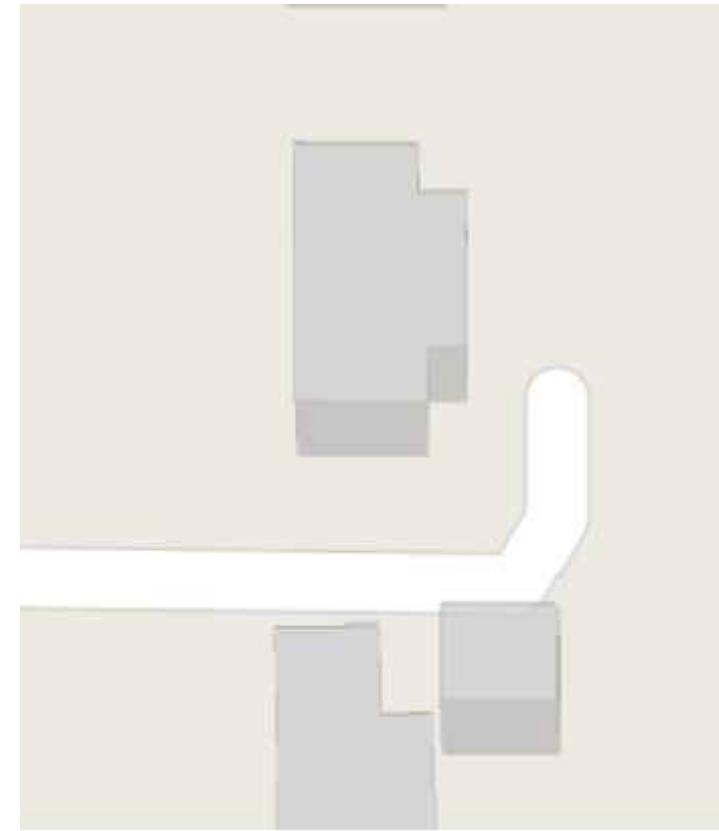


# PV PROJECT



1 PROPERTY ASSESSOR MAP - PROJECT LOCATION NTS



2 AERIAL MAP - PROJECT LOCATION NTS

### SCOPE OF WORK

THESE PLANS ARE FOR THE INSTALLATION OF A ROOF MOUNTED PHOTOVOLTAIC (PV) SYSTEM. THE PV SYSTEM WILL BE INTERCONNECTED WITH THE -- UTILITY GRID THROUGH EXISTING ELECTRICAL EQUIPMENT AND WILL OPERATE IN PARALLEL VIA SUPPLY(LST) SIDE CONNECTION WITH NET ENERGY METER.

### GOVERNING BUILDING CODES

1. 2018 INTERNATIONAL BUILDING CODE
2. 2018 INTERNATIONAL RESIDENTIAL CODE
3. 2017 NATIONAL ELECTRICAL CODE, NEC
4. 2018 INTERNATIONAL FIRE CODE
5. UL STANDARDS
  - 5.1. RACKING - UL 2703
  - 5.2. PV MODULE - UL 1703
  - 5.3. INVERTER - UL 1741

### DESIGN SPECIFICATIONS

1. AHJ - --
2. UTILITY - DUKE ENERGY
3. BUILDING RISK CATEGORY II
4. DESIGN WIND SPEED (ULT) - 150MPH
5. DESIGN SNOW LOAD - 0PSF
6. EXPOSURE CATEGORY - C
7. MEAN ROOF HEIGHT - 15FT
8. ROOF SLOPE - 22.62°

### Sheet List Table

Sheet Number	Sheet Title
PV01	COVER
PV02	NOTES
PV03	E_PV SITE PLAN
PV04	ELEVATION
PV05	LINE DIAGRAM
PV06	S_PV SITE LAYOUT
PV07	PV ATTACH PLAN
R01	MODULE DATASHEET
R02	INVERTER DATASHEET
R03	IQ COMBINER DATASHEET
R04	RACKING DATASHEET

