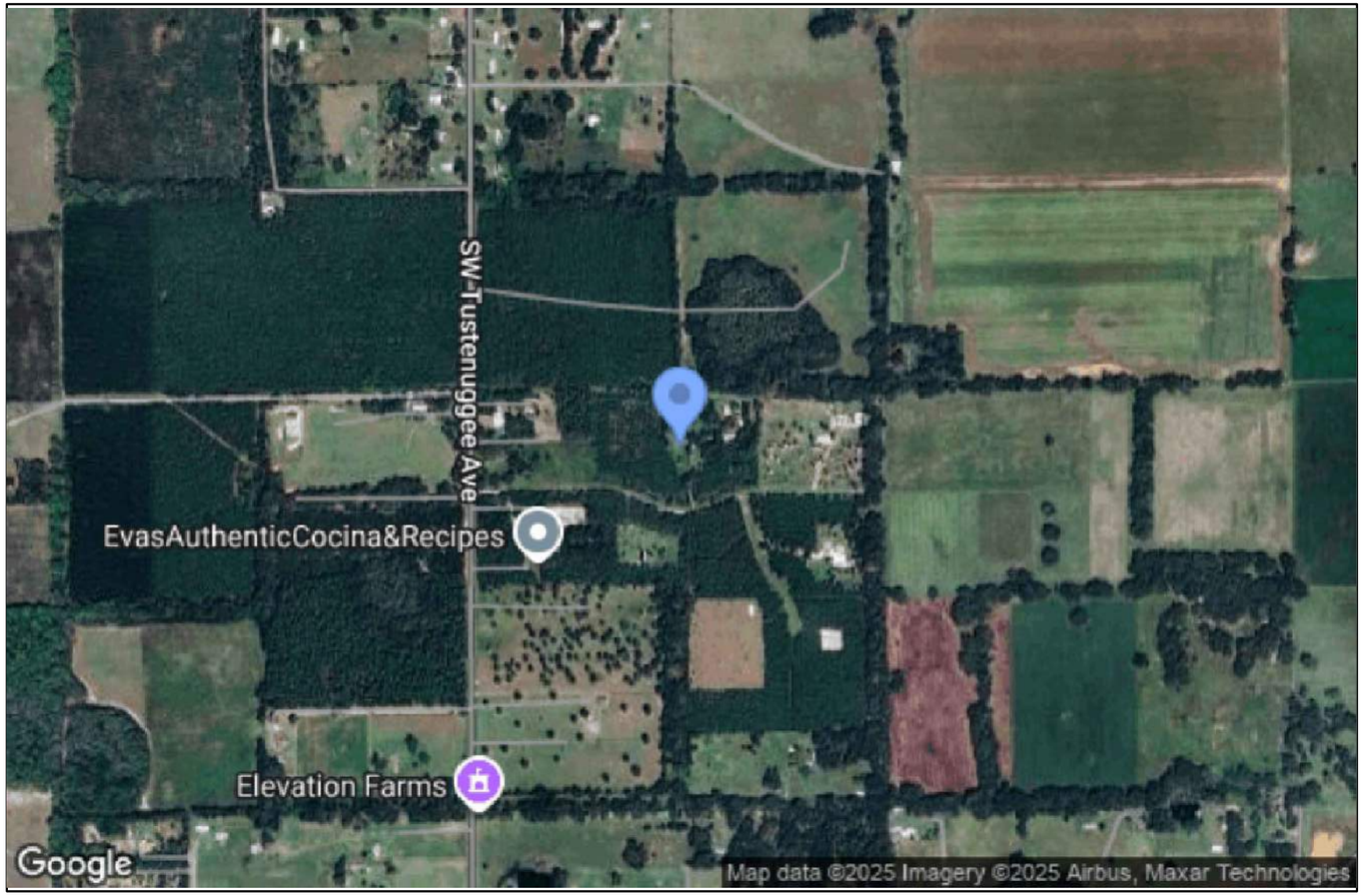
DONALD J HAYES

359 SW Hunter Leigh Place Lake City FL 32024

30.0019684,-82.6388063

SYSTEM TIER (UTILITY): TIER 2 (13.78 KWDC*0.85 = 11.71 KWAC)

SCOPE OF WORK: INSTALLATION OF SOLAR PANELS AND ASSOCIATED ELECTRICAL EQUIPMENT.



01 VICINITY

01 AERIAL

PROJECT INFORMATION

DISTRICTS
COUNTY: COLUMBIA COUNTY
JURISDICTION: UN-INCORPORATED COLUMBIA

DESIGN SPECS
WIND EXPOSURE: B
RISK CATEGORY: II
WIND SPEED (MPH): 130
SNOW LOAD (PSF): 0

GOVERNING CODES
BUILDING: FBC 2023/ASCE 7-22
ELECTRICAL: NEC 2020
FIRE: FFPC, 8th ed. (2023)/NFPA 1 2021 ed.
GENERAL: UN-INCORPORATED COLUMBIA ORDINANCES

SYSTEM
SIZE (KWDC): 13.78
EST KWH/YR: 21406
PANEL: (26) ADANI SOLAR ASB-M10-144-530
INVERTER(S): 18KPV-12LV
VOLTAGE (V): 240

SHEET INDEX

DONALD J HAYES

359 SW Hunter Leigh Place Lake City FL 32024

PROJECT ID: 432025-355

CONTRACTOR:
ENLIGHT ENERGY
978 SW 2ND AVE GAINESVILLE, FL 32601
(800) 798-0315

ENGINEER: CA33343
ECUIP ENGINEERING
1646 W SNOW AVE 9 TAMPA, FL 33606

RYAN S GITTENS LICENSE No 90605 STATE OF FLORIDA PROFESSIONAL ENGINEER
Ryan S Gittens 2025.05.20 11:21:08 -04'00'
RYAN S GITTENS PE90605

DATE	BY	VER	DESCRIPTION
03.18.25	JB	00	INITIAL DESIGN

T1

PAPER: ARCHB

SCALE:

GENERAL
1.1 THE PROJECT IS DESIGNED IN GENERAL ACCORDANCE WITH FBC 2023/ASCE 7-22 AND OTHER REFERENCED CODES.
1.2 ABBREVIATIONS OTHER THAN AS PROVIDED ARE INDUSTRY STANDARD.
1.3 CONDITION AND CONSTRUCTION OF ROOF ASSEMBLY SHALL BE VERIFIED BY PHYSICAL INSPECTION AND ACCEPTED BY CONTRACTOR PRIOR TO COMMENCEMENT.
1.4 WORK TO BE COMPLETED SHALL BE VERIFIED BY INSTALLER AND ELECTRICIAN PRIOR TO COMMENCEMENT AND MATERIAL ORDER.
1.5 ALL CONTRACTORS AND SUB-CONTRACTORS SHALL INSPECT THE SITE AND ALL RESPECTIVE BUILDINGS IMMEDIATELY BEFORE PREPARING ANY BID AND BEFORE ORDERING ANY MATERIALS, AND SHALL PROVIDE CONTRACTOR WRITTEN NOTICE OF ANY DISCREPANCY BETWEEN FIELD CONDITIONS AND THE PLANS.
1.6 REQUIRED PLAN DIMENSIONS NOT PROVIDED SHALL BE CONFIRMED WITH ENGINEER OF RECORD. DIMENSIONS IN PARENTHESES ARE FOR ENGINEERING REFERENCE ONLY.
1.7 UNPLANNED ALTERATION OF STRUCTURAL ROOF OR WALL FRAMING SHALL REQUIRE WRITTEN APPROVAL BY THE EOR AND OWNER; PLANS SHALL BE SO REVISED.
1.8 BEST MANAGEMENT PRACTICES SHALL BE EXERCISED AT ALL TIMES TO MAINTAIN A SAFE AND CLEAN JOBSITE IN COORDINATION WITH PROPERTY OWNER AS APPLIES TO PARKING, TRASH REMOVAL, STORAGE, SOUND, UTILITIES AND TIMES OF WORK.
1.9 NO WORK SHALL BE PERFORMED IN RIGHT-OF-WAY OR EASEMENTS WITHOUT WRITTEN PERMISSION FROM THE APPROPRIATE PERMITTING AGENCY AND OWNER.
1.10 IN THE EVENT OF WEATHER AND OTHER CIRCUMSTANCES THAT COULD MATERIALLY AFFECT BUILDING CONDITIONS OR INSTALLATION, CONTRACTOR SHALL PERFORM A RE-INSPECTION AS REQUIRED THEN ADJUST PROJECT SCHEDULE TO INCLUDE RESPECTIVE PLAN REVISIONS.
1.11 INTERIOR FINISHES INCLUDING DRYWALL, FLOORING, PAINT, AND TRIM WORK SHALL BE REPAIRED IF MODIFIED OR DAMAGED DURING INSTALLATION PROCESS.

ROOF FIRE SAFETY
2.1 FIRE PROTECTION PROCEDURES SHALL BE FOLLOWED IN ACCORDANCE WITH FFPC, 8th ed. (2023)/NFPA 1 2021 ed.. WORK SHALL BE INSPECTED PRIOR TO COVER BY BUILDING INSPECTOR, AND EOR UPON REQUEST.
2.2 ACCESS POINT FOR FIRE DEPT. LADDER(S) SHALL BE CLEAR OF OPENINGS/OBSTRUCTIONS.
2.3 WORK SHALL BE PERFORMED IN ACCORDANCE WITH ROOF SAFETY RATING (CLASS A). (UL 790/ASTM E108)

NOTE TO INSTALLER
3.1 ALL PANELS SHALL BE ATTACHED TO EXISTING ROOF STRUCTURE USING THE REQUIRED NUMBER OF ATTACHMENTS IN THE PROPER CONFIGURATION AS DEFINED IN THIS PLAN SET.
3.2 ALL PANELS SHALL BE FULLY OUTSIDE OF ANY ROOF AREAS DEFINED AS FIRE SETBACK IN THIS SITE PLAN. FIRE SETBACKS ARE DEFINED BY THE DIMENSIONS IN RED AND ARE CONSIDERED ABSOLUTE.
3.3 ANY DIMENSIONS NOTED AS "MAX" SHALL BE BE UNDERSTOOD TO BE ABSOLUTE REQUIREMENTS WITH A TOLERANCE OF +-0.0"
3.4 ANY DIMENSIONS NOTED AS "MIN SHALL BE BE UNDERSTOOD TO BE ABSOLUTE REQUIREMENTS WITH A TOLERANCE OF +-0.0"
3.5 STANDARD DIMENSIONS (NOT INCLUDING FIRE SETBACKS) SHALL BE UNDERSTOOD TO BE REQUIREMENTS WITH A TOLERANCE OF +-2.0"
3.6 ANY DIMENSIONS NOTED AS APPROX SHALL BE UNDERSTOOD TO BE APPROXIMATE IN NATURE AND SHOULD BE USED AS A GUIDE. EXACT PLACEMENT OF THE PANELS RELATIVE TO THESE DIMENSIONS ARE LEFT TO THE INSTALLERS DISCRETION ASSUMING THAT ALL OTHER DEFINED REQUIREMENTS ARE MET.
3.7 ANY DIMENSIONS IN PARENTHESES () ARE FOR ENGINEERING REFERENCE ONLY AND ARE NOT NEEDED FOR INSTALLATION.
3.8 IT IS THE CONTRACTOR RESPONSIBILITY TO INSTALL THE SYSTEM AND ITS SUPPORTS AS INDICATED IN THESE PLANS. THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD IF SITE CONDITIONS DIFFER FROM WHAT IS DEPICTED ON PLANS.

ATTACHMENT SYSTEM
4.1 ATTACHMENT SYSTEM AND FLASHING METHOD SHALL BE CONSTRUCTED ACCORDING MANUFACTURER'S INSTALLATION MANUAL AND AS SPECIFIED BY EOR.

01 GENERAL NOTES

ELECTRICAL CERTIFICATION
1.1 PER FL STATUTE 377.705: I RYAN S GITTENS PE#: PE90605 AN ENGINEER LICENSED PURSUANT TO CHAPTER 471, CERTIFY THAT THE PV ELECTRICAL SYSTEM AND ELECTRICAL COMPONENTS ARE DESIGNED AND APPROVED USING THE STANDARDS CONTAINED IN THE MOST RECENT VERSION OF THE FLORIDA BUILDING CODE, FBC 107

STRUCTURAL CERTIFICATION
2.1 PER FL STATUTE 377.705: I RYAN S GITTENS PE#: PE90605 AN ENGINEER LICENSED PURSUANT TO CHAPTER 471, CERTIFY THAT THE INSTALLATION OF THE SOLAR MODULES IS IN COMPLIANCE WITH FBC 2023 8TH EDITION, CHAPTER 3. BUILDING STRUCTURE WILL SAFELY ACCOMMODATE WIND LATERAL AND UPLIFT FORCES, AND EQUIPMENT DEAD LOADS

STRUCTURAL EVALUATION
3.1 THE EXISTING STRUCTURE APPEARS TO BE BUILT TO INDUSTRY STANDARDS AND IS IN ORIGINAL CONDITION. IF STRUCTURALLY SOUND, THE EXISTING ROOF STRUCTURE IS CAPABLE OF ITS CODE REQUIRED LOADS. THE ADDITIONAL LOADS SUPERIMPOSED BY THE PHOTOVOLTAIC SYSTEM ARE NEGLIGIBLE AND WILL HAVE NO EFFECT ON ROOF PERFORMANCE. THE EXISTING ROOF IS CAPABLE OF SUPPORTING THE ADDITIONAL LOADS.

02 CERTIFICATIONS

EQUIPMENT NOTES
1.1 NEW EQUIPMENT CLEARANCES: 36" (FRONT), 30" (WORK AROUND), 6 FT (OH) (NEC 110.26)
1.2 NEW EQUIPMENT AND COMPONENTS SHALL BE CERTIFIED BY A NATIONAL LABORATORY.
1.3 EQUIPMENT SHALL BE INSTALLED AND USED ACCORDING TO INSTALLATION MANUAL OR SPECIFICATIONS, AND SHALL BE RATED FOR OUTDOOR USE IF INSTALLED OUTSIDE

GENERAL NOTES
2.1 INSTALLER SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR THE INSTALLATION OF A COMPLETE ELECTRICAL SYSTEM PURSUANT TO THE PLANS IN ACCORDANCE WITH THE BUILDING CODE, OSHA AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
2.2 ELECTRICAL WORK AND RESPECTIVE PREPARATION WORK SHALL BE PERFORMED BY PROPERLY LICENSED SUBCONTRACTORS.
2.3 MATERIALS SHALL BE INCLUDED IN THE PLANS AND ANY NECESSARY EQUIVALENT SUBSTITUTIONS SHALL BE APPROVED BY THE EOR
2.4 CONDUCTORS SHALL BE COPPER OF 98% CONDUCTIVITY. CABLES SHALL BE RATED FOR APPLICABLE VOLTAGE, SINGLE-CONDUCTOR IN THERMOPLASTIC INSULATION SUITABLE FOR CONTINUOUS OPERATION AT 75° C. INSULATION SHALL BE COLOR-CODED #6 AND SMALLER. COLOR-CODED TAPE SHALL BE USED ON #4 AND LARGER.
2.5 CONDUCTORS SHALL BE RUN IN CONDUIT WHEN NOT BENEATH MODULES. EXPOSED CONDUIT IS PERMITTED IN GARAGES OR OTHER AREAS ACCEPTABLE TO OWNER AND AS APPROVED BY EOR.
2.6 FLEXIBLE CONDUIT SHALL BE USED FOR VIBRATING EQUIPMENT AND RECESSED MOUNTED FIXTURES AND SHALL BE SEALED WITH LIQUID TIGHT IF EXPOSED TO WEATHER WITH GREEN BOND CONDUCTOR INSTALLED TOGETHER AT CIRCUIT CONDUCTORS. GALVANIZED EMT WITH SET-SCREW MAY BE USED FOR INTERIOR LOCATIONS. PVC WITH GREEN BOND CONDUCTOR (NEC 250) MAY BE USED IN UG LOCATIONS.
2.7 FOR PIERCING TAPS, THE TOTAL AREA OF ALL CONDUCTORS, SPLICES, AND TAPS INSTALLED AT ANY CROSS SECTION OF THE WIRING SPACE SHALL NOT EXCEED 75 PERCENT OF THE CROSS-SECTIONAL AREA OF THAT SPACE (NEC 312.8.A).
2.8 PV AC DISCONNECT, WHEN INSTALLED, SHALL BE SERVICE ENTRANCE RATED IF CONNECTED TO SUPPLY SIDE OF SERVICE AND MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE AND BE A VISIBLE BREAK SWITCH.
2.9 ALL FUSES SHALL BE (R) RATED AND SHALL HAVE APPROPRIATE REJECTION CLIPS
2.10 THE SUGGESTED EQUIPMENT MOUNTING LOCATION MAY BE ADJUSTED AT INSTALLER'S DISCRETION SO LONG AS LOCAL AHJ REQUIREMENTS ARE ADHERED TO

CONDUIT NOTES
3.1 PVC SCH 40 OR SCH 80 MAY BE USED AS REQUIRED FOR ADDITIONAL SAFETY OR FOR RUNS <= FT WITH UPSIZE ACCORDING TO FILL TABLE.
3.2 ELECTRICAL METALLIC TUBING (EMT) NEC Art. 358:
3.3 1. EMT SHALL BE FASTENED EVERY 10 FT & FROM BOX, FITTING, TERMINAL POINT.
3.4 2. BENDS BETWEEN PULL POINTS SHALL COMBINE LESS THAN OR EQUAL TO 360°.
3.5 3. CONNECTORS SHALL BE CORROSION RESISTANT.
3.6 4. GASKETS SHALL BE WATERTIGHT.
3.7 5. COUPLINGS AND CONNECTORS SHALL BE RAIN-TIGHT OR RAIN-TIGHT/INSULATED. NEC FILL TABLES
3.8 RIGID PVC CONDUIT TABLE: SCHEDULE 80-C10/40-C11
3.9 FLEXIBLE METALLIC CONDUIT-TABLE C3
3.10 LIQUIDTIGHT FLEXIBLE CONDUIT TABLE-METALLIC C7/NON-METALLIC (FNMC-B)-CS

ELECTRICIAN NOTES:
4.1 1. CONFIRM GROUND CONDUCTOR (EGC) & EXISTING GROUNDING ELECTRODE (GE)
4.2 2. CONFIRM BUSBAR RATINGS & FEEDERS. IF ACTUAL CONDITIONS DIFFER, NOTIFY EOR.
4.3 3. CONDUCTORS MAY BE COMBINED USING RATED JUNCTIONS BOXES/CONDUIT UP-SIZE.
4.4 EXPANSION NOTE: FITTINGS SHALL BE INSTALLED BETWEEN SECURELY-MOUNTED ELBOWS AND TERMINATION POINTS (NOT INCL. WYES). IF JOINT IS VERTICAL, OPEN-END SHALL BE SECURELY FASTENED IN DOWN POSITION W/COUPLING INSTALLED CLOSE TO TOP OF RUN W/ BARREL ALSO DOWN AND LOWER END SECURED AT BOTTOM TO ALLOW UPWARD MOVEMENT. (SEC. 352.44 NEC)

BONDING & GROUNDING NOTE:
5.1 1. MODULES SHALL BE BONDED BY BONDING MID-CLAMPS ACCORDING TO INSTALLATION MANUAL MODULES WHICH CAN NOT BE FULLY BONDED SHALL BE PROPERLY GROUND USING GROUNDING LUG WIRED DIRECTLY TO SYSTEM GROUND WIRE. ALTERNATIVES REQUIRE A CUSTOMIZED PLAN FROM EOR.
5.2 2. (2) ROD AND PIPE ELECTRODES REQUIRED. ROD AND PIPE ELECTRODES SHALL NOT BE LESS THAN 2.44 M (8 FT) IN LENGTH AND SHALL CONSIST OF THE FOLLOWING MATERIALS: COPPER, GALVANIZED STEEL, STAINLESS STEEL
5.3 3. GROUNDING ELECTRODES OF PIPE OR CONDUIT SHALL NOT BE SMALLER THAN METRIC DESIGNATOR 21 (TRADE SIZE 3/4) AND, WHERE OF STEEL, SHALL HAVE THE OUTER SURFACE GALVANIZED OR OTHERWISE METAL-COATED FOR CORROSION PROTECTION.
5.4 4. ROD-TYPE GROUNDING ELECTRODES OF STAINLESS STEEL AND COPPER OR ZINC-COATED STEEL SHALL BE AT LEAST 15.87 MM (5/8 IN.) IN DIAMETER, UNLESS LISTED.
5.5 5. THE METAL WATER PIPING SYSTEM SHALL BE BONDED AS REQUIRED PER NEC 250.104
5.6 6. INTERSYSTEM BONDING REQUIRED PER NEC 250.94

SMOKE ALARM NOTES:
6.1 INTERCONNECTED SMOKE ALARMS SHALL BE INSTALLED THROUGHOUT THE DWELLING, INCLUDING IN ROOMS, ATTACHED GARAGES, AND AREAS IN WHICH ESS ARE INSTALLED IN COMPLIANCE WITH LOCAL BUILDING CODE. WHERE ESS ARE INSTALLED IN AN ATTACHED GARAGE OR AREA IN WHICH SMOKE ALARMS CANNOT BE INSTALLED IN ACCORDANCE WITH THEIR LISTING, AN INTERCONNECTED LISTED HEAT ALARM SHALL BE INSTALLED AND BE CONNECTED TO THE SMOKE ALARM SYSTEM REQUIRED BY THE LOCAL BUILDING CODE PER NFPA 855 EDITION 2020 15.9.2.

SURGE PROTECTION NOTE:
7.1 PER NEC 230.67(D) WHERE SERVICE EQUIPMENT IS REPLACED, A SURGE-PROTECTIVE DEVICE (SPD) SHALL BE PROVIDED TO NEW SERVICE EQUIPMENT

03 ELECTRICAL NOTES

DONALD J HAYES

359 SW Hunter Leigh Place Lake City FL 32024

PROJECT ID: 432025-355

CONTRACTOR:
ENLIGHT ENERGY
978 SW 2ND AVE GAINESVILLE, FL 32601
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G1

PAPER: ARCHB

SCALE: NTS

35'-5"

(26) SOLAR PANELS

RECONFIGURED
GROUND MOUNTED
SOLAR ARRAY

JUNCTION BOX

345' DC TRENCH CONDUIT

DC DISCONNECT

PROPERTY LINE

(E) MAIN HOUSE

(E) MOBILE HOME

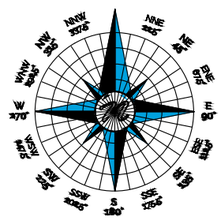
BATTERY
INVERTER
TRANSFER SWITCH
MAIN PANEL

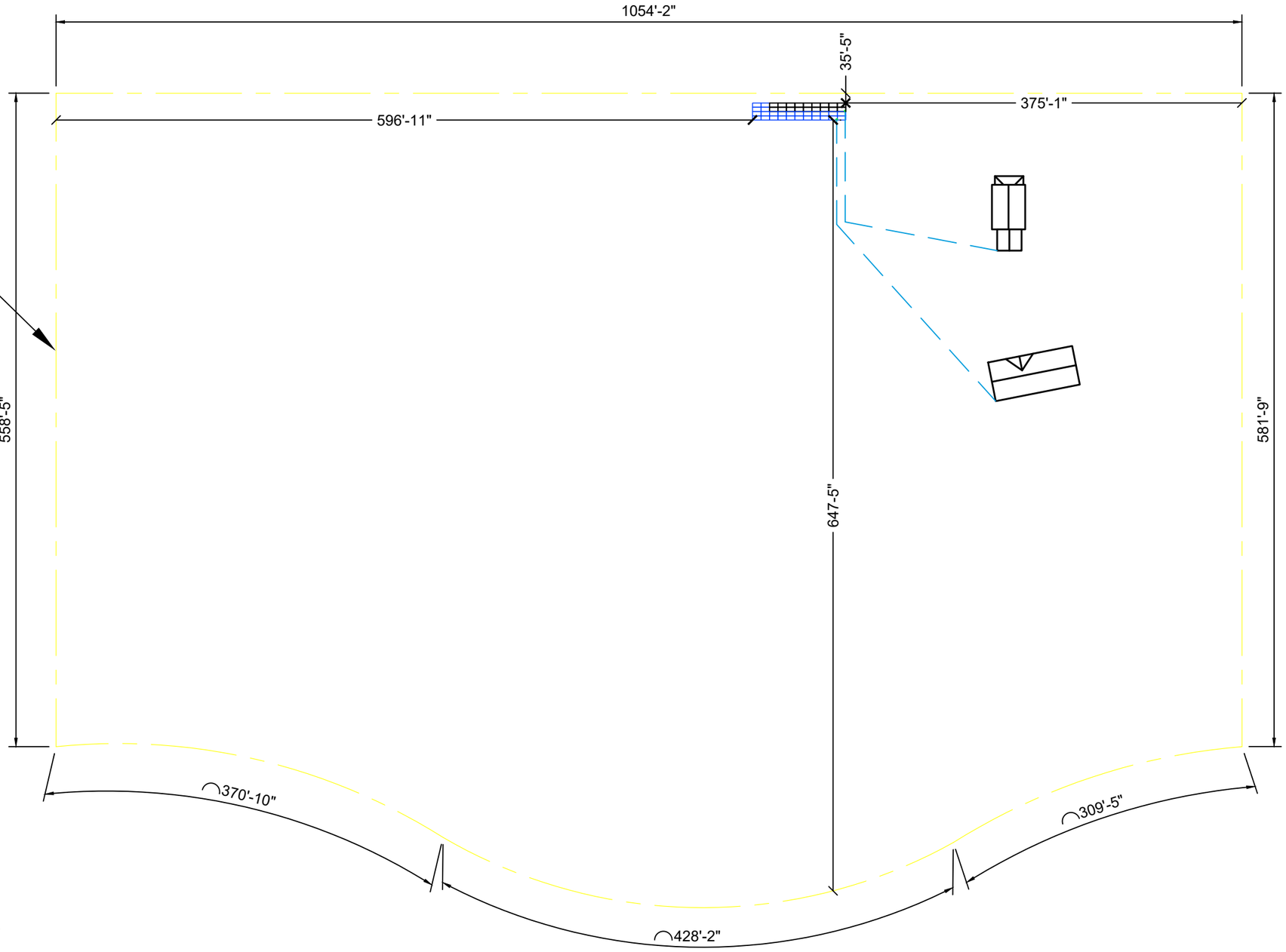
MP ATS INV BAT

01 PLAN VIEW

ECUIP ENGINEERING

DONALD J HAYES	CONTRACTOR: ENLIGHT ENERGY	ENGINEER: CA33343	Ryan S Gittens 2025.05.20 11:21:08 -04'00'	DATE	BY	VER	DESCRIPTION	S1
359 SW Hunter Leigh Place Lake City FL 32024	978 SW 2ND AVE GAINESVILLE, FL 32601	1646 W SNOW AVE 9 TAMPA, FL 33606	RYAN S GITTENS PE90605	03.18.25	JB	00	INITIAL DESIGN	PAPER: ARCHB
PROJECT ID: 432025-355	(800) 798-0315							SCALE: NTS





01 PARCEL PLAN

DONALD J HAYES	CONTRACTOR: ENLIGHT ENERGY	ENGINEER: CA33343	Ryan S Gittens 2025.05.20 11:21:08 -04'00'	DATE	BY	VER	DESCRIPTION	SL1
359 SW Hunter Leigh Place Lake City FL 32024	978 SW 2ND AVE GAINESVILLE, FL 32601	1646 W SNOW AVE 9 TAMPA, FL 33606	RYAN S GITTENS PE90605	03.18.25	JB	00	INITIAL DESIGN	PAPER: ARCHB
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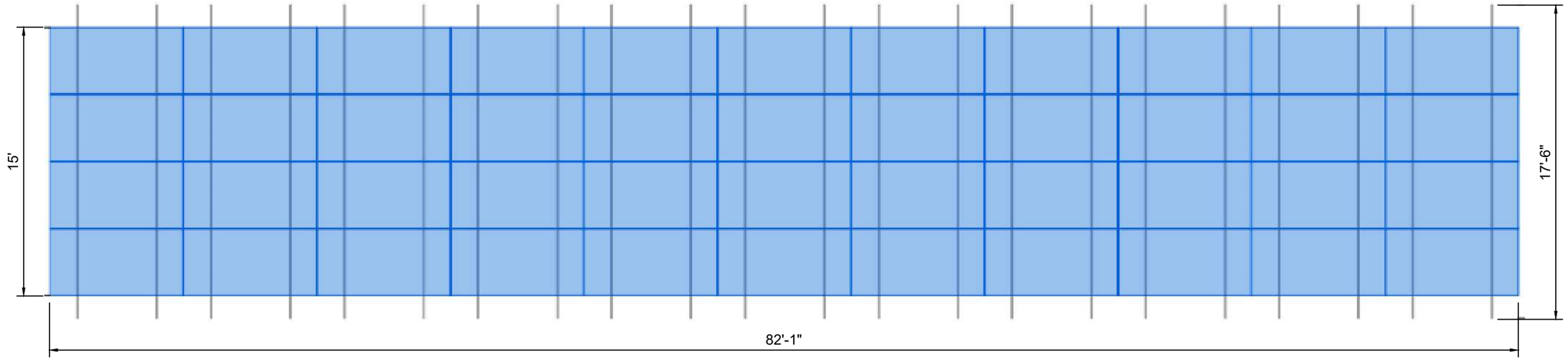
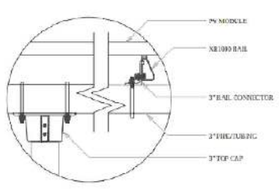
ECUIP ENGINEERING



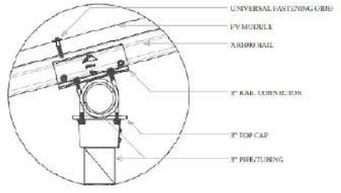
Sub array #1					
Rows	4	Columns	11	# Arrays	1
Area	82' 1" (EW) × 15' 2" (NS)	Rail type	XR1000	Diagonal bracing	no
E/W spacing	13' 6"	Rail cantilever	4' 1"	Pipe cantilever	7"
Piers/array	14	Total south piers	7 (6")	Total north piers	7 (8' 5")
Total cross pipes	2 (82' 1")	Total pipe length	265' 4"		
Shear	703 lbs	Moment	1,756 ft-lbs	Uplift	-1,624 lbs

Pipe Fitting Detail

XR1000 Rail

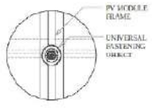


Front View

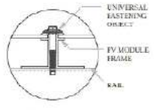


Side View

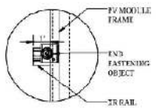
Clamp Detail



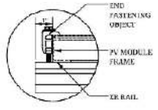
Mid Clamp, Plan



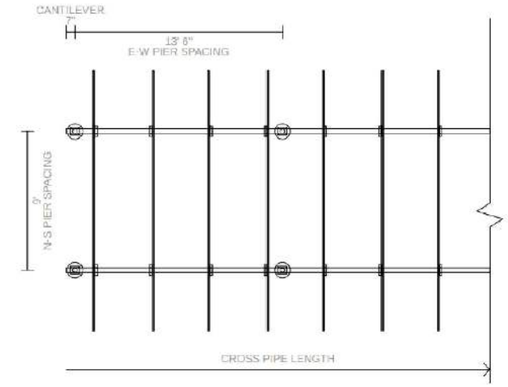
Mid Clamp, Front

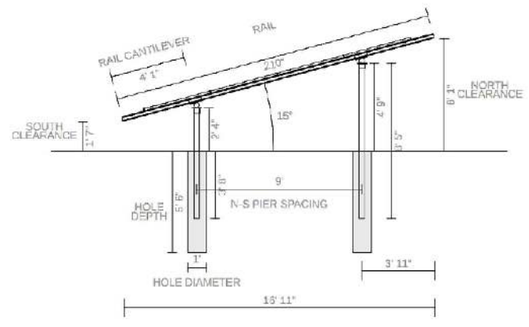


End Clamp, Plan



End Clamp, Front





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SCALE: NTS

GENERAL
1.1 CONTRACTOR SHALL COMPLY WITH FBC 2023/ASCE 7-22, NEC 2020 AND EQUIPMENT INSTALLATION INSTRUCTIONS NOT SHOWN IN THIS PLAN.
1.2 ALL EQUIPMENT SHALL BE LISTED PER NEC 690.4(B).
1.3 PV SOURCE CONDUCTORS ARE SIZED BE EXPOSED TO DIRECT SUNLIGHT WHEN INSTALLED IN RACEWAYS 7/8" OR LESS ABOVE ROOF. ADJUSTMENTS ARE BASED ON MAX CURRENT OF 16A, 35C AMBIENT TEMP, NEC 310.15(B)(2) AND T310.15(B)(1).
1.4 ALL EQUIPMENT SHALL BE RATED FOR INSTALL LOCATION. ROOF & OUTDOOR JUNCTION BOXES SHALL BE OUTDOOR RATED
1.5 INTERCONNECTION EQUIPMENT SHALL BE RATED FOR AVAILABLE FAULT CURRENT.
1.6 NEC 230.67(D) WHERE SERVICE EQUIPMENT IS REPLACED, A SURGE-PROTECTIVE DEVICE (SPD) SHALL BE PROVIDED.

SYSTEM
2.1 THE ENPHASE SYSTEM IS NON-ISOLATED AND UNGROUNDED. NEITHER THE NEGATIVE NOR POSITIVE CONDUCTOR IS GROUNDED AND HAS A COMMON AC AND DC EQUIPMENT GROUNDING TERMINAL THEREFORE NO DC GEC IS REQUIRED.
2.2 ENPHASE IQ SERIES MICROINVERTERS REQUIRE NO GROUND OR GROUNDED CONDUCTOR BECAUSE THE DC CIRCUIT IS ISOLATED AND INSULATED FROM GROUND.
2.3 THE INVERTER IS EQUIPPED WITH A RAPID SHUTDOWN FEATURE WHICH CONFORMS TO NEC 690.12.
2.4 INTERCONNECTION SHALL BE MADE BY LINE-SIDE-TAP PER ARTICLE 705.11 USING CONNECTORS UL LISTED FOR THIS PURPOSE. TAP CONDUCTORS SHALL BE NO MORE THAN 10FT IF INSIDE BUILDING PER 705.11(C). TAP & ENCLOSURE SHALL COMPLY WITH NEC 312.8(A) (CROSS SECTIONAL AREA FILL).
2.5 NO MORE THAN 4 BRANCHES (OR 8 CONDUCTORS) SHALL BE RUN IN A SINGLE CONDUIT USING #10 WIRE. USE MULTIPLE CONDUITS/JBOX AS REQUIRED TO SATISFY THIS LIMIT.

GROUNDING
3.1 ALL EQUIPMENT SHALL BE PROPERLY GROUNDED PER THE REQUIREMENTS OF NEC ARTICLES 250 & 690.
3.2 FRAMED PV MODULES SHALL BE BONDED TOGETHER USING LUGS OR RACKING INTEGRATED GROUNDING CLAMPS.
3.3 EQUIPMENT GROUNDING SHALL BE INSTALLED PER NEC 250.120(C), SIZED PER 690.45 & BE A MINIMUM OF #6 WHEN EXPOSED TO DAMAGE.
3.4 INTERSYSTEM BONDING DEVICE REQUIRED AT SERVICE WHEN COMMUNICATION DEVICES ARE PRESENT PER 250.94.
3.5 EXISTING GROUNDING ELECTRODE SYSTEM (GES) SHALL COMPLY WITH 250.64, 250.53 & 250.62 & BE OF THE TYPES & SIZE LISTED IN 250.52.
3.6 EXISTING GROUNDING ELECTRODE SYSTEM (GES) SHALL BE SIZED PER 250.66 & T250.66: TYP. #4 GEC (FIELD VERIFY).
3.7 METAL WATER PIPES SHALL BE GROUNDED PER 250.104(A)

01 NOTES

MAKE	ADANI SOLAR
MODEL	ASB-M10-144-530
RATED POWER (W)	530
MPP VOLTAGE (V)	41.49
MPP CURRENT (A)	12.79
OC VOLTAGE (V)	48.57
SC CURRENT (A)	13.7

02 MODULE RATINGS

MAKE	TIGO
MODEL	TS4-A-O
INPUT POWER (W)	700
MAX INPUT VOLTAGE (V)	90
MAX INPUT CURRENT (A)	15
MAX OUTPUT CURRENT (A)	15
MAX STRING POWER (W)	NA

03 OPT/RSD RATINGS

MAKE, INV	EG4
MODEL	12KPV
MAX INPUT POWER (W)	15000
MAX INPUT VOLTAGE (V)	600
NOM INPUT VOLTAGE (V)	360
MAX INPUT CURRENT (A)	25
NOM AC VOLTAGE (V)	240
MAX AC CURRENT (A)	33.3
NOM AC POWER (W)	12000

04 INVERTER RATINGS

# PV MODULES, INV	26
STC DC RATING (KW)	137.8
AC OUTPUT RATING (KW)	12
# STRINGS	3
MIN-MAX STRING SIZE	5-11
DC/AC RATIO	1.15
MPP CURRENT (A)	25

05 SYSTEM

MAKE	EG4	
MODEL	GRIDBOSS	
NOMINAL VOLTAGE	120/240	V
FREQUENCY	60	HZ
MAX CURRENT	200	A
INTERNAL BUS RATING	350	A
OUTDOOR RATING	NEMA 3R	

06 TRANSFER SWITCH RATINGS

MAKE	EG4	
MODEL	WALLMOUNT INDOOR BATTERY	
NOMINAL VOLTAGE	51.2	V
CAPACITY	280	AH
TOTAL STORAGE CAPACITY	14.3	KWH
MAX CHARGE CURRENT	200	A
MAX DISCHARGE CURRENT	200	A
USABLE CAPACITY	14.3	KWH
UNITS	5	
TOTAL USABLE CAPACITY	71.5	KWH

07 ESS RATINGS

DONALD J HAYES

359 SW Hunter Leigh Place Lake City FL 32024

PROJECT ID: 432025-355

CONTRACTOR:
ENLIGHT ENERGY
978 SW 2ND AVE GAINESVILLE, FL 32601
(800) 798-0315

ENGINEER: CA33343
ECUIP ENGINEERING
1646 W SNOW AVE 9 TAMPA, FL 33606

RYAN S GITTENS LICENSE No 90605 STATE OF FLORIDA PROFESSIONAL ENGINEER
Ryan S Gittens
2025.05.20 11:21:08 -04'00'
RYAN S GITTENS
PE90605

DATE	BY	VER	DESCRIPTION
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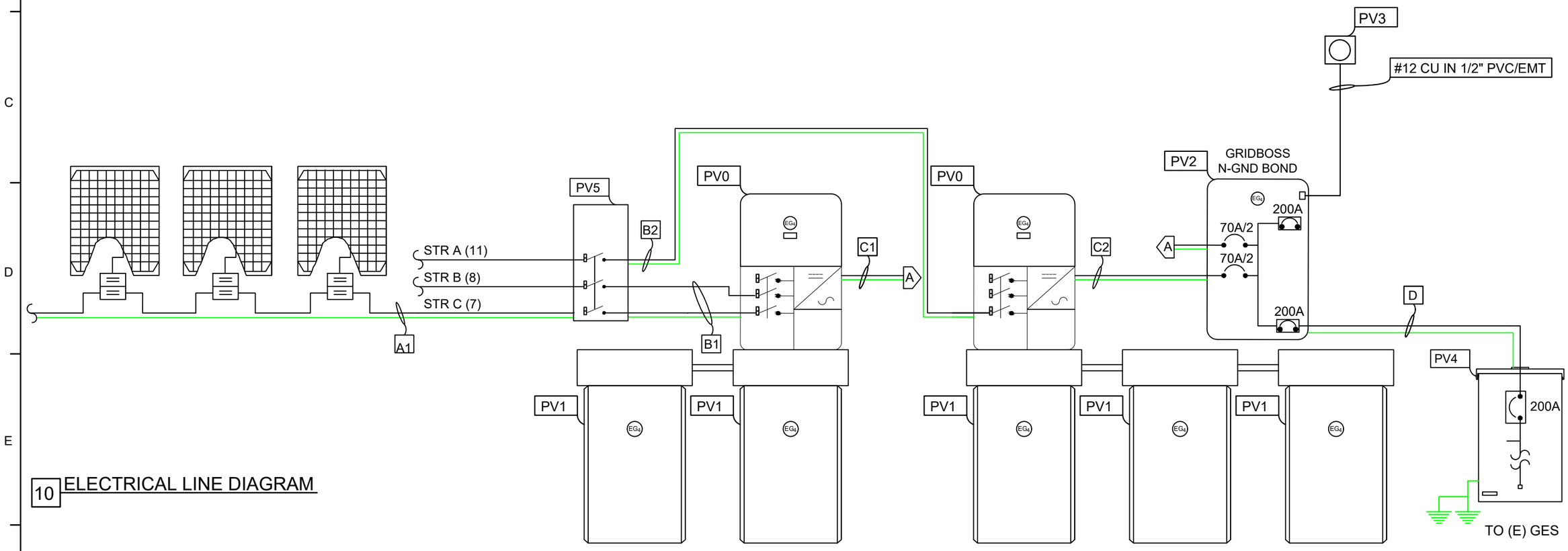
CONDUCTOR SCHEDULE																	
ID	RUN	VOLTAGE (V)	CURRENT (A)	VD (%)	LENGTH	CONDUCTOR	SIZE	Ω/KFT	CONDUIT	SIZE	#CCC	EGC	OCPD	TERM (C)	TEMP ADJ	FILL ADJ	BASE AMP	DERATED AMP
A	STR-JBOX	331.92	13.41	0.35	40	PV WIRE	#10	1.24	FREE AIR	NA	2	#10	NA	75	1	1	35	35
B1	JBOX-INV	331.92	13.41	0.09	300	THHN/THWN-2	#10	1.24	EMT/FMC	MIN 3/4"	4	#10	NA	75	1	0.8	35	32
B2	JBOX-INV	331.92	13.41	0.09	300	THHN/THWN-2	#10	1.24	EMT/FMC	MIN 3/4"	2	#10	NA	75	1	1	35	35
C1	INV-XFER	240	50	0.2	10	THHN/THWN-2	#6	0.491	PVC/EMT/FMC/NMLT	MIN 3/4"	3	#8	70	75	1	1	65	65
C2	INV-XFER	240	50	0.2	10	THHN/THWN-2	#6	0.491	PVC/EMT/FMC/NMLT	MIN 3/4"	3	#8	70	75	1	1	65	65
D	XFER-BKUP	240	--	0.2	10	THHN/THWN-2	#2/0	0.098	PVC/EMT/FMC/NMLT	MIN 1-1/2"	3	#4	200	75	1	1	175	175

08 CONDUCTOR SCHEDULE

PV0	(N) 18KPV-12LV
PV1	(N) EG4 WALLMOUNT INDOOR BATTERY
PV2	(N) GRIDBOSS
PV3	(N) OPTIONAL RSD/ESS DISCONNECT INITIATOR
PV4	(E) 200A MAIN PNL W/ (E) 200A MAIN
PV5	(N) 30A, MANUAL DC DISC

09 EQUIPMENT SCHEDULE



10 ELECTRICAL LINE DIAGRAM

DONALD J HAYES

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PROJECT ID: 432025-355

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(800) 798-0315

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1646 W SNOW AVE 9 TAMPA, FL 33606

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RYAN S GITTENS PE90605

DATE	BY	VER	DESCRIPTION
03.18.25	JB	00	INITIAL DESIGN

E2

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SCALE:

ECUIP ENGINEERING

! WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

NEC 706.15(C)(4), NEC 690.13(B)
LOCATION(S): 3
Combiner Box/Circuits/Enclosures

! WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

NEC 690.13(B)
LOCATION(S): 4, 3
DC Disconnect

PHOTOVOLTAIC
DC DISCONNECT

NEC 690.13(B)
LOCATION(S): 4, 3
DC Disconnect

MAXIMUM DC VOLTAGE
418.98
OF PV SYSTEM

NEC 690.13(B)
LOCATION(S): 4, 3
DC Disconnect

SOLAR PV DC CIRCUIT

NEC 690.31(D)(2)
LOCATION(S): 1, 2
Conduit Raceways

PHOTOVOLTAIC POWER SOURCE

NEC 690.31(D)(2)
LOCATION(S): 4, 3
Conduit Raceways

PHOTOVOLTAIC
AC DISCONNECT

NEC 690.13(B)
LOCATION(S): 4, 5
AC Disconnect/Breaker/POC

! WARNING
DUAL POWER SOURCE
SECOND POWER SOURCE IS PV SYSTEM

NEC 705.12(C), NEC 690.59
LOCATION(S): 6
Production/Net Meter

PHOTOVOLTAIC AC DISCONNECT	
RATED AC OUTPUT CURRENT	100
NOMINAL OPERATING AC VOLTAGE	240

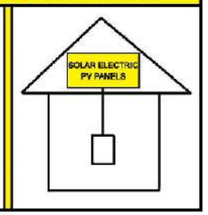
NEC 690.54
LOCATION(S): 3, 4
Inverter/POC/Breaker Panel/Pull Boxes

PV SYSTEM DISCONNECT

NEC 690.13(B)
LOCATION(S): 4, 5
Main Service Disconnect

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



NFPA 1 11.12.2.1.1.1.1
LOCATION(S): 5

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

NFPA 1 11.12.2.1.1.8
LOCATION(S): 4
Rapid Shutdown Switch

EMERGENCY CONTACT
ENLIGHT ENERGY

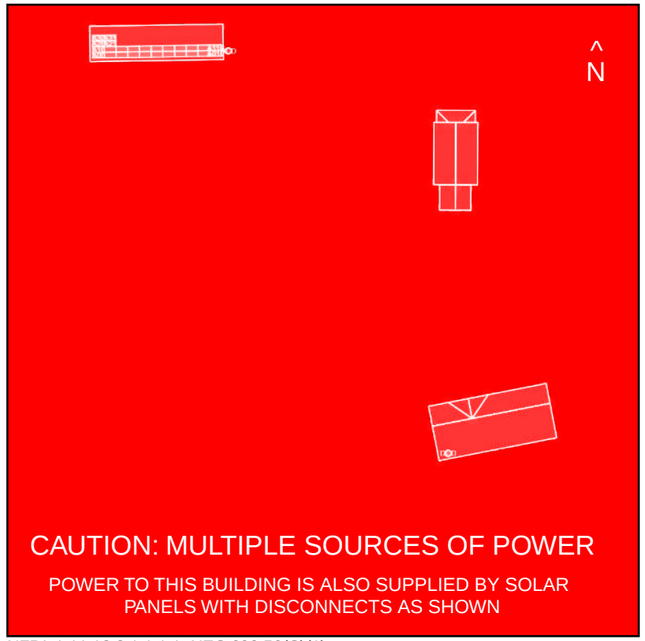
UTILITY REQ'D
LOCATION(S): 4, 6
Main Service Disconnect

! WARNING
DUAL POWER SOURCE
SECOND POWER SOURCE IS BATTERY

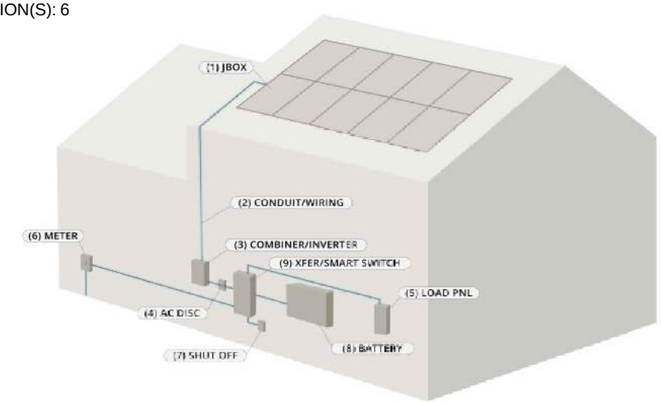
NEC 705.12(C), NEC 690.59
LOCATION(S): 6
Production/Net Meter

BATTERY DISCONNECT

NEC 690.13(B)
LOCATION(S): 8, 9
Transfer Switch



NFPA 1 11.12.2.1.1.1.1, NEC 690.56(C)(1)
LOCATION(S): 6



01 LABELS

02 NOTES

GENERAL
1.1 LABEL MATERIALS SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT, NEC 110.21(B)(3).
1.2 EXACT MATERIALS USED ARE SUBJECT TO THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
1.3 LABELS SHALL BE A MINIMUM LETTER HEIGHT OF 3/8" AND PERMANENTLY AFFIXED.
1.4 LABELS WILL BE REFLECTIVE AND MEET THE REQUIREMENTS OF NFPA 1-11.12.2.1.1.2

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Preliminary Datasheet

adani Solar

Bifacial PV Modules
MBB P-Type PERC Half-cut

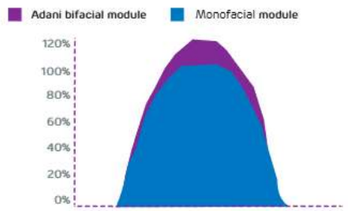
ASB-M10-144-AAA (AAA=520-545) | 144 Cells |520-545 Wp

Highlights

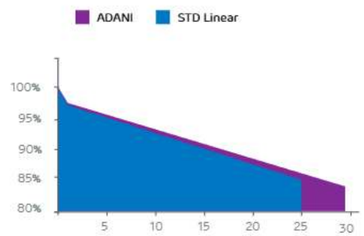
- MBB cell technology - excellent anti-microcracking performance with more balanced interior stress; grid pattern current path, lower cost
- Up to 600 Wp at 15% bifaciality Gain**
- Characterised for 1000 W/m² & 200 W/m² on the front and rear side respectively
- Up to 70 ± 5 % bifaciality Factor
- Least Degradation for LID & LeTID with Ga Doped wafer technology
- Excellent PID Resistance

TIER-1 BANKABLE MODULES

Higher generation due to bifacial technology



Bifacial technology

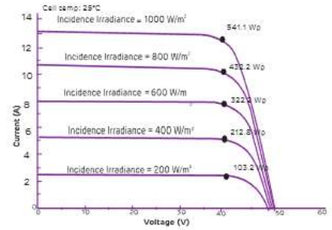


Preliminary Datasheet

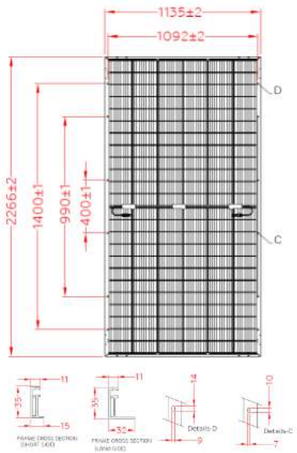
adani Solar

Technical Data

Multi irradiance curve for ASB-M10-144-AAA



Dimensions in mm



Warranty and certifications

Product warranty**
12 years of product warranty

Performance guarantee**
Power degradation < 2.0 % in first year
< 0.55 % / year in 2-30 years

Approvals and certificates* : IEC 61215 Ed2, IEC 61730, IEC 61701, UL 61730, MCS, JET, CEC, CEC-Aus, IEC 62716, IEC 62782, IEC 60068-2-68, IEC 61853,BIS

*All certifications are under process

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)	41.19	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)	48.18	48.36	48.57	48.72	48.92	49.07
Short circuit current, Isc (A)	13.54	13.62	13.70	13.74	13.84	13.92
Module efficiency (%)	20.22	20.41	20.60	20.80	21.00	21.20

*STC: Irradiance 1000 W/m², cell temperature 25°C, Air Mass AM 1.5 according to EN 60904-3 . Average efficiency reduction of 4.5 % at 200 W/m² according to EN 60904-1. Except Pmpp, all other parameters have a 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	10%	15%	20%	25%
Peak power, (0 –+ 4.99 Wp) Pmax(Wp)	575	600	630	650
Maximum voltage, Vmpp (V)	41.35	41.35	41.36	41.36
Maximum current, Impp (A)	13.89	14.50	15.25	15.75
Open circuit voltage, Voc (V)	48.36	48.36	48.36	48.36
Short circuit current, Isc (A)	15.01	15.66	16.47	17.01
Module efficiency (%)	22.36	23.33	24.50	25.27

**Power gain from rear side depends upon the ground reflectance (Albedo) & Bifaciality factor.

Temperature co-efficients (Tc) and permissible operating conditions

T_c of open circuit voltage (β)	-0.29 % /°C
T_c of short circuit current (α)	0.045 % /°C
T_c of power (γ)	-0.35 % /°C
Maximum system voltage	1500 V (IEC & UL)
NOCT	44°C ± 2°C
Temperature range	-40°C to + 85°C

Mechanical data

Length	2266 mm
Width	1135 mm
Height	35 mm
Weight	28.8 kg
Junction box	IP68; Junction box, MC4 compatible
Cable and connectors	300 mm length cable, MC4 & Amphenol compatible connectors
Application class	Class A (Safety class II)
Superstrate	High transmittance ARC glass-3.2 mm
Cells	144 Half-cut mono-crystalline P-type PERC bifacial solar cells; MBB bus bars
Encapsulation	High volume resistivity and low MVTR
Substrate	Transparent Backsheet
Frame	Anodized Frame
Mechanical load test as per IEC & UL	5400 Pa-front; 2400 Pa-back
Maximum series fuse rating	25 A

Packaging Configuration

Container	40'HC
Pallets / Container	18
Pieces / Container	589

Note:
- The specifications included in this datasheet are subject to change without notice.
- The electrical data given here is for reference purpose only.
- Please confirm your exact requirements with the sales representative while placing your order.

** Warranty:**
Please read Adani solar warranty documents thoroughly.

*Caution:**
Please read safety and installation instructions before using the product.

*This is preliminary datasheet and subjected to change after final ECN

DONALD J HAYES	CONTRACTOR: ENLIGHT ENERGY	ENGINEER: CA33343	Ryan S Gittens 2025.05.20 11:21:08 -04'00'	DATE	BY	VER	DESCRIPTION	D1
359 SW Hunter Leigh Place Lake City FL 32024	978 SW 2ND AVE GAINESVILLE, FL 32601	1646 W SNOW AVE 9 TAMPA, FL 33606	RYAN S GITTENS PE90605	03.18.25	JB	00	INITIAL DESIGN	PAPER: ARCHB
PROJECT ID: 432025-355	(800) 798-0315							SCALE:

TS4-A-O

Module-level optimization, monitoring, and rapid shutdown

The Tigo TS4-A-O improves production, safety, and intelligence in new designs and existing systems. Patented technology delivers top performance with high efficiency for a fast ROI. Easy installation and long-term reliability reduce system downtime and truck rolls, while Tigo's Energy Intelligence platform enables quicker onsite commissioning and comprehensive remote monitoring.

Features

- Simple, fast installation – snaps to a standard PV module frame or mounts to racking
- Intelligent optimization – delivers the maximum energy from an array
- Module-level monitoring – full visibility into module- and system-level production
- Rapid shutdown – a UL Standards-certified component for photovoltaic rapid shutdown systems (PVRSS) worldwide
- Works with any system – fully compatible with thousands of different inverter models from more than 50 inverter brands
- 25-year warranty
- Monitoring, rapid shutdown, and remote troubleshooting with Tigo Access Point (TAP) and Cloud Connect Advanced (CCA)

Specifications

Electrical	
Maximum current (I_{MP}/I_{SC})	15 A/20 A
Input voltage range (V_{MP})	16 – 80 V
Maximum input voltage	80 V
Maximum system voltage (V_{MAX})	1000 V/1500 V*
Maximum output current (I_{MAX})	15 A
Maximum output power (P_{MAX})	700 W
Maximum fuse rating	25 A
Maximum efficiency	99.6%
AS 5033: Operational Output	
Maximum output current	$I_{DCU\ MAX}$
Maximum output voltage	$V_{DCU\ MAX}$
Maximum output power	$P_{DCU\ MAX}$
Rapid Shutdown	
TS4 conductor AWG	12
Rapid shutdown time limit	<30 sec.
PVRSE-controlled conductor limits	≤240 VA, ≤8 A, ≤30 V_{DC}
UL 1741-compliant PVRSE	Yes
Communications	Wireless
Connections	
Input (from module) cable lengths	0.12/0.62 m
Output (to string) cable lengths	1.2/2 m
Connectors	MC4/EVO2

*Depending on UL/IEC certification

Specifications

Environmental	
Operating temperature range	-40 – 70 °C (-40 – 158 °F)
Storage temperature range	-40 – 85 °C (-40 – 185 °F)
Maximum elevation	2000 m (6560 ft.)
Outdoor IP rating	IP68/NEMA 3R
Mechanical	
Dimensions (H/W/D)	139.7 x 138.4 x 22.9 mm (5.4 x 5.5 x 0.9 in.)
Weight	520 g (1.15 lb.)
General	
Standards compliance	
FCC 15b, ETSI EN 301 489, CISPR 31, CSA 22.2, IEC 62109, NEC 690.12 UL 1741 PVRSE/PVRSS	
Warranty	25 years

Ordering Information

Part Number	V_{MAX} Certifications UL/IEC	Cable Lengths	Connectors
461-00252-20	1500 V/1000 V	1.2/2 m	MC4
461-00252-32	1500 V/1000 V	0.12/1.2 m	MC4
461-00252-62	1500 V/1000 V	0.62/1.2 m	MC4
461-00261-32	1500 V/1500 V	0.12/1.2 m	EVO2
461-00261-62	1500 V/1500 V	0.62/1.2 m	EVO2
462-00252-32	1000 V*	0.12/1.2 m	MC4
462-00252-62	1000 V*	0.62/1.2 m	MC4
462-00261-32	1500 V*	0.12/1.2 m	EVO2
462-00261-62	1500 V*	0.62/1.2 m	EVO2

* IEC certified only

More Resources

Home | Help Center | Downloads

tigoenergy.com

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EG4® 18KPV-12LV

Hybrid Inverter/Charger

AC Input Data	
Nominal AC Voltage	240 | 208VAC
Frequency	50/60Hz
Max. Continuous AC Current	50A
AC Grid Output Data	
Max. Continuous Output Current	50A
AC Bypass (Grid)	200A
Rated Voltage	240VAC
Operating Voltage Range	180–270VAC
Nominal Power Output (W)	@240V 12kW/@208V 10.4kW
Operating Frequency	50/60Hz
Phase Shift	0.99@ full load
Reactive Power Adjust Range	(-0.8) – (+0.8) leading adjustable
Sync Inrush Current	35A
Backup/UPS AC Output Data	
Rated Output Current (240V/208V)	50A
AC Bypass (Generator)	90A
Nominal Output Voltage (V)	240 | 120/240 | 120/208 VAC
Rated Output Power (W)	@240VAC 12kW/@208VAC 10.4kW
Max Cont. Line Wattage	8kW per 120V
Peak Power (W)	With PV: 14.7kW (10 min), 15.5kW (5 min) Without PV: 13.5kW (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	2/1/1
Max. Usable Input Current	25/15/15A
Max. Short Circuit Input Current	31/19/19A
DC Input Voltage Range	100–600 VDC
Unit Startup Voltage	100 VDC
Load Output Minimum Voltage	>140 VDC
MPP Operating Voltage Range	120–500 VDC
Full Power MPPT Voltage Range	230–500 VDC
Nominal MPPT Voltage	360 VDC
Maximum Utilized Solar Power	18kW
Recommended Maximum Solar Input	21kW

EG4® Electronics | Specification Sheet

EG4® 18KPV-12LV

Hybrid Inverter/Charger

AC Input Data	
Nominal AC Voltage	240 | 208VAC
Frequency	50/60Hz
Max. Continuous AC Current	50A
AC Grid Output Data	
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DC Input Voltage Range	100–600 VDC
Unit Startup Voltage	100 VDC
Load Output Minimum Voltage	>140 VDC
MPP Operating Voltage Range	120–500 VDC
Full Power MPPT Voltage Range	230–500 VDC
Nominal MPPT Voltage	360 VDC
Maximum Utilized Solar Power	18kW
Recommended Maximum Solar Input	21kW

EG4® Electronics | Specification Sheet

EG4® 18KPV-12LV

Hybrid Inverter/Charger

Standards and Certifications	
Safety	
UL1741SB Rule 21	Yes
Rapid Shut Down (RSD) NEC 2020:690.12	Yes
Arc-Fault Circuit Interrupter (AFCI) NEC 2020:690.11 / UL1699B	Yes
Ground Fault Monitoring (GFDI) NEC 2020:690.41(B)	Yes
CSA 22.2.107.1	Yes
CSA 22.2.330	Yes
Grid Connection	
IEEE 1547.1:2020; IEEE 1547:2018	Yes
Hawaii Rule 14H	Yes
California Rule 21 Phase I, II, III	Yes
EMC	
FCC Part 15 Class B	Yes
Outdoor Rating	
NEMA 4X / IP65	Yes

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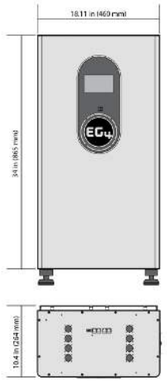

EG4® WALLMOUNT INDOOR 280Ah LITHIUM BATTERY

The WallMount Indoor 280Ah batteries are ideal for low-voltage residential indoor energy storage 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.

INTEGRATED SELF-HEATING FEATURE
Internal heating keeps cells operating during cold temperatures.

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 EG4 INVERTERS
The optional conduit box mates up directly to the connection ports of EG4 inverters allowing a sleek and efficient installation. For other inverters or stand-alone battery installation, the conduit box plugs should be installed.

VERSION 1.1.4 | INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE
MODEL #: WM-48|280-LL-00 / WM-48-280-1-IN-LL-00

*For information regarding warranty registration on EG4® Electronics products, please navigate to https://eg4electronics.com/warranty/ and select the corresponding product to begin the registration process.

EG4 ELECTRONICS

TECHNICAL SPECIFICATIONS

MODULE OPERATING PARAMETERS			
PARAMETER	BMS		RECOMMENDED SETTING
TOTAL ENERGY CAPACITY	14.3kWh @25C, 100% SOC		-
VOLTAGE	51.2V		-
CAPACITY	280Ah		-
CHARGING VOLTAGE (BULK/ABSORB)	56.0V (+/-0.8V)		56.2V (+/-0.2V)
FLOAT	-		54V (+/-0.2V)
SOC CUTOFF	-		20%*
CHARGING CURRENT	200A (Max. continuous)		60A – 160A
DISCHARGING CURRENT	200A (Max. continuous)		160A
DISCHARGE RATE	10.24kW (Max. continuous)		-
BMS PARAMETERS			
CHARGE	SPEC	DELAY	RECOVERY
CELL VOLTAGE PROTECTION	3.8V	1 sec	3.45V
MODULE VOLTAGE PROTECTION	60.0V	1 sec	55.2V
OVER CHARGING CURRENT 1	>205A	10 sec	-
OVER CHARGING 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
OVER-CHARGING CURRENT 1	>205A	10 sec	60 sec
OVER-CHARGING CURRENT 2	>300A	3 sec	60 sec
SHORT CIRCUIT	>600A	<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 TEMP 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	Measuring Range -40°F to +212°F (-40°C to +100°C)
VOLTAGE ACCURACY	0.5%	Cycle Measurement	For Cells & Module
CURRENT ACCURACY	3%	Cycle Measurement	Measuring Range -200A - 200A
SOC	5%	-	Integral Calculation
POWER CONSUMPTION	Sleep & Off Mode	<300uA	Storage/Transport/Standby
POWER CONSUMPTION	Operating Mode	<25mA	Charging/Discharging
COMMUNICATION PORTS	RS485/CAN		Can be customized
BATTERY HEATER SPECIFICATIONS			
PARAMETER	SPEC		CONDITION
VOLTAGE	56V		-
POWER CONSUMPTION	224W		-
INTERNAL BATTERY TEMPERATURE	≤32°F (0°C)/≥41°F (5°C)		Heat On/Heat Off

EG4 ELECTRONICS

ENVIRONMENTAL PARAMETERS	
CHARGING RANGE	32° 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	IP20
PHYSICAL SPECIFICATIONS	
DIMENSIONS (H×W×D)	36.4 in ×18.1 in ×9.6 in (925 mm×460 mm×245 mm)
WEIGHT	282.2 lbs. (128 kg)
DESIGN LIFE	>10 Years
CYCLE LIFE	>8000 cycles, 0.5C 80% DOD
LIFETIME PRODUCTION	82.6MWh**
SAFETY CERTIFICATIONS	
CERTIFICATIONS	UL1973, UL 9540A (Passed)

*EG4 recommends this value be set no lower than 20% to maintain the recommended 80% depth of discharge.

**(51.2V×280Ah/1000×80%×8000 cycles/1000)90%=MWh

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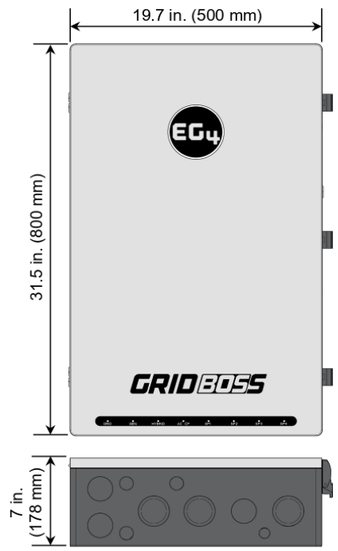
DONALD J HAYES	CONTRACTOR:	ENGINEER: CA33343	Ryan S Gittens 2025.05.20 11:21:08 -04'00'	DATE	BY	VER	DESCRIPTION	D4
359 SW Hunter Leigh Place Lake City FL 32024	ENLIGHT ENERGY 978 SW 2ND AVE GAINESVILLE, FL 32601 (800) 798-0315	ECUIP ENGINEERING 1646 W SNOW AVE 9 TAMPA, FL 33606	RYAN S GITTENS PE90605	03.18.25	JB	00	INITIAL DESIGN	PAPER: ARCHB
PROJECT ID: 432025-355								SCALE:

EG4 ELECTRONICS



EG4® GRID BOSS

MICRO-GRID INTERCONNECTION DEVICE (MID)

The EG4 GridBOSS Micro-Grid Interconnection Device (MID) simplifies Energy Storage Systems (ESS) by consolidating multiple components into a single, innovative unit. It replaces traditional elements such as the point of common connection, back-fed breakers, feeder taps, tap breakers, supply-side taps, transfer switches, and dedicated combiner panels for grid-in, grid-out, and generator input. As a versatile solution, the GridBOSS serves as the service entrance equipment* when paired with the utility meter, providing a single point of connection for utilities, hybrid inverters, generators, smart loads, and AC-coupled inverters.

200A SERVICE ENTRANCE*

4 CONFIGURABLE SMART PORTS

INTEGRATED GENERATOR SUPPORT

CENTRALIZED ESS CONTROL

Provides a single point of connection for utility, hybrid inverters, generators, smart loads, and AC-coupled inverters.

REDUCED ESS COMPLEXITY

Replaces up to 10 components with one unit, including point of common connection, back-fed breakers, feeder taps, feeder tap breakers, supply side taps & breakers, transfer switches, and dedicated combiner panels for grid-in, load/EPS, and generator input.

SERVICE ENTRANCE RATED

200 Amp service entrance with a 22 kAIC main breaker, acts as service entrance equipment in conjunction with a utility meter and a 200A Eaton braker (CSR25K).

REMOTE MONITORING

Enable remote monitoring, configuration, and firmware updates through the EG4 mobile app or online monitoring system.

SMART PORTS

Includes load shedding, which disconnects loads during low battery voltage and reconnects on high voltage. Power shedding connects loads when at full SOC and PV flow and disconnects on low SOC or PV loss.

*When used with an Eaton 200A main breaker (model CSR25k)

VERSION 1.1.2 | INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE.
MODEL #: MI-200-2P-HYB-AW-01

TECHNICAL SPECIFICATIONS

GRID	
NOMINAL AC VOLTAGE	120/240VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT	200A
SERVICE ENTRANCE RATED	22kAIC with 200A Eaton breaker (model: (CSR2200N) CSR25K)
GENERATOR	
NOMINAL VOLTAGE	120/240VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT	125A
NON-BACKUP	
NOMINAL VOLTAGE	120/240VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT	200A
BACKUP	
NOMINAL VOLTAGE	120/240VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT	200A
HYBRID	
NUMBER OF PORTS	3
NOMINAL VOLTAGE	120/240VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT PER PORT	70A*
SUPPORTED INVERTERS	EG4® 12kPV, 18kPV, & FlexBOSS21**
SMART PORTS	
NUMBER OF PORTS	4
NOMINAL VOLTAGE	120/240VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT PER PORT	1: 125A | 2: 80A | 3: 60A | 4: 60A
GENERAL DATA	
COMMUNICATION INTERFACE	RS485/Wi-Fi/CAN
IDLE CONSUMPTION	~55W
TRANSFER TIME	~25 ms
INTERNAL BUS RATING	350A
INTERNAL FUSE RATING	315A
OPERATING ALTITUDE	<6561 ft (<2000 m)
RELATIVE HUMIDITY	0 – 100%
OUTDOOR RATING	NEMA 3R
OPERATING AMBIENT TEMPERATURE RANGE	-40°F – 140°F (-40°C – 60°C)
PRODUCT DIMENSIONS (H×W×D)	31.5×19.7×7 in (800×500×178 mm)
UNIT WEIGHT	55 lbs. (25 kg)
STANDARD WARRANTY	10-year standard warranty***

*Install a properly sized breaker based on the connected inverter: 50A - 12kPV; 70A - 18kPV; 90A - FlexBOSS21.

**Third party inverters are not supported and cannot be connected to the hybrid ports.

***For information regarding warranty registration on EG4® Electronics products, please navigate to https://eg4electronics.com/warranty/ and select the corresponding product to begin the registration process.

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	(800) 798-0315							SCALE:
PROJECT ID: 432025-355								

Tech Brief

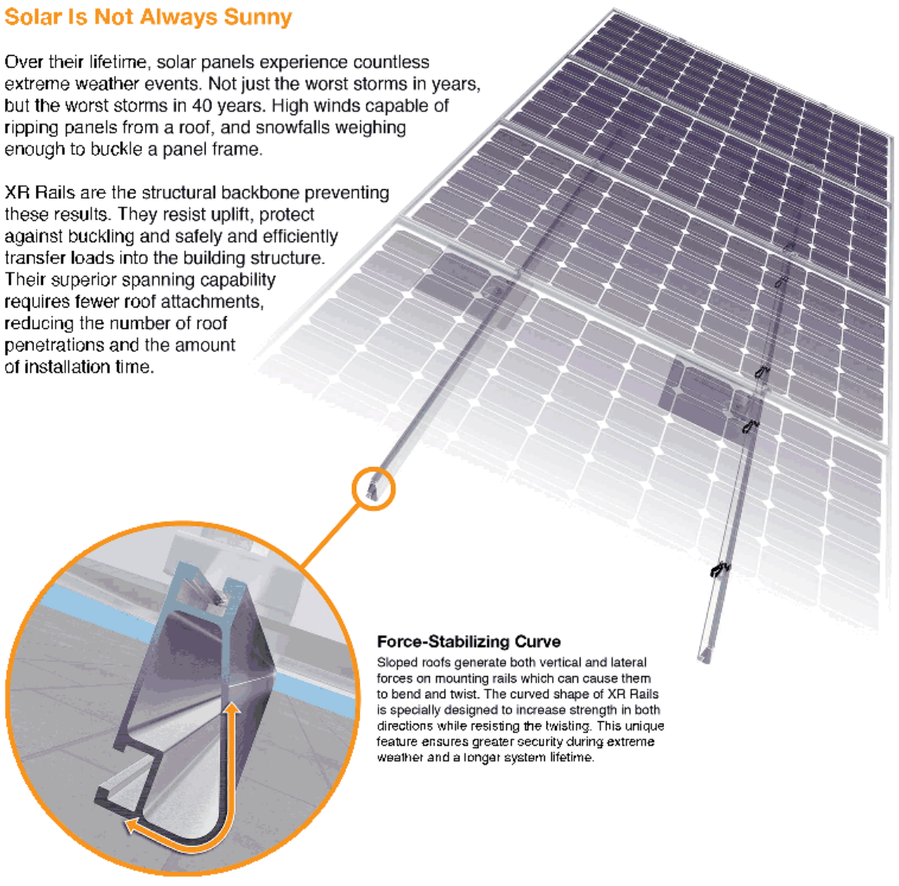
IRONRIDGE

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.

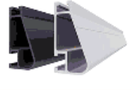
Compatible with Flat & Pitched Roofs

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 marine-grade 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

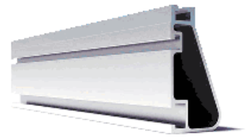
XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves 6 foot spans, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear 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 8 feet.

- 8' 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 12 feet or more for commercial applications.

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

Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	100	XR10		XR100		XR1000	
	120						
	140						
	160						
10-20	100						
	120						
	140						
	160						
30	100						
	160						
40	100						
	160						
50-70	160						
80-90	160						

DONALD J HAYES

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CONTRACTOR:

ENLIGHT ENERGY

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(800) 798-0315

ENGINEER: CA33343

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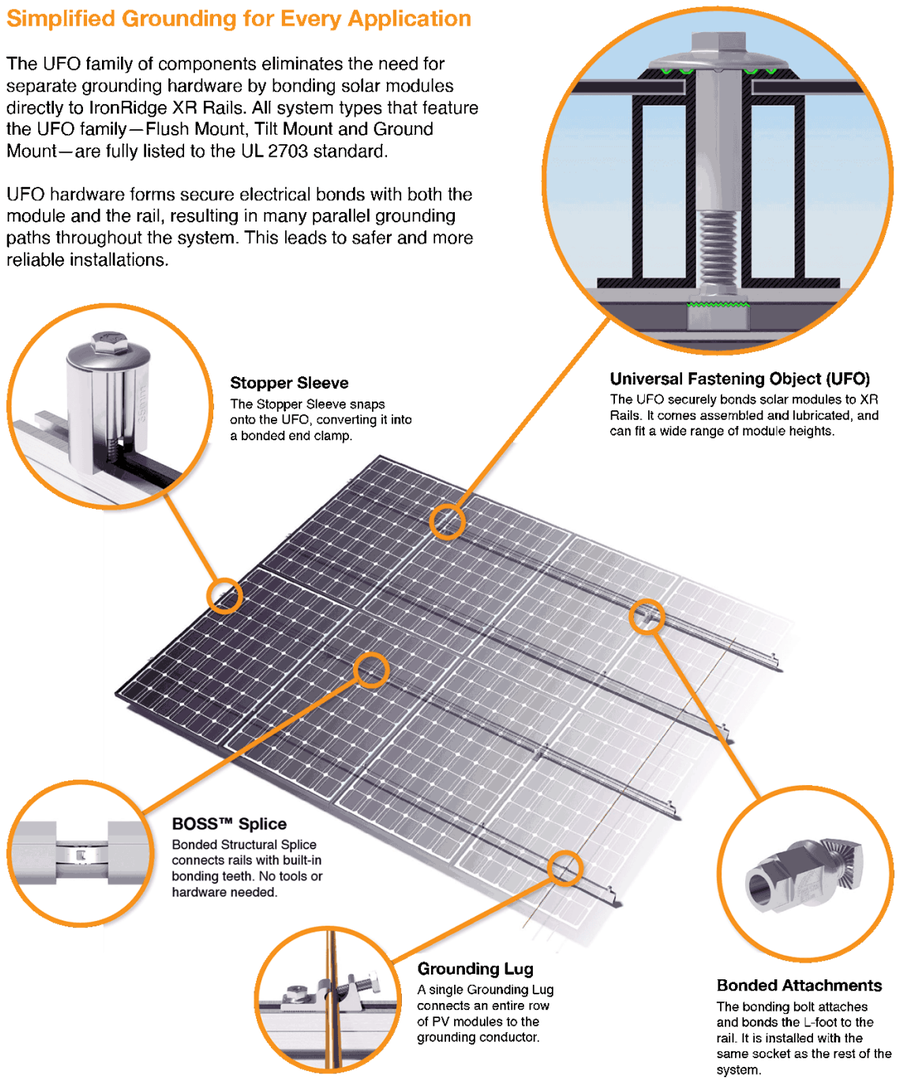
Tech Brief

IRONRIDGE UFO Family of Components

Simplified Grounding for Every Application

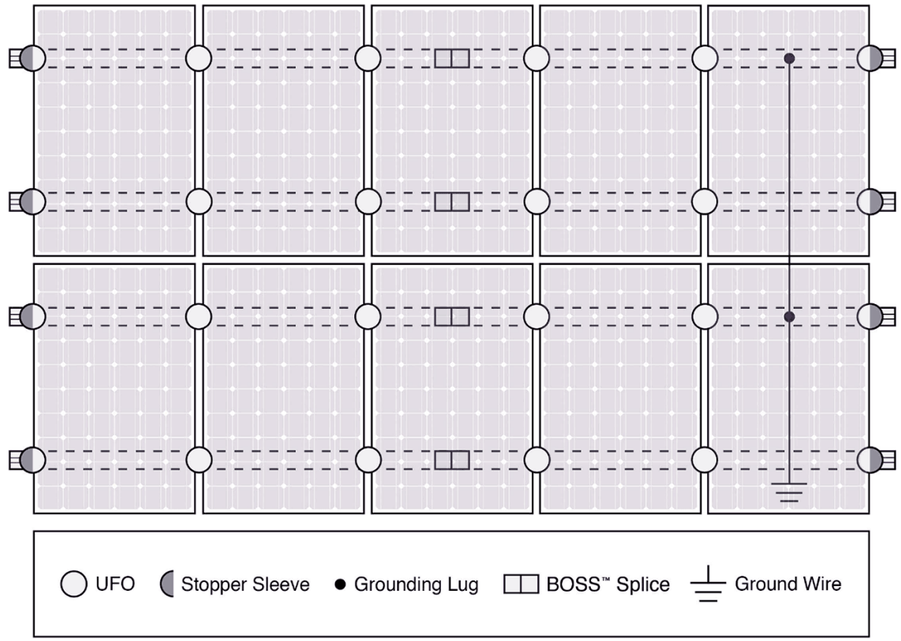
The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



Tech Brief

System Diagram



Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to IronRidge.com/UFO

Cross-System Compatibility

Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails	✔	✔	XR1000 Only
UFO/Stopper	✔	✔	✔
BOSS™ Splice	✔	✔	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Enphase - M250-72, M250-60, M215-60, C250-72 Darfon - MIG240, MIG300, G320, G640 SolarEdge - P300, P320, P400, P405, P600, P700, P730		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for a detailed list.		

DONALD J HAYES

359 SW Hunter Leigh Place Lake City FL 32024

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