH PLACE,
LAKE CITY, FL 32024

SHEET NAME
GROUND 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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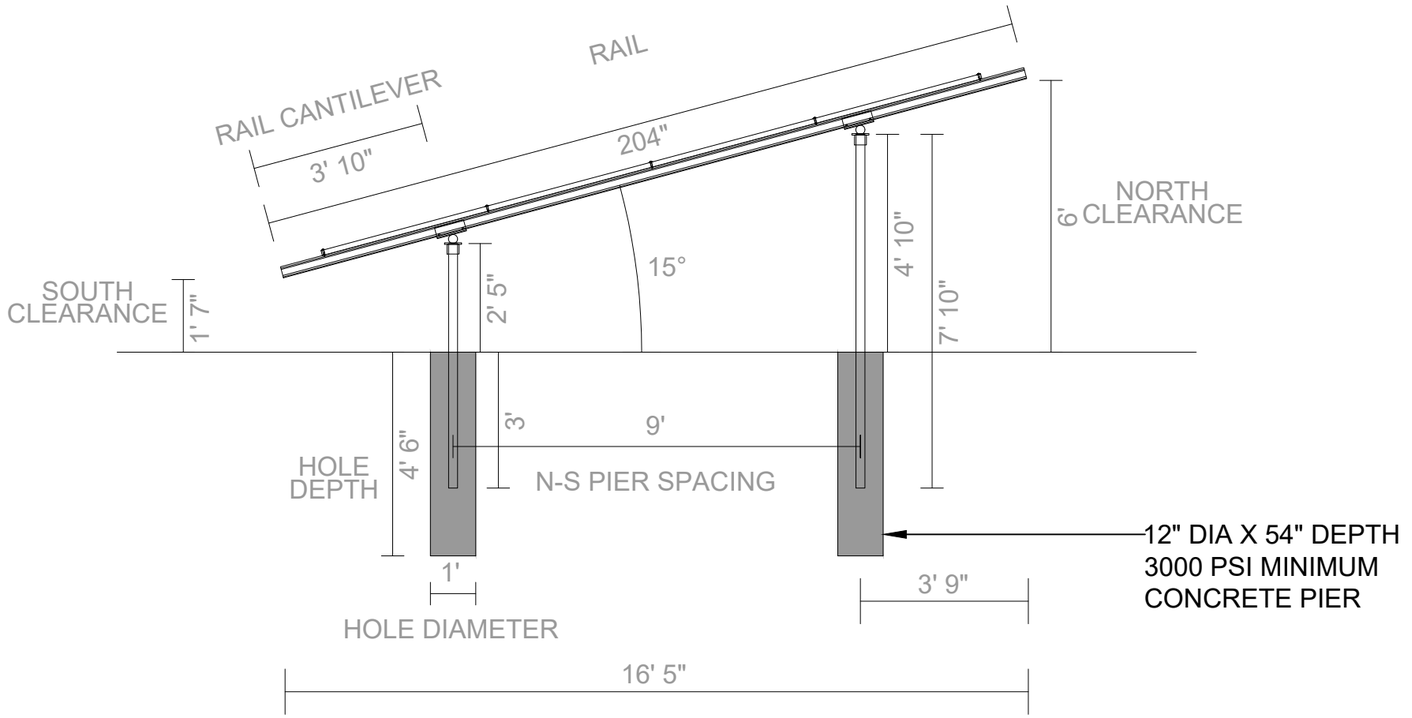
FL COA #35170
925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

GROUND-MOUNT FOR PV MODULES GENERAL NOTES:

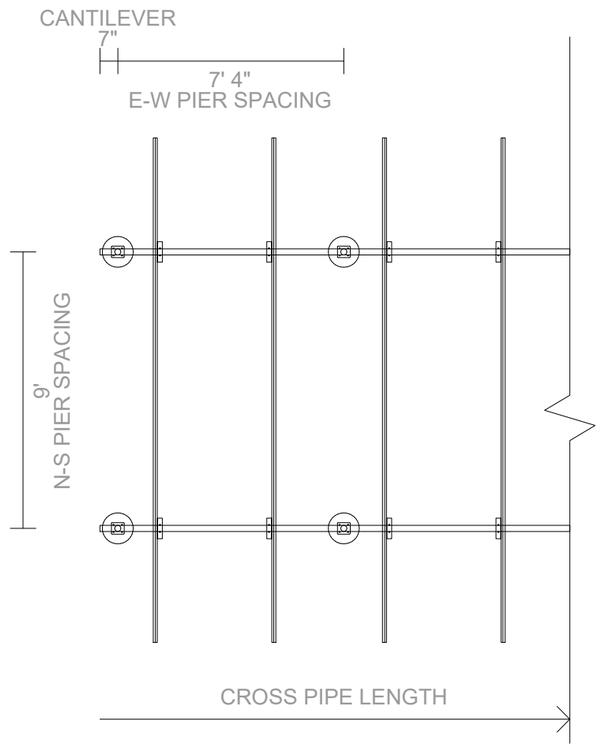
1. APPLICABLE CODE: ASCE 7-22 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES COMPATIBLE WITH 2023 FLROIDA BUILDING CODE (8TH EDITION).
2. GROUND-MOUNT STRUCTURE SHOWN MAY BE SLOPED UP TO A MAXIMUM 15°.
3. SOIL BEARING CAPACITY ASSUMED TO BE THE FOLLOWING: UNDISTURBED COMPACTED SAND, SILTY SAND, CLAYEY SAND, SILTY GRAVEL AND CLAYEY GRAVEL WITH VERTICAL FOUNDATION PRESSURE OF 2,000 PSF AND LATERAL BEARING PRESSURE OF 150 PSF / FT BELOW NATURAL GRADE THAT CONTINUES TO HOLD IT SHAPE BEFORE AND AFTER INSTALLATION. IN THE CASE OF LOOSE SANDS, MUD, SILTS, OR ORGANIC TYPE SOILS, LARGER FOOTER SIZE WILL BE REQUIRED. CONTRACTOR SHALL NOTIFY ENGINEER TO RE-SIZE FOOTERS. SEE 2023 FBC CHAPTER 18 SECTION 1806.2 FOR ADDITIONAL DETAILS AND EXCEPTIONS.
4. REFER TO IRONRIDGE FOR ALL COMPONENT SPECIFICATION AND INSTALLATION INSTRUCTIONS.
5. CONTRACTOR/INSTALLER SHALL INSTALL GROUND-MOUNT SYSTEM WITHIN NEW OR EXISTING PROPERTY SETBACKS PER GOVERNING BUILDING DEPARTMENT.
6. THIS SHEET REFLECTS STRUCTURAL CONNECTIONS AND STRUCTURAL DETAILS OF GROUND-MOUNT ONLY. INSTALL SOLAR PV MODULES PER MANUFACTURER RECOMMENDATIONS.
7. INSTALL & ASSEMBLE ALL GROUND SCREW ANCHORS PER MANUFACTURER INSTALLATION INSTRUCTIONS.
8. ALL DISSIMILAR METALS & MATERIALS SHALL BE SEPARATED WITH NEOPRENE OR EQUAL.

-- DESIGN CRITERIA FOR GROUND RACK AND ALL CONNECTIONS THIS SHEET IS BASED ON MAIN WIND FORCE RESISTING SYSTEM (MWFRS) NOMINAL WIND SPEED UP TO 93 MPH (120 MPH ULTIMATE) WITH EXPOSURE "B", GROUND SNOW LOAD OF 0 PSF, RISK CATEGORY I, MONOSLOPE FREE ROOF AND h < 15'-0" PER ASCE 7-22 "MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES" AND 2023 FBC (8TH EDITION).



1 SIDE VIEW

S-02 SCALE: NTS



2 TOP VIEW

S-02 SCALE: NTS

John L Antonelli 2024.07.10 '00'04- 12:44:45

SOLAR CONSULTANTS LLC

6110 SW 13TH STREET,
GAINESVILLE, FL 32608
PHONE#: (352)-377-8866

REVISIONS

DESCRIPTION	DATE	REV

DATE: 07/09/2024

PROJECT NAME

HAYES RESIDENCE

355 SW HUNTER LEIGH PLACE,
LAKE CITY, FL 32024

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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FL COA #35170
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(407) 710-1147

SW HUNTER LEIGH PL

(E) FRONT YARD

DC SYSTEM SIZE: 18.02 kW-DC STC
AC SYSTEM SIZE: 12.00 kW AC

(42) ADANI SOLAR: ASB-M10-144-530-AAA (530W) MODULES
(01) BRANCH OF 12 MODULES
(02) BRANCHES OF 11 MODULES

ONLY (34) MODULES BEING WIRED TO INVERTER AT THIS TIME, REMAINING (8) WILL BE INSTALLED FOR FUTURE USE ONLY

BRANCH-1 (12 MODULES)

BRANCH-2 (11 MODULES)

BRANCH-3 (11 MODULES)

(N) JUNCTION BOX

~150' DC TRENCH CONDUIT

(E) MAIN HOUSE

(N) JUNCTION BOX

~150' DC TRENCH CONDUIT

(N) EG4 18KPV-12LV HYBRID INVERTER

(N) 2-EG4 ELECTRONICS BMS POWERPRO WALLMOUNT BATTERIES

(E) MAIN SERVICE PANEL

DOUBLEWIDE RACK

(E) BACK YARD

LEGEND

MSP	- MAIN SERVICE PANEL
JB	- JUNCTION BOX
INV	- INVERTER
BAT	- BATTERY
≡≡≡	- TRENCH

1 ELECTRICAL SITE PLAN

E-01 SCALE: 1"=25'-0"

SOLAR CONSULTANTS LLC
6110 SW 13TH STREET,
GAINESVILLE, FL 32608
PHONE#: (352)-377-8866

REVISIONS

DESCRIPTION	DATE	REV

DATE: 07/09/2024

PROJECT NAME

HAYES RESIDENCE
355 SW HUNTER LEIGH PLACE,
LAKE CITY, FL 32024

SHEET NAME
ELECTRICAL SITE PLAN

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-01

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

John L Antonelli
2024.07.10
'00'04- 12:44:52

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FL PE #81305
SUNSMART ENGINEERING LLC
FL COA #35170
925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

Bill of Materials

Part	Spares	Total Qty
Rails		
XR-1000-204A XR1000, Rail 204" Clear	0	22
Clamps & Grounding		
UFO-CL-01-A1 Universal Module Clamp, Clear	0	110
UFO-STP-35MM-M1 Stopper Sleeve, 35MM, Mill	0	44
XR-LUG-03-A1 Grounding Lug, Low Profile	0	1
Substructure		
70-0200-SGA SGA Top Cap at 2"	0	24
GM-BRC2-01-M1 Ground Mount Bonded Rail Connector - 2"	0	44

John L Antonelli
2024.07.10 '00'04- 12:44:59

1 BILL OF MATERIAL
E-01 SCALE: NTS

SOLAR CONSULTANTS LLC
6110 SW 13TH STREET,
GAINESVILLE, FL 32608
PHONE#: (352)-377-8866

REVISIONS

DESCRIPTION	DATE	REV

DATE: 07/09/2024

PROJECT NAME
HAYES RESIDENCE
355 SW HUNTER LEIGH PLACE,
LAKE CITY, FL 32024

SHEET NAME
BILL OF MATERIAL

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-02

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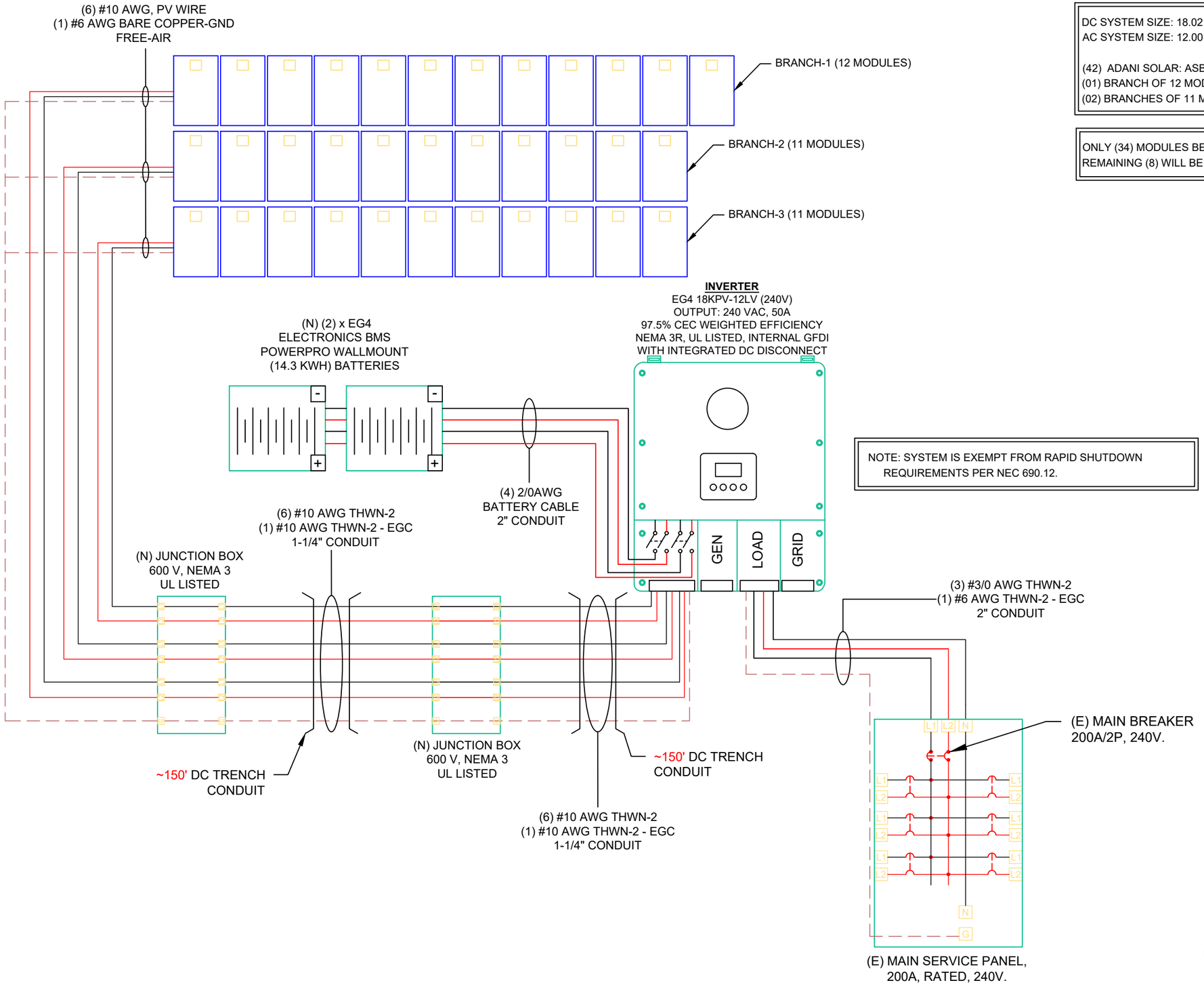

DC SYSTEM SIZE: 18.02 kW-DC STC
AC SYSTEM SIZE: 12.00 kW AC

(42) ADANI SOLAR: ASB-M10-144-530-AAA (530W) MODULES
(01) BRANCH OF 12 MODULES
(02) BRANCHES OF 11 MODULES

ONLY (34) MODULES BEING WIRED TO INVERTER AT THIS TIME, REMAINING (8) WILL BE INSTALLED FOR FUTURE USE ONLY

NOTE: SYSTEM IS EXEMPT FROM RAPID SHUTDOWN REQUIREMENTS PER NEC 690.12.

1 | ELECTRICAL LINE DIAGRAM

E-03 | SCALE: NTS

SOLAR CONSULTANTS LLC

6110 SW 13TH STREET,
GAINESVILLE, FL 32608
PHONE#: (352)-377-8866

REVISIONS

DESCRIPTION	DATE	REV

DATE: 07/09/2024

PROJECT NAME

HAYES RESIDENCE

355 SW HUNTER LEIGH PLACE,
LAKE CITY, FL 32024

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-03

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

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SUNSMART ENGINEERING LLC
FL COA #35170
925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

John L Antonelli
2024.07.10
'00'04- 12:45:06

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	ADANI SOLAR: ASB-M10-144-530-AAA (530W) MODULES
VMP	41.49V
IMP	12.79A
VOC	48.95V
ISC	13.55A
MODULE DIMENSION	89.21"L x 44.60"W x 1.38"D (In Inch)

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	EG4 18KPV-12LV HYBRID INVERTER
MAXIMUM OUTPUT CURRENT	50A
CEC WEIGHTED EFFICIENCY	97.5%

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-5°
AMBIENT TEMP (HIGH TEMP 2%)	30°
CONDUIT MINIMUM HEIGHT FROM ROOF	0.5"
CONDUCTOR TEMPERATURE RATING	90°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.29%/°C

DC CONDUCTOR AMPACITY CALCULATIONS: ARRAY TO JUNCTION BOX

EXPECTED WIRE TEMP (In Celsius)	30°
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a)	1.00
# OF CURRENT CARRYING CONDUCTORS	N/A
# OF C.C. CONDUCTORS 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)	17.13A
1.25 x MAX DC OUTPUT CURRENT	
DERATED CIRCUIT CONDUCTOR AMPACITY	40.00A
Result should be greater than (17.13A)	

DC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX TO INVERTER

EXPECTED WIRE TEMP (In Celsius)	30°
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a)	1.00
# OF CURRENT CARRYING CONDUCTORS	6
# OF C.C. CONDUCTORS 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)	17.13A
1.25 x MAX DC OUTPUT CURRENT	
DERATED CIRCUIT CONDUCTOR AMPACITY	32.00A
Result should be greater than (17.13A)	

AC CONDUCTOR AMPACITY CALCULATIONS: FROM INVETER TO POI

EXPECTED WIRE TEMP (In Celsius)	30°
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a)	1.00
# OF CURRENT CARRYING CONDUCTORS	3
# OF C.C. CONDUCTORS CORRECTION PER NEC 310.15(B)(3)(a)	1.00
CIRCUIT CONDUCTOR SIZE	3/0 AWG
CIRCUIT CONDUCTOR AMPACITY	200A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A) & (B)	200.00A
MAX OUTPUT CURRENT	
DERATED CIRCUIT CONDUCTOR AMPACITY	225.00A
Result should be greater than (200.00A)	

AC CONDUCTOR AMPACITY CALCULATIONS: FROM INVETER TO BATTERY

EXPECTED WIRE TEMP (In Celsius)	30°
TEMP. CORRECTION PER TABLE (310.15)(B)(2)(a)	1.00
# OF CURRENT CARRYING CONDUCTORS	4
# OF C.C. CONDUCTORS CORRECTION PER NEC 310.15(B)(3)(a)	1.00
CIRCUIT CONDUCTOR SIZE	2/0 AWG
CIRCUIT CONDUCTOR AMPACITY	350
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A) & (B)	200.00A
1.25 x MAX OUTPUT CURRENT	
DERATED CIRCUIT CONDUCTOR AMPACITY	390.00A
Result should be greater than (200.00A)	

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 2024.07.10 '00'04- 12:45:13

2 | WIRING CALCULATIONS

E-02 SCALE: NTS

SOLAR CONSULTANTS LLC
6110 SW 13TH STREET,
GAINESVILLE, FL 32608
PHONE#: (352)-377-8866

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 07/09/2024

PROJECT NAME

HAYES RESIDENCE
355 SW HUNTER LEIGH PLACE,
LAKE CITY, FL 32024

SHEET NAME
WIRING CALCULATIONS

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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FL COA #35170
925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

PHOTOVOLTAIC AC DISCONNECT

NOMINAL OPERATING AC VOLATGE **240 V**

RATED AC OUTPUT CURRENT **50.00 A**

LABEL LOCATION:
MAIN SERVICE PANEL
SUBPANEL
AC DISCONNECT
CODE REF: NEC 690.54

IN CASE OF EMERGENCY
CONTACT :
SOLAR-FIT
386-527-1435

LABEL LOCATION:
AC DISCONNECT
PER FFPC: 11.12.2.1.5

MAXIMUM DC VOLTAGE
600 V
OF PV SYSTEM

CODE REF: NEC 690.53

PHOTOVOLTAIC
POWER SOURCE

LABEL LOCATION:
EMT/CONDUIT RACEWAY
SOLADECK/JUNCTION BOX
CODE REF : NEC 690.31 (D) (2)

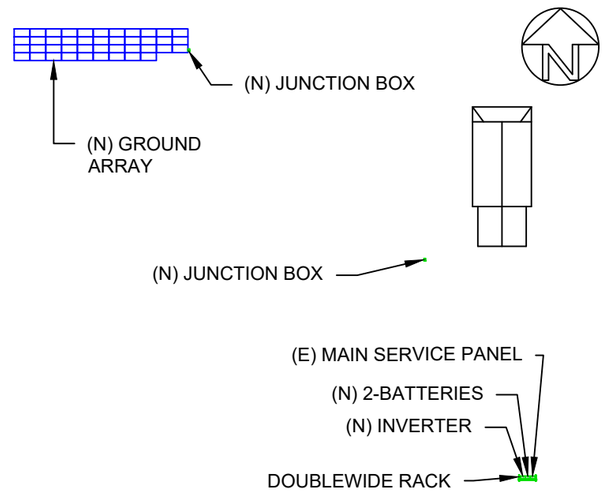
CAUTION

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)

CAUTION

MULTIPLE SOURCES OF POWER



355 SW HUNTER LEIGH PLACE, LAKE CITY, FL 32024

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)

ADHESIVE FASTENED SIGNS:
- THE LABEL SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE IT IS INSTALLED.
- WHERE REQUIRED ELSEWHERE IN THIS CODE, ALL FIELD APPLIED LABELS, WARNINGS, AND MARKINGS SHOULD COMPLY WITH ANSI Z535.4 [NEC 110.21(B) FIELD MARKING].
- ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT [IFC 605.11.1.3]

John L Antonelli 2024.07.10 '00'04- 12:45:20

SOLAR CONSULTANTS LLC

6110 SW 13TH STREET,
GAINESVILLE, FL 32608
PHONE#: (352)-377-8866

REVISIONS

DESCRIPTION	DATE	REV

DATE: 07/09/2024

PROJECT NAME

HAYES RESIDENCE

355 SW HUNTER LEIGH PLACE,
LAKE CITY, FL 32024

SHEET NAME
SYSTEM LABELING

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-05

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

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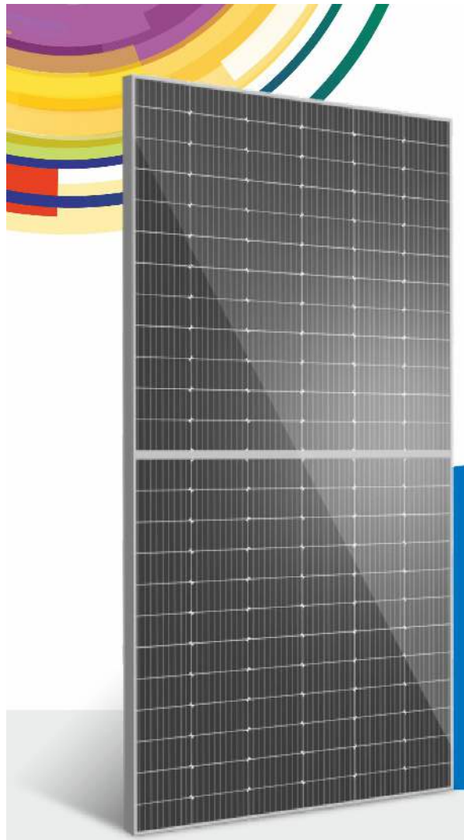


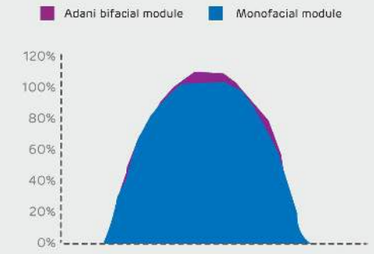
adani Solar

ELAN SHINE Series

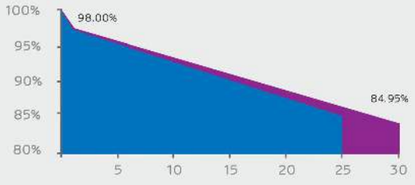
Bifacial PV Modules
MBB P-Type PERC Half-cut

ASB-M10-144-AAA (AAA=520-545)
144 Cells | 520-545 Wp

Higher generation due to bifacial technology



Warranty based on Power

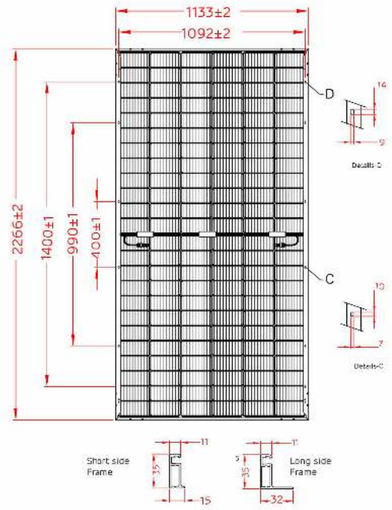


Highlights

- MBB cell technology - excellent anti-microcracking performance with more balanced interior stress: grid pattern current path, lower cost
- Up to 70 ± 5 % bifaciality Factor
- Longer Product life and performance -0.45% year over year degradation with 30 years warranty on power
- Least degradation for LID, LeTID
- Modules made with Ga doped wafer, Smart soldering, 10BB
- Excellent PID resistance

www.adanisolar.com

Dimensions in mm

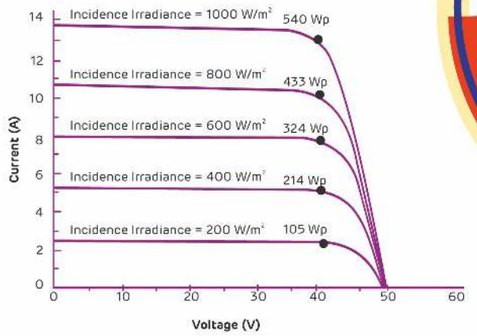


adani Solar

Technical Data

Multi Irradiance Curve Bifacial M10-144 HC Cell Module

Cell temp: 25°C



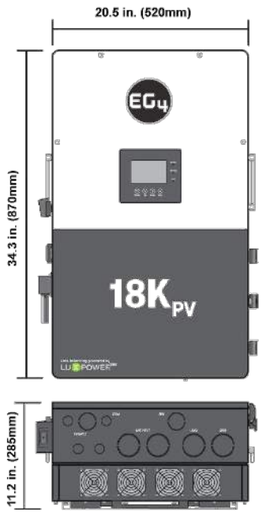
Electrical data – All data measured to STC*

Electrical Specification	Only front (STC)					
Peak power, (0 ~+ 4.99 Wp) Pmax(Wp)	520	525	530	535	540	545
Maximum voltage, Vmpp (V)	41.18	41.34	41.49	41.64	41.80	41.94
Maximum current, Impp (A)	12.65	12.73	12.79	12.86	12.93	13.01
Open circuit voltage, Voc (V)	48.60	48.78	48.95	49.12	49.32	49.48
Short circuit current, Isc (A)	13.41	13.48	13.55	13.63	13.71	13.79
Module efficiency (%)	20.25	20.44	20.64	20.83	21.03	21.22

*STC: Irradiance 1000 W/m², cell temperature 25°C, Air mass AM 1.5 according to EN 60904-3. Average efficiency reduction is approx. 3% at 200 W/m² according to EN 60904-1. Expect Pmpp, all other parameter have tolerance of +/-3%, measurement uncertainty <3%.

Electrical Characteristics with different rear side power gain (Reference 525 Wp Front)

Electrical Specification	Pmax gain from rear side*
Bifaciality Gain	•••••• •••••• •••••• ••••••
Peak power, (0 ~+ 4.99 Wp) Pmax(Wp)	•••••• •••••• •••••• ••••••
Maximum voltage, Vmpp (V)	•••••••



EG4® 18kPV HYBRID INVERTER

The EG4 18kPV is a 48V split-phase, hybrid inverter/charger capable of utilizing 18kW of PV and efficiently outputting 12kW of power while charging the battery bank. Parallel up to 10 units for 120kWs of AC power. Control multiple stations and units using the new EG4 monitoring software.

AC COUPLING CAPABILITY

REMOTE ADJUSTMENT VIA EG4 SOFTWARE

10-YEAR WARRANTY

ALL-IN-ONE HYBRID INVERTER
Capable of running entirely off the grid, using grid assist, or selling power back to the grid.

UP TO 600VDC INPUT
The extra high voltage enables lower cable sizing for the 3 MPPTs with a recommended maximum PV input of 21kW, eliminating the need for a combiner box.

MOUNTABLE WI-FI DEVICE
Enables wireless connection between our new monitoring platform and the 18kPV through the EG4 app or EG4 Monitor system.

CLOSED-LOOP COMMUNICATIONS
Able to communicate with EG4 48V batteries and other battery brands. A battery firmware update is required for closed-loop communications with LifePower4 batteries.

HIGH FREQUENCY, SPLIT-PHASE OUTPUT
Allows for 120/240V single unit or 120/208 service operation.

MODEL #: 18KPV-12LV

EG4 ELECTRONICS

TECHNICAL SPECIFICATIONS

AC INPUT DATA	
NOMINAL AC VOLTAGE	120/240VAC; 120/208VAC (L1/L2/N required)
FREQUENCY	50/60Hz
MAX. AC CURRENT	50A @ 240VAC
MAX. AC INPUT POWER	12000W
MAX. AC BYPASS	200A
AC GRID OUTPUT DATA	
MAX. OUTPUT CURRENT	50A
OUTPUT VOLTAGE	120/240VAC; 120/208VAC (L1/L2/N required)
OPERATING VOLTAGE RANGE	180-270VAC
NOMINAL POWER OUTPUT	@240V 12000W | @208V 10400W
OUTPUT FREQUENCY	50/60Hz
POWER FACTOR	0.99 @ Full Load
REACTIVE POWER ADJUST RANGE	(-0.8) ≈ (+0.8) Leading Adjustable
MAX CONT. LINE WATTAGE	6000W
PEAK POWER (SURGE CAPACITY)	w/ PV: 14700W (10 min), 15500W (5 min) W/O PV: 13500W (10 min)
OPERATING FREQUENCY	50/60Hz
THD @FULL LOAD	<5%
TRANSFER TIME	20ms (Default), 10ms (Configurable) | Parallel – 20ms
BACKUP/UPS AC OUTPUT DATA	
RATED OUTPUT CURRENT (240/208VAC)	50A
AC BYPASS (GENERATOR)	90A
NOMINAL OUTPUT VOLTAGE	240 | 120/240 | 120/208VAC
RATED OUTPUT POWER	@240VAC 12000W | @208VAC 10400W
MAX. CONTINOUS LINE WATTAGE	8000W per 120V
PEAK POWER	w/ PV: 14700W (10 min), 15500W (5 min) w/o PV: 13500W (10 min)
OPERATING FREQUENCY	50/60Hz
THDV (TOTAL HARMONIC DISTORTION VOLTAGE)	<5%
SWITCHING TIME	10ms
PV INPUT DATA	
NUMBER OF MPPTS	3
INPUTS PER MPPT	2 (MPPT 1) | 1 (MPPT 2) | 1 (MPPT 3)
MAX. USABLE INPUT CURRENT	25A (MPPT 1) | 15A (MPPT 2) | 15A (MPPT 3)
MAX. SHORT CIRCUIT INPUT CURRENT	31A (MPPT 1) | 19A (MPPT 2) | 19A (MPPT 3)
DC INPUT VOLTAGE RANGE	100-600 VDC
UNIT STARTUP VOLTAGE	100 VDC
MPPT OPERATING VOLTAGE RANGE	140-500 VDC

SOLAR CONSULTANTS LLC
6110 SW 13TH STREET,
GAINESVILLE, FL 32608
PHONE#: (352)-377-8866

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 07/09/2024

PROJECT NAME
HAYES RESIDENCE
355 SW HUNTER LEIGH PLACE,
LAKE CITY, FL 32024

SHEET NAME
INVERTER DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-02

Signature with Seal

JOHN L. ANTONELLI, PE
FL PE #81305
SUNSMART ENGINEERING LLC
FL COA #35170
925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

EG4 ELECTRONICS

POWERPRO WALLMOUNT ALL WEATHER LITHIUM BATTERY

The PowerPro WallMount All Weather 280Ah batteries are ideal for low-voltage residential outdoor energy storage system (ESS) applications. The batteries use lithium iron phosphate cells with the highest safety performance and an intelligent Battery Management System (BMS) that can monitor and record the voltage of each cell along with the current, voltage, and temperature of the module in real-time. The BMS also contains a passive balance function and an advanced battery control method, both of which improve the performance of the battery pack.

BUILT-IN 200A BMS	INTEGRATED 600A BUSBARS	82.6MWh LIFETIME PRODUCTION*	10 YEAR WARRANTY >8000 CYCLES @ 80% DOD

ON-BOARD LCD TOUCH SCREEN

Easy to see BMS monitoring, and selectable closed-loop communications with EG4, Schneider, Sol-Ark, Victron, Growatt, Megarevo, Luxpower, and Deye inverters.

DUAL ON-BOARD FIRE ARRESTORS

Offer fail-safe protection against thermal runaway.

WEATHER-TIGHT QUICK CONNECTS

Included battery cables with outdoor rated connectors allowing for fast, safe, and reliable battery connections.

INTEGRATED SELF-HEATING FEATURE

Heats the battery when the ambient temperature is low. A key feature for outdoor Lithium battery cell operations.

INTEGRATED BUSBARS

The battery design comes manufactured with 600A internal busbars with multiple terminals (4 positive & 4 negative) eliminating the need for external busbars when paralleling batteries and/or multiple inverters.

INNOVATIVE EMERGENCY STOP FUNCTION

The optional ESS disconnect can shut down all batteries and inverters (if equipped with rapid shut down capability) with the press of a button.

THE PERFECT PARTNER TO THE EG4 18kPV

The optional conduit box mates up directly to the connection ports of the inverter allowing a sleek and efficient installation. For other inverters or stand-alone battery installation, the conduit box plugs should be installed.

VER. 1.1.1 | INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE.
MODEL #: WP-16/280-1AWLL | WP-16/280-1-AWLL

EG4 ELECTRONICS

SPECIFICATION SHEET

MODULE OPERATING PARAMETERS		
Parameter	BMS	Recommended Charger Settings
Total Energy Capacity	14.3kWh @25C, 100% SOC	-
Voltage	51.2V	-
Capacity	280Ah ±2%	@25°C ±2°C @ 0.5C
Charging Voltage (Bulk/Absorb)	56.0V (±0.8V)	56.2V (±0.2V)
Float	-	54V (±0.2V)
Low DC Cutoff	44.8V	47-45.6V (start higher, lower as needed)
Charge Current	100/140/200A Max. Continuous**	60 - 160A
Discharge Current	200A Max. Continuous	160A

ENVIRONMENTAL PARAMETERS	
Charging Range	32°F to ≈113°F (0°C to ≈45°C)
Discharging Range	-4°F to ≈122°F (-20°C to ≈50°C)
Storage Range	-4°F to ≈122°F (-20°C to ≈50°C)
Ingress Protection	IP65

CHARGING/DISCHARGING PARAMETERS			
Charge	Spec	Delay	Recovery
Cell Voltage Protection	3.8V	1 sec	3.45V
Module Voltage Protection	60V	1 sec	55.2V
Charge Over-Current 1	>205A	10 sec	-
Charge Over-Current 2	>225A	3 sec	-
Temperature Protection	<23°F or >158°F <-5°C or >70°C	1 sec	>32°F or <140°F >0°C or <60°C
Discharge	**Spec**	**Delay**	**Recovery**
Cell Voltage Protection	2.3V	1 sec	3.1V
Module Voltage Protection	44.8V	1 sec	48V
Discharge Over-Current 1	>205A	10 sec	60 sec
Discharge Over-Current 2	>300A	3 sec	60 sec
Short Circuit	2000A	0.1 ms	-
Temperature Protection	<-4°F or >167°F <-20°C or >75°C	1 sec	>14°F or <149°F (>-10°C or <65°C)
PCB Temperature Protection	>230°F (>110°C)	1 sec	@ <176°F (<80°C)

GENERAL SPECIFICATIONS			
Parameter	Spec		Condition
Cell Balance	120mA	Passive Balance	Cell Voltage Difference >40mV
Temperature Accuracy	3%	Cycle Measurement	Measure Range: -40°F – ≈212°F (-40°C – ≈100°C)
Voltage Accuracy	0.5%	Cycle Measurement	Cells & Module
Current Accuracy	3%	Cycle Measurement	Measure Range: -200 – 200A
SOC	5%		Integral Calculation
Power Consumption (Standby)	<300uA		Standby/Storage
Power Consumption (Operating)	<25mA		Charging/Discharging
Communication Ports	RS485/CAN		Customizable

SOLAR CONSULTANTS LLC
6110 SW 13TH STREET,
GAINESVILLE, FL 32608
PHONE#: (352)-377-8866

REVISIONS

DESCRIPTION	DATE	REV

DATE: 07/09/2024

PROJECT NAME
HAYES RESIDENCE
355 SW HUNTER LEIGH PLACE,
LAKE CITY, FL 32024

SHEET NAME
BATTERY DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-03

Signature with Seal

JOHN L. ANTONELLI, PE
FL PE #81305
SUNSMART ENGINEERING LLC
FL COA #35170
925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

Tech Brief

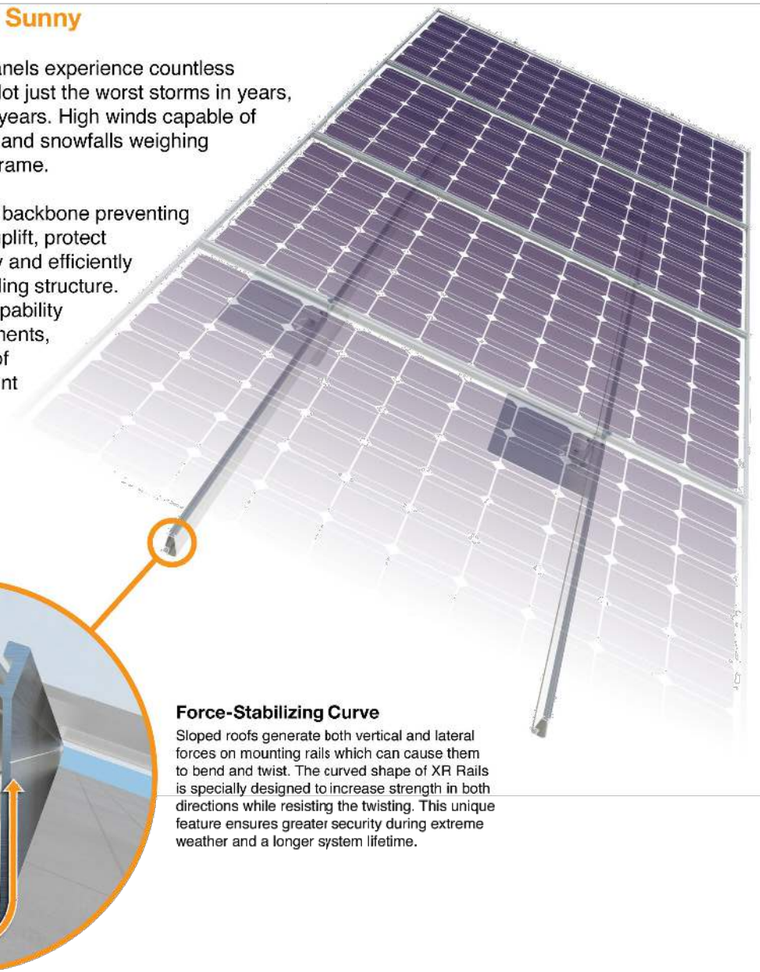
IRONRIDGE

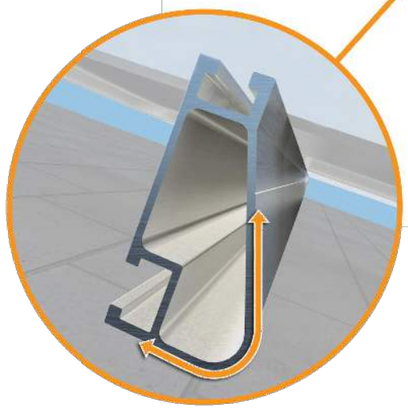
XR Rail Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.





Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs

XR Rails are compatible with FlashFoot and other pitched roof attachments.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of 6000-series aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.

Tech Brief

XR Rail Family

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.

XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves spans up to 6 feet, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear & black anodized finish
- Internal splices available

XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 10 feet.

- 10' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available

XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans up to 12 feet for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The table below was prepared in compliance with applicable engineering codes and standards.* Values are based on the following criteria: ASCE 7-16, Gable Roof Flush Mount, Roof Zones 1 & 2e, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	90	XR10		XR100		XR1000	
	120						
	140						
	160						
20	90						
	120						
	140						
	160						
30	90						
	160						
40	90						
	160						
80	160						
120	160						

*Table is meant to be a simplified span chart for conveying general rail capabilities. Use approved certification letters for actual design guidance.

SOLAR CONSULTANTS LLC
6110 SW 13TH STREET,
GAINESVILLE, FL 32608
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REVISIONS

DESCRIPTION	DATE	REV

DATE: 07/09/2024

PROJECT NAME

HAYES RESIDENCE

355 SW HUNTER LEIGH PLACE,
LAKE CITY, FL 32024

SHEET NAME
RAIL
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-04

Signature with Seal

JOHN L. ANTONELLI, PE
FL PE #81305
SUNSMART ENGINEERING LLC
FL COA #35170
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ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

Datasheet

IRONRIDGE

Ground Mount System

All-Terrain Mounting

The IronRidge Ground Mount System combines our XR100 or XR1000 rails with locally-sourced steel pipes or mechanical tubing, to create a cost-effective structure capable of handling any site or terrain challenge.

Installation is simple with only a few structural components and no drilling, welding, or heavy machinery required. In addition, the system works with a variety of foundation options—including concrete piers, ground screws, helical or driven piles, and above-ground ballast blocks.

Rugged Construction
Engineered steel and aluminum components ensure durability.

PE Certified
Pre-stamped engineering letters available in most states.

UL 2703 Listed System
Meets newest effective UL 2703 standard.

Design Software
Online tool generates engineering values and bill of materials.

Flexible Architecture
Multiple foundation and array configuration options.

25-Year Warranty
Products guaranteed to be free of impairing defects.

Datasheet

360° Product Tour
Visit ironridge.com

Substructure

Top Caps

Connect vertical and cross pipes.

Bonded Rail Connectors

Attach and bond Rail Assembly to cross pipes.

Diagonal Braces

Optional Brace provides additional support.

Cross Pipe & Piers

Steel pipes or mechanical tubing for substructure.

Rail Assembly

XR100/XR1000 Rails

Curved rails increase spanning capabilities.

UFOs

Universal Fastening Objects bond modules to rails.

Stopper Sleeves

Snap onto the UFO to turn into a bonded end clamp.

CAMO

Bond modules to rails while staying completely hidden.

Resources

Design Assistant
Go from rough layout to fully engineered system. For free.
Go to ironridge.com/design

NABCEP Certified Training
Earn free continuing education credits, while learning more about our systems.
Go to ironridge.com/training

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6110 SW 13TH STREET,
GAINESVILLE, FL 32608
PHONE#: (352)-377-8866

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 07/09/2024

PROJECT NAME
HAYES RESIDENCE
355 SW HUNTER LEIGH PLACE,
LAKE CITY, FL 32024

SHEET NAME
GROUND MOUNT DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-05

Signature with Seal

JOHN L. ANTONELLI, PE
FL PE #81305
SUNSMART ENGINEERING LLC
FL COA #35170
925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
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