### Contractor Info

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### Project Type - Photovoltaic

### Project Location:

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### Parcel Number:

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### Assessor Phone # --

### PV SYSTEM SPECIFICATIONS

1. PV MODULE: 42 x Aptos  
DNA-120-MF26-365W; 15.33kWdc
2. INVERTER: IQ8+-72-2-US
3. RACKING: Ecofasten Rock-it
4. ROOF TYPE: SHINGLE
5. AZIMUTH: 90°
6. ROOF SLOPE: 22.62°

### Sheet Number and Title:

PV01 - COVER

### Sheet Size:

ANSI full bleed B (17.00 x 11.00 Inches)

### Drawing history

no.	drawn by	revision	date
01	DCG	---	10/11/22

### Permit manager

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PV01

**1**

**2**

**3**

**4**

**5**

**6**

**7**

**8**

**9**

**10**

**11**

**A**

**B**

**C**

**D**

**E**

**F**

**G**

**INSTALLATION NOTES**

1. THE EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURES INSTALLATION INSTRUCTIONS.
2. THE ACTUAL LOCATION OF THE ARRAY AND PLACEMENT OF THE MECHANICAL ANCHORS ARE SUBJECT TO VARIANCES DEPENDING ON SITE CONDITIONS AND/OR ROOF OBSTRUCTIONS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SPECIFICATIONS BEFORE COMMENCING.
3. ALL OUTDOOR EQUIPMENT SHALL BE RAIN TIGHT WITH MINIMUM NEMA3-R RATING.
4. ALL LOCATIONS ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION.
5. ALL WORK SHALL COMPLY WITH THE BUILDING CODES SET FORTH BY THE GOVERNING JURISDICTION.
6. ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY THE NATIONAL FIRE CODE, NFC AND THE NATIONAL ELECTRICAL CODE, NEC.


**GENERAL PV SITE NOTES**


1. PV ARRAY NOT TO DIRUPT ATTIC VENTS OR PLUMBING VENTS. ARRAY TO SPAN OR EXTEND TERMINATION PLUMBING VENTS WITHOUT ANY IMPACT ON THEIR FUNCTIONALITY.
2. PANELS WILL NOT EXCEED THE OVERALL HEIGHT OR ROOF PITCH OF THE EXISTING STRUCTURE.


**ABBREVIATIONS**


(E) - EXISTING  
(N) - NEW  
TYP - TYPICAL  
NTS - NOT TO SCALE  
MIN - MINIMUM  
MAX - MAXIMUM  
AC - ALTERNATING CURRENT  
DC - DIRECT CURRENT  
PV - PHOTOVOLTAIC  
MOD - PV MODULE  
INV - DC/AC PV INVERTER  
POC - POINT OF CONNECTION(PV)  
RSB - RAPID SHUTDOWN BOX  
CB - CIRCUIT BREAKER (EX. 20A/2P CB - 20AMP 2-POLE CIRCUIT BREAKER)  
C - CONDUIT  
OCP - OVERCURRENT PROTECTION  
OCPD- OVERCURRENT PROTECTION DEVICE  
MSD - MAIN SERVICE DISCONNECT  
DISC - DISCONNECT  
MSP - MAIN SERVICE PANEL  
SP - SUB PANEL  
PLP - PROTECTED LOADS PANEL  
MLO - MAIN LUG ONLY  
MB - MAIN BREAKER  
EGC - EQUIPMENT GROUNDING CONDUCTOR  
GEC - GROUNDING ELECTRODE CODUCTOR  
GES - GROUNDING ELECTRODE SYSTEM


**SYMBOLS**


 UTILITY METER


 PV MODULE


 DC/AC UTILITY INTERACTIVE INVERTER

 DISCONNECT

 CB DOUBLE POLE

 CB SINGLE POLE

 FUSE

 FUSED DISCONNECT

**ELECTRICAL NOTES**

1. INSTALLATION TO BE COMPLIANT WITH NFPA 1 & NFPA70 (NATIONAL ELECTRICAL CODE)
2. THE PV SYSTEM IS AN UNGROUNDED PV ARRAY AND HAS A GROUND-FAULT PROTECTION DEVICE THAT MEETS THE REQUIREMENTS OF 690.41(B)(1) AND (2)
3. THE EXACT LOCATION OF NEW ELECTRICAL EQUIPMENT AND CONDUIT RUN RELATING TO THIS PROJECT IS SUBJECT TO CHANGE AND WILL BE DETERMINED ON SITE BY THE CONTRACTOR.
4. ALL CLEARANCES AND WORK SPACE AS REQUIRED PER NEC 110.26 SHALL BE FOLLOWED
5. THE INVERTER(S) SHALL MEET ALL CURRENT CODE REQUIREMENTS FOR RAPID SHUTDOWN AS DEFINED IN NEC 690.12.
6. ALL EQUIPMENT TO BE LISTED OR LABELED FOR ITS APPLICATION(UL OR OTHER APPROVED LISTINGS)
  - 6.1. PV MODULE - UL1703
  - 6.2. INVERTER - UL1741
  - 6.3. RACKING SYSTEM - UL2703
7. GROUNDING
  - 7.1. ALL EQUIPMENT SHALL BE PROPERLY GROUNDED PER THE REQUIREMENTS OF NEC ARTICLES 250 & 690
  - 7.2. MODULE BONDING METHOD SHALL BE INTEGRATED GROUNDING MID CLAPS. REFER TO MANUFACTURES SPECIFIC INSTRUCTIONS FOR PROPER BONDING TECHNIQUES.
  - 7.3. GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES SHALL BE RATED FOR DIRECT BURIAL
  - 7.4. EGC SHALL BE SIZED IN ACCORDACE WITH 250.122 AND ARRAY EGC'S SMALLER THAN 6AWG SHALL COMPLY WITH 250.120(C)
8. ALL CONDUCTORS ARE COPPER, UNLESS SPECIFIED OTHERWISE
9. ALL CONDUIT, RACEWAYS, AND JUNCTION BOXES SHALL BE SIZED ACCORDING TO THE APPLICABLE CODE IF THE SIZE IS NOT SPECIFIED.
10. SIGNAGE SHALL BE APPLIED ACCORDING TO GOVERNING BUILDING CODES AND LOCAL JURISDICTIONS SPECIFIC REQUIREMENTS.
11. EQUIPMENT INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC.
12. CALCULATION OF MAXIMUM CIRCUIT CURRENT FOR THE SPECIFIC CIRCUIT SHALL BE CALCULATED IN ACCORDANCE WITH 690.8(A)(1) THROUGH (A)(6). CONDUCTOR AMPACITY SHALL BE SIZED TO NOT CARRY LESS THAN THE LARGER OF 690.8(B)(1) OR (2)
13. DC PV SOURCE AND DC OUTPUT CURRENT CIRCUITS ON OR INSIDE A BUILDING SHALL BE CONTAINED IN METAL RACEWAYS, TYPE MC METAL-CLAD CABLE THAT COMPLIES WITH 250.118(10), OR METAL ENCLOSURES FROM THE POINT OF PENETRATION OF THE SURFACE OF THE BUILDING OR STRUCTURE TO THE FIRST READILY ACCESSIBLE DISCONNECTING MEANS.(690.31(G))
14. ACCESS TO BOXES; JUNCTION, PULL, AND OUTLET BOXES LOCATED BEHIND MODULES OR PANELS SHALL BE SO INSTALLED THAT THE WIRING CONTAINED IN THEM CAN BE RENDERED ACCESSIBLE DIRECTLY OR BY DISPLACEMENT OF A MODULE(S) SECURED BY REMOVABLE FASTENERS AND CONNECTED BY FLEXIBLE WIRING SYSTEM.(690.34)
15. PV POINT OF CONNECTION. THE OUTPUT OF AN INTERCONNECTED ELECTRIC POWER SOURCE SHALL BE CONNECTED AS SPECIFIED IN 705.12(A) or (B).

**FIRE OFFSETS - SYSTEM WILL BE INSTALLED PER 2018 NFPA 1, CH 11.12**

**NFPA 11.12.2.2.2.1 - PATHWAYS**  
NOT LESS THAN TWO 36IN WIDE PATHWAYSON SEPARATE ROOF PLANES, FROM GUTTER TO RIDGE, SHALL BE PROVIDED ON ALL BUILDINGS. ONE PATHWAY SHALL BE PROVIDED ON THE STREET OR DRIVEWAY SIDE OF THE ROOF. FOR EACH ROOF PLANS WITH A PV ARRAY, A 36IN WIDE PATHWAY FROM GUTTER TO RIDGE SHALL BE PROVIDED ON THE SAME PLAN AS THE PV ARRAY, ON AN ADJACENT ROOF PLANE OR STRADDLING THE SAME AND ADJACENT ROOF PLANES. PATHWAYS SHALL BE LOCATED IN AREAS WITH MINIMAL OBSTRUCTIONS SUCH AS VENT PIPES, CONDUIT, OR MECHANICAL EQUIPMENT.

**11.12.2.2.2**  
FOR PV ARRAYS OCCUPYING UP TO 33 PERCENT OF THE PLAN VIEW ROOF AREA, A MIN. 18IN PATHWAY SHALL BE PROVIDED ON EITHER SIDE OF A HORIZONTAL RIDGE, FOR PV ARRAYS OCCUPYING MORE THAN 33 PERCENT OF THE PLAN VIEW ROOF AREA, A MIN 36IN PATHWAY SHALL BE PROVIDED ON EITHER SIDE OF A HORIZONTAL RIDGE.

THE ACCESS PATHWAY SHALL BE LOCATED AT A STRUCTURALLY STRONG LOCATION OF THE BUILDING, SUCH AS A BEARING WALL.

**STRUCTURAL NOTES**

1. PV SYSTEM CONSIST OF THE PV MODULES, RAILING, AND CONNECTION HARDWARE
2. RACKING SYSTEM & PV ARRAY SHALL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL
3. MAXIMUM SPACING BETWEEN CONNECTION POINTS 4FT.
8. THE ATTACHMENTS SHOULD BE STAGGERED, WHERE POSSIBLE, TO ALLOW DISTRIBUTION OF THE DESIGN LOADS EVENLY TO THE STRUCTURE.
9. ALL ROOF PENETRATIONS SHALL BE FLASHED AND SEALED BY APPROVED METHOD PER ROOF TYPE MANUFACTURE.
10. TYP. ROOF SUPPORT STRUCTURE; 2" X 4", 24"O.C.
11. REFER TO TABLE 1.1 FOR MAX OVERHANG FROM LAST ATTACHMENT.
12. PV ARRAY SHALL BE A MINIMUM 3" ABOVE THE ROOFING MATERIAL.

**LOAD INFORMATION**

1. THE COMBINED LOADS WITH THE PV ROOF EQUIPMENT INSTALLED ARE NOT LARGER THAN THE COMBINED LOADS AS REQUIRED BY THE BUILDING CODE FOR THE ROOF WITHOUT PANELS.
2. NUMBER OF ATTACHMENT POINTS: 67
3. WEIGHT PER ATTACHMENT POINT: 35.4LBS/ATTACH
4. PV DEAD LOAD: 2.73PSF
5. DESIGN SNOW LOAD
  - 5.1. GROUND SNOW LOAD - 0PSF
6. ALLOWABLE DESIGN LOADS FOR PV MODULE:
  - 6.1. WIND = 62PSF
  - 6.2. SNOW = 125PSF

**Contractor Info**

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**Project Type - Photovoltaic**

**Project Location:**

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Parcel Number: --  
Assessor Phone # --

**PV SYSTEM SPECIFICATIONS**

1. PV MODULE: 42 x Aptos DNA-120-MF26-365W; 15.33kWdc
2. INVERTER: IQ8+-72-2-US
3. RACKING: Ecofasten Rock-it
4. ROOF TYPE:SHINGLE
5. AZIMUTH:90°
6. ROOF SLOPE:22.62°

**Sheet Number and Title:**

PV02 - NOTES

**Sheet Size:**

ANSI full bleed B (17.00 x 11.00 Inches)

**Drawing history**

no.	drawn by	revision	date
01	DCG	----	10/11/22

**Permit manager**

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PV02



RIDGE SETBACK

J-BOX (N)

PV MODULE (N)  
WITH MICROINVERTER

ARRAY 1 - 15.33kWdc  
42 x 365W MODULES  
MODULE TILT: FLUSH  
ROOF PITCH: 22.62°  
AZIMUTH: 90°

DRIVEWAY

PATHWAY

ROOF ACCESS POINT

MAIN SERVICE PANEL(E)  
200A, 200A MB

UTILITY METER(E)

PV AC DISCONNECT(N)  
100A, 70A FUSED/OCP  
ENPHASE IQ COMBINER(N)

4 PV SITE PLAN W/ MODULE LAYOUT

Scale: 3/32" = 1'-0"

Contractor Info

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Project Type - Photovoltaic

Project Location:

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Parcel Number: --  
Assessor Phone # --

PV SYSTEM SPECIFICATIONS

1. PV MODULE: 42 x Aptos DNA-120-MF26-365W; 15.33kWdc
2. INVERTER: IQ8+-72-2-US
3. RACKING: Ecofasten Rock-it
4. ROOF TYPE: SHINGLE
5. AZIMUTH: 90°
6. ROOF SLOPE: 22.62°

Sheet Number and Title:

PV03 - E\_PV SITE PLAN

Sheet Size:

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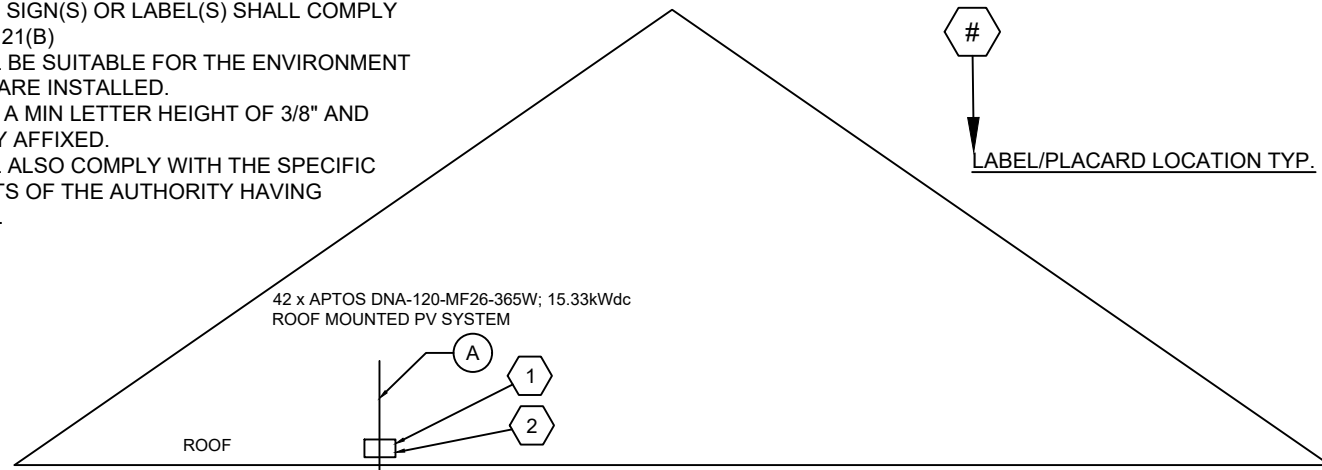
Drawing history

no.	drawn by	revision	date
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Permit manager

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- NEC LABEL NOTES:**
1. THE WARNING SIGN(S) OR LABEL(S) SHALL COMPLY WITH NEC 110.21(B)
  2. LABELS SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE THEY ARE INSTALLED.
  3. LABELS TO BE A MIN LETTER HEIGHT OF 3/8" AND PERMANENTLY AFFIXED.
  4. LABELS SHALL ALSO COMPLY WITH THE SPECIFIC REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.



- NOTES:**
1. DESCRIPTION OF COMBINER BOX.
  2. DESCRIPTION OF NON-FUSED DISCONNECT (AUXILIARY GENERATION DISCONNECT)
  3. DESCRIPTION OF CONDUIT BEING USED, INCLUDING DIAMETER OF CONDUIT TYPE. REFER TO CONDUIT AND CONDUCTOR SCHEDULE ON LINE DIAGRAM

**4 RISER DIAGRAM** Scale: NTS



**PHOTOVOLTAIC SOLAR AC DISCONNECT**

LABEL 11 - NEC 690.13(B)  
AT EACH AC DISCONNECTING MEANS (4" X 1")

**CAUTION**  
SOLAR ELECTRIC SYSTEM CONNECTED

LABEL 12 - NEC 690.56(B)  
AT UTILITY METER (5 3/4" X 1 1/8")

**EMERGENCY RESPONDER THIS SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN**

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN THE ENTIRE PV SYSTEM

INTERACTIVE PHOTOVOLTAIC SYSTEM CONNECTED PHOTOVOLTAIC SYSTEM DISCONNECT LOCATED WEST SIDE OF THE HOUSE

**DIRECTORY**  
PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS IF NOT IN THE SAME LOCATION (5 3/4" X 1 1/8").  
[NEC 690.56(B)]  
WHERE THE PV SYSTEMS ARE REMOTELY LOCATED FROM EACH OTHER, A DIRECTORY IN ACCORDANCE WITH 705.10 SHALL BE PROVIDED AT EACH PV SYSTEM DISCONNECTING MEANS. PV SYSTEM EQUIPMENT AND DISCONNECTING MEANS SHALL NOT BE INSTALLED IN BATHROOMS [NEC 690.4(D),(E)]

LABEL 1 - NEC 690.13(B)  
APPLY TO DISCONNECTING MEANS WHERE THE LINE AND LOAD TERMINALS MAY BE ENERGIZED IN THE OPEN POSITION

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

LABEL 2 - NEC 690.31(G)(4)  
APPLY TO EXPOSED RACEWAYS, CABLE TRAYS, OTHER WIRING METHODS, COVERS, ENCLOSURES OF PULL BOXES, AND J-BOXES. SPACING BETWEEN LABELS OR MARKINGS SHALL NOT BE MORE THAN 10FT APART.

**WARNING: PHOTOVOLTAIC POWER SOURCE**

LABEL 3 - NEC 690.56(C)(1)(a)  
APPLY TO LABEL ON OR NO MORE THAN 3FT FROM THE SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED AND SHALL INDICATE THE LOCATION OF ALL IDENTIFIED RAPID SHUTDOWN SWITCHES IF NOT AT THE SAME LOCATION

**SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN** 3/8 IN MIN. TEXT

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

3/16 IN MIN. TEXT

LABEL 4 - NEC 690.56(B) & NFPA 11.12.2.1.1.6  
APPLY TO RAPID SHUTDOWN SWITCH  
PV SYSTEM COMMENCES RAPID SHUTDOWN SEQUENCE UPON DISCONNECT FROM AC SOURCE - COMPLIES WITH NEC 690.12  
INITIATION DEVICE SHALL BE LOCATED AT A READILY ACCESSIBLE LOCATION OUTSIDE THE BUILDING(LABEL SHALL BE WITHIN 3FT OF SWITCH)

**RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM**  
3/8 IN MIN. TEXT

LABEL 5 - 690.53(IF APPLICABLE)  
APPLY TO DC DISCONNECT/INVERