

# NEW PHOTOVOLTAIC SYSTEM 9.24 KW DC

4417 MENDEZ ST, NEW ORLEANS, LA 70126

## PROJECT INFORMATION

(21) STAR-APTOS 440W PV MODULES  
(21) ENPHASE IQ8A-72-2-US MICRO INVERTERS  
SYSTEM SIZE (STC): 9.24 KW DC  
ROOF TYPE: SHINGLE  
ATTACHMENT TYPE: ROOF TECH MINI

## APPLICABLE CODES

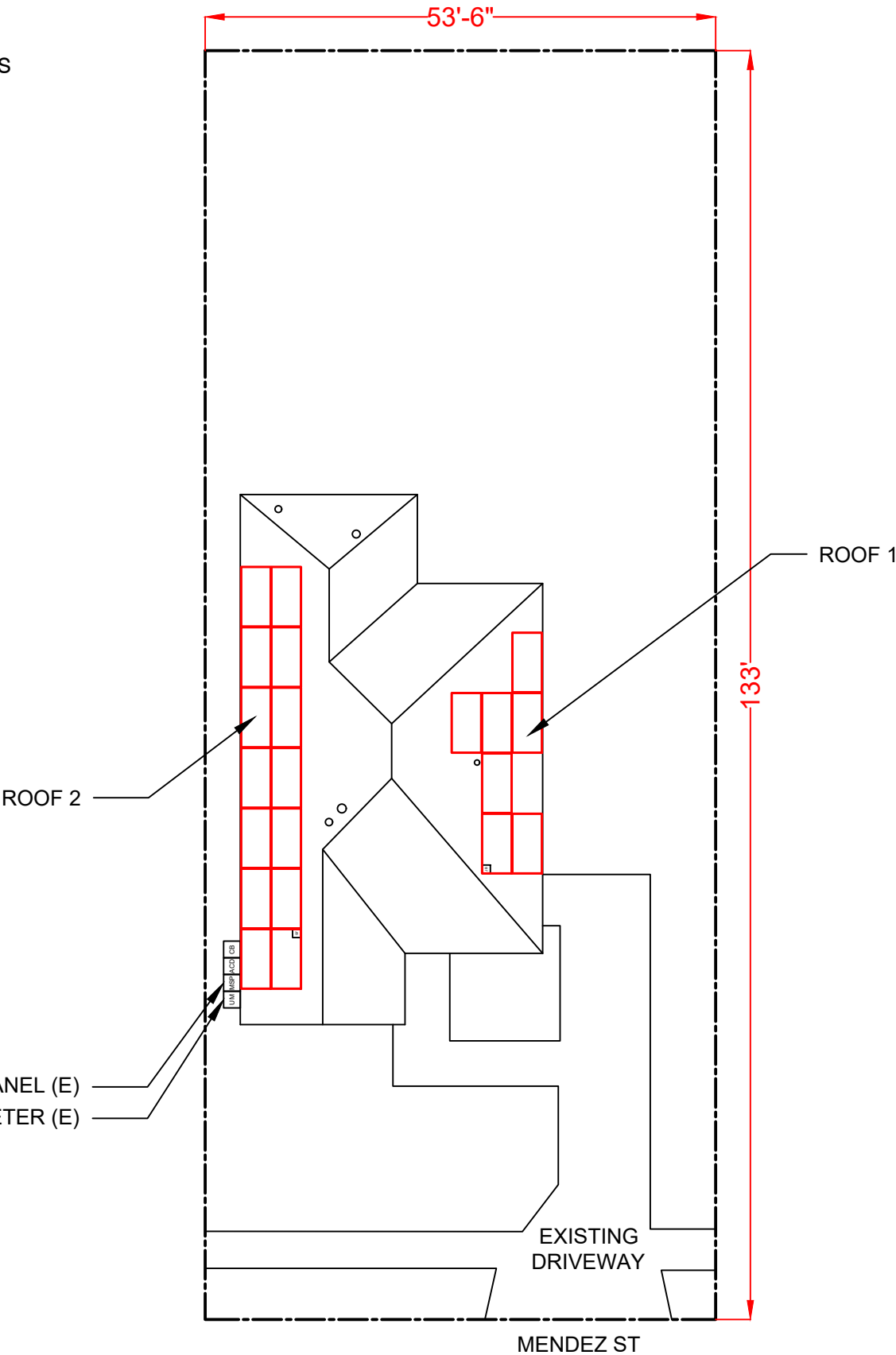
JURISDICTION: ORLEANS PARISH  
2015 INTERNATIONAL RESIDENTIAL CODE  
2015 INTERNATIONAL BUILDING CODE  
2015 INTERNATIONAL FIRE CODE  
2014 NATIONAL ELECTRIC CODE

## DESIGN SPECIFICATIONS

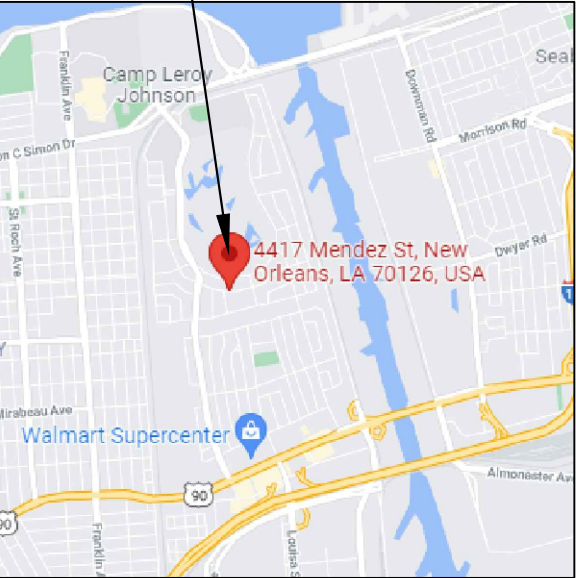
OCCUPANCY RISK: II  
ZONING TYPE: RESIDENTIAL  
WIND EXPOSURE CATEGORY: C  
WIND SPEED: 143 MPH (3 SECOND GUST)  
SNOW LOAD: 0 PSF

## SHEET INDEX

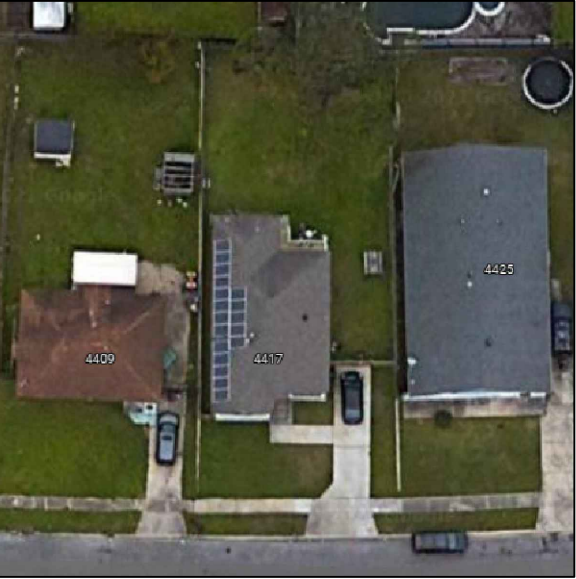
PV-1: TITLE SHEET  
PV-2: PROJECT NOTES  
PV-3: ROOF LAYOUT  
PV-4: ELECTRICAL DIAGRAM  
PV-5: SAFETY LABELS  
REF: REFERENCE PAGES



PROJECT  
LOCATION



VICINITY MAP N.T.S.



AERIAL MAP N.T.S.

## NOTE:

THESE DRAWINGS ARE FOR PERMIT USE ONLY.  
DIMENSIONS ARE APPROXIMATE AND SHOULD BE FIELD  
VERIFIED BY THE CONTRACTOR BEFORE INSTALLATION.

DESIGNED FOR  
ENVISHA ENERGY

PROJECT NAME & ADDRESS  
  
TERRY RESIDENCE  
4417 MENDEZ ST  
NEW ORLEANS, LA 70126

ENGINEER'S SIGNATURE & SEAL



08/25/2022

Louisiana Firm No. EF-003168  
Principal Engineering, Inc.

## REVISIONS

REV	DESCRIPTION	DATE

DATE	08/22/2022
DRAWN BY	HY CONSULTING, LLC

TITLE SHEET

SHEET IDENTIFICATION

PV-1



SCALE: 1/16" = 1'

PROJECT NOTES:

THIS PROJECT SHALL COMPLY WITH ALL APPLICABLE LOCAL ORDINANCES  
ALL WORK SHALL COMPLY WITH RESPECTIVE NEC, IRC, IBC AND IFC MUNICIPAL CODES, AND ALL MANUFACTURERS' RECOMMENDATIONS AND SPECIFICATIONS.  
PROPER ACCESS AND WORKING CLEARANCE WILL BE PROVIDED AT PROJECT SITE  
A LADDER SHALL BE IN PLACE FOR THE INSPECTION TO COMPLY WITH OSHA REGULATIONS  
THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY ROOF VENTS (PLUMBING, MECHANICAL, OR BUILDING, ETC).  
ALL EQUIPMENT SHALL BE INSTALLED WITHIN AN ACCESSIBLE AREA FOR QUALIFIED PERSONNEL.  
ALL APPLICABLE EQUIPMENT IS TO BE UL LISTED.  
ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.  
ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS REQUIRED BY NEC AND ANY OTHER APPLICABLE CODES.  
ANY WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURES.  
IF NECESSARY, ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC DISCONNECT.  
RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL AND WILL FOLLOW MANUFACTURERS' RECOMMENDATIONS AND SPECIFICATIONS.  
WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.  
MODULES WILL BE FLUSH MOUNTED AND NOT EXCEED A MXIMUM OF 6” PARALLEL FROM THE ROOF PLANE  
ALL ROOF PENETRATIONS WILL BE SEALED WITH APPROVED ROOF SEALANT BY A LICENSED CONTRACTOR.

PROJECT NOTES CONTINUED:





ALL PV RELATED ROOF ATTACHMENTS ARE TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.  
ANY CONDUIT EXPOSED TO SUNLIGHT ON ROOF SHALL BE LOCATED NO LESS THAN 7/8" ABOVE ROOF SURFACE.  
ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.  
CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.  
VOLTAGE DROP LIMITED TO 1.5%.  
DC WIRING LIMITED TO MODULE FOOTPRINT.  
MICROINVERTER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY WITH SUITABLE WIRING CLIPS.  
PHOTOVOLTAIC SYSTEM INVERTER IS UNGROUNDED.  
NO CONDUCTORS ARE SOLIDLY GROUNDED IN THE INVERTER, AND SYSTEM COMPLIES WITH NEC ARTICLE 690.  
AC DISCONNECT(S) ARE VISIBLE, LOCKABLE AND ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL.  
LOCAL UTILITY PROVIDER SHALL BE NOTIFIED PRIOR TO USE AND THE SYSTEM WILL NOT BE INTERCONNECTED UNTIL APPROVAL FROM THE LOCAL JURISDICTION AND THE UTILITY IS OBTAINED.  
A PV METER WILL BE INSTALLED IF REQUIRED BY AUTHORITY HAVING JURISDICTION  
ALL ELECTRICAL EQUIPMENT WILL BE PROPERLY LABELED WITH NECESSARY PLACARDS AS PER NEC 690

ABBREVIATIONS:

AC	ALTERNATING CURRENT
ACD	ALTERNATING CURRENT DISCONNECT
APPR	APPROXIMATE
CB	COMBINER BOX
DC	DIRECT CURRENT
DCD	DIRECT CURRENT DISCONNECT
E	EXISTING
JB	JUNCTION BOX
MIN	MINIMUM
MISC	MISCELLANEOUS
MSP	MAIN SERVICE PANEL
N	NEW
PV	PHOTOVOLTAIC
PVM	PHOTOVOLTAIC METER
SB	STORAGE BATTERY
SI	STRING INVERTER
SQFT	SQUARE FOOT
STC	STANDARD TEST CONDITIONS
TYP	TYPICAL
UM	UTILITY METER

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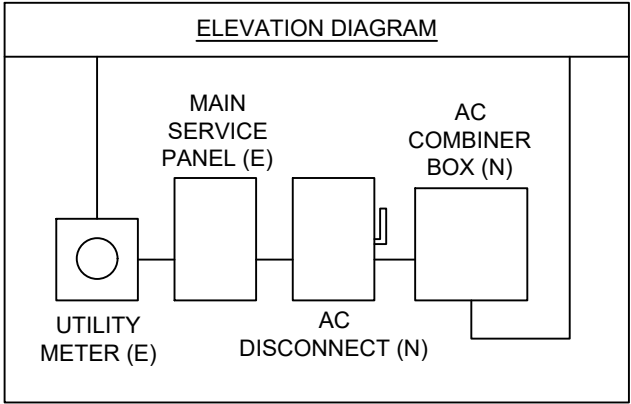
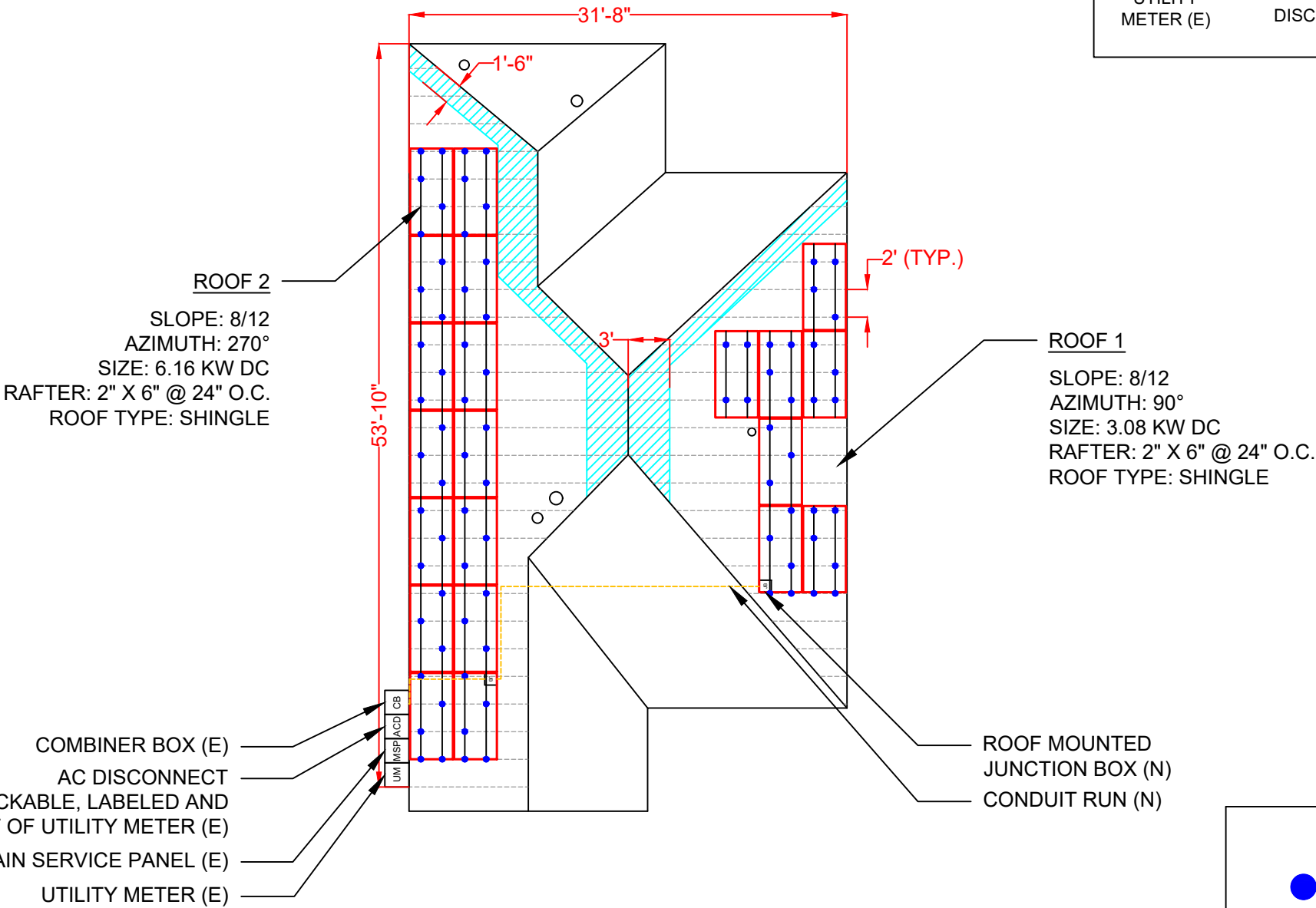
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PROJECT NOTES

SHEET IDENTIFICATION  
  
PV-2

GENERAL NOTES:

1. VISIBLE, LOCKABLE, AND LABELED AC DISCONNECT IS LOCATED WITHIN 10 FEET OF THE UTILITY METER.
2. NO ENCROACHMENT INTO EASEMENTS BY NEW SCOPE OF WORK (SOLAR MODULES, RACK/RAIL SYSTEMS, AND EQUIPMENT).
3. RAFTER LOCATIONS ARE APPROXIMATE AND MAY NOT DEPICT EXACT LOCATIONS. THEREFORE, ROOF ATTACHMENTS ARE SUBJECT TO CHANGE DURING INSTALLATION, BUT WILL NOT EXCEED MAXIMUM ROOF ATTACHMENT SPACING PROVIDED BY THE ENGINEER.
4. ROOF ATTACHMENTS ARE TO BE STAGGERED SO THAT NO ONE ATTACHMENT FALLS ON THE SAME STRUCTURAL MEMBER WITH THE EXCEPTION OF THE FIRST AND FINAL STRUCTURAL MEMBER HAVING TWO ROOF ATTACHMENTS.
5. FOR METAL ROOF INSTALLATIONS, ROOF ATTACHMENTS ARE TO BE MOUNTED TO THE SEAM OF THE METAL AND SHOULD STILL FOLLOW A STAGGERED PATTERN UNLESS SPECIFIED OTHERWISE BY THE ENGINEER.



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ROOF LAYOUT

SHEET IDENTIFICATION

PV-3

SCALE: 3/32" = 1'





1 COMBINER BOXES/ENCLOSURES/PULL BOXES

⚠

WARNING

ELECTRICAL SHOCK HAZARD

TERMINALS ON THE LINE AND  
LOAD SIDES MAY BE ENERGIZED  
IN THE OPEN POSITION

NEC 690.13(B) & 706.15(C)(4)

⚠

WARNING

TURN OFF PHOTOVOLTAIC AC  
DISCONNECT PRIOR TO  
WORKING INSIDE PANEL

NEC 110.27(C)

2 DC DISCONNECT/BREAKER

⚠

WARNING

ELECTRICAL SHOCK HAZARD

TERMINALS ON THE LINE AND  
LOAD SIDES MAY BE ENERGIZED  
IN THE OPEN POSITION

DC VOLTAGE IS ALWAYS PRESENT  
WHEN SOLAR MODULES  
ARE EXPOSED TO SUNLIGHT

NEC 690.13(B)

PHOTOVOLTAIC

AC DISCONNECT

NEC 690.13(B)

RATED AC OPERATING CURRENT

MAX RATED AC OPERATING CURRENT

RATED AC OPERATING VOLTAGE

MAX RATED AC OPERATING VOLTAGE

RATED SHORT CIRCUIT CURRENT

MAXIMUM SYSTEM VOLTAGE

BATTERY BACKUP SYSTEMS

MAXIMUM DC VOLTAGE

OF PV SYSTEM

NEC 690.53

3 EMT/CONDUITS

SOLAR PV DC CIRCUIT

NEC 690.31(O)(2)

PHOTOVOLTAIC POWER  
SOURCE

NEC 690.31(D)(2)

4 INVERTER

⚠

WARNING

THE DISCONNECTION OF THE  
GROUNDED CONDUCTOR(S) MAY  
RESULT IN OVERVOLTAGE ON  
THE EQUIPMENT

NEC 690.31(E)

PHOTOVOLTAIC AC DISCONNECT

RATED AC OUTPUT CURRENT:

NOMINAL OPERATING AC VOLTAGE:

NEC 690.54

5 PRODUCTION METER/BI-DIRECTIONAL NET METER

⚠

WARNING DUAL POWER SOURCE

SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

NEC 705.12(D)(3) & NEC 690.59

6 AC DISCONNECT/BREAKER/POINTS OF CONNECTION

PHOTOVOLTAIC

AC DISCONNECT

NEC 690.13(B)

⚠

WARNING

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

NEC 710.15(C) & 692.9(C)

⚠

WARNING

ELECTRICAL SHOCK HAZARD

TERMINALS ON THE LINE AND  
LOAD SIDES MAY BE ENERGIZED  
IN THE OPEN POSITION

NEC 690.13(B) & 706.15(C)(4)

7 MAIN SERVICE DISCONNECT/UTILITY METER

⚠

WARNING

ELECTRICAL SHOCK HAZARD

TERMINALS ON THE LINE AND  
LOAD SIDES MAY BE ENERGIZED  
IN THE OPEN POSITION

NEC 690.13(B) & 706.15(C)(4)

⚠

WARNING

TURN OFF PHOTOVOLTAIC AC  
DISCONNECT PRIOR TO  
WORKING INSIDE PANEL

NEC 110.27(C)

DO NOT DISCONNECT  
UNDER LOAD

NEC 690.15(C) & NEC 690.33(E)(2)

⚠

CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

NEC 705.12(D) & NEC 690.59

⚠

WARNING

POWER SOURCE OUTPUT  
CONNECTION. DO NOT  
RELOCATE THIS  
OVERCURRENT DEVICE.

NEC 705.12(B)(3)(2)

8 RAPID SHUTDOWN

SOLAR PV SYSTEM EQUIPPED  
WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN  
SWITCH TO THE  
"OFF" POSITION TO  
SHUTDOWN PV SYSTEM  
AND REDUCE  
SHOCK HAZARD  
IN ARRAY

SOLAR ELECTRIC  
PV PANELS

RAPID SHUTDOWN FOR  
SOLAR PV SYSTEM

NEC 690.56(C)(2)

9 ENERGY STORAGE

NOMINAL ESS AC VOLTAGE

NOMINAL ESS DC VOLTAGE

AVAILABLE FAULT CURRENT  
DERIVED FROM THE ESS

DATE CALCULATION PERFORMED

NEC 705.15(C)(4)

⚠

WARNING

FUEL CELL POWER  
SYSTEM CONTAINS  
ENERGY STORAGE  
DEVICES

NEC 705.12(B)(3)(2)

ENERGY  
STORAGE  
SYSTEM  
DISCONNECT

NEC 706.15(C)

10 BUILDING/STRUCTURE

⚠

CAUTION

MULTIPLE SOURCES OF POWER

COMBINER BOX (E)

AC DISCONNECT  
VISIBLE, LOCKABLE, LABELED AND  
WITHIN 10 FT OF UTILITY METER (E)

MAIN SERVICE PANEL (E)

UTILITY METER (E)

NEC 705.10 & NEC 690.56 (A)(B)

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SAFETY LABELS

SHEET IDENTIFICATION

PV-5

# DNA™ 120

Solar for Innovators

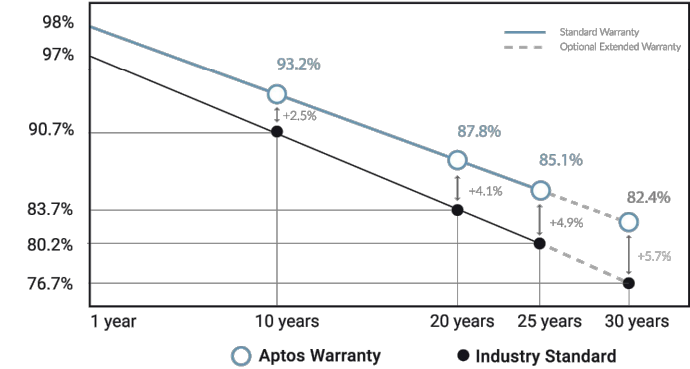
Residential | Commercial

## Designed & Engineered in Silicon Valley

440W | 435W | 430W

Our DNA Split Cell Series uses advanced selective emitter PERC technology with thin film layers to improve heat tolerance, increase photon capture, minimize resistive loss, and use 5% more of the available active area for optimal power performance. Our panels exceed IEC standards and come with an industry leading, 30-year warranty.

### Linear Performance Warranty



#### Features



**Advanced Technology**  
Patented DNA™ technology boosts power performance & module efficiency



**Maximum Panel Density**  
Advanced split cell technology with 10 ultra-thin busbars allows for less resistance and more photon capture



**Durable Design**  
Robust product design is resilient in extreme weather. Up to 5400 Pa snow load and 5400 Pa wind load

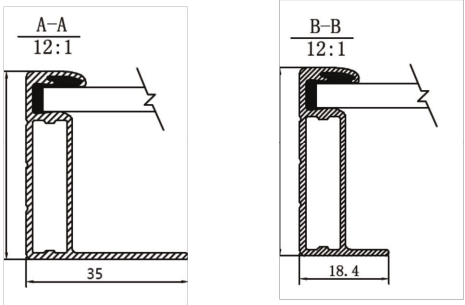
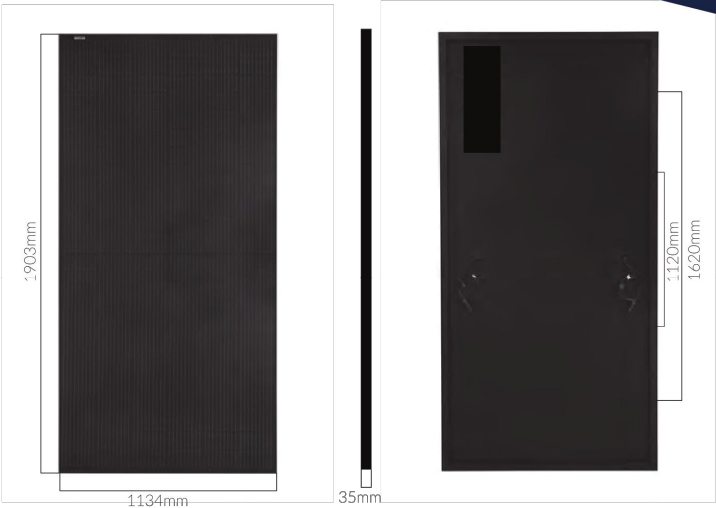


**A Safe Investment**  
Industry leading 30 year warranty



3140 De La Cruz Blvd., Ste 200  
Santa Clara, CA 95054  
www.aptosolar.com | info@aptossolar.com

√ A™ 120



Electrical Specifications	DNA-120-MF10-430W	DNA-120-MF10-435W	DNA-120-MF10-440W
STCrated Output P <sub>mpp</sub> (W)	430W	435W	440W
Module Efficiency	20.39%	20.62%	20.85%
Open Circuit Voltage V <sub>oc</sub> (V)	40.80	41.10	41.34
Short Circuit Current I <sub>sc</sub> (A)	13.61	13.70	13.80
Rated Voltage V <sub>mpp</sub> (V)	33.82	34.02	34.16
Rated Voltage I <sub>maz</sub> (A)	13.01	13.09	13.17

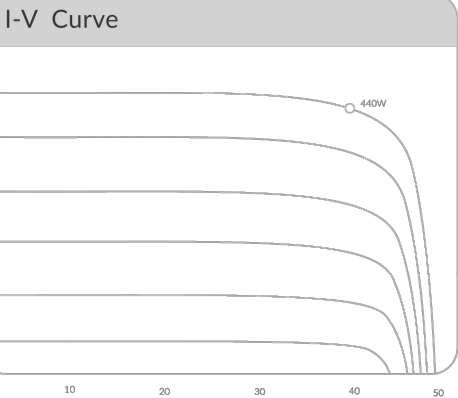
Standard Test Conditions for front-face of panel: 1000 W/m², 25°C, measurement uncertainty ≤3%

Temperature Coefficients	
Temperature Coefficients P <sub>mpp</sub>	-0.35%/°C
Temperature Coefficients I <sub>sc</sub>	+0.06%/°C
Temperature Coefficients V <sub>oc</sub>	-0.29%/°C
Nominal Operating Cell Temperature (NOCT)	45°C

Test Operating Conditions	
Maximum Series Fuse	25A
Maximum System Voltage	1,500 VDC (UL&IEC)
Maximum Load Capacity (Per UL 1703)	5400 PA Snow Load / 5400 Pa Wind Load
Fire Performance Class	Class C/Type 1

Packaging Configuration	
Number of Modules per Pallet	31
Number of Pallets per 40ft. Container	24
Pallet Dimensions	2030 X 1220 X 1200
Pallet Weight (kg)	766
Container Weight (kg)	18,384

Mechanical Properties	
Cell Type	Monocrystalline
Glass	3.2mm, anti-reflection coating, high transmission, low iron, tempered glass
Frame	Anodized Aluminum Alloy
Junction Box	IP68
Dimensions	1903 X 1134 X 35 mm
Output Cable	4mm2 (EU)12AWG,39.37in.(1200mm)
Weight	52.9lbs.(24kg)
Cable Length	1200mm
Encapsulant	POE



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Aptos Solar Technology reserves the right to make specification changes without notice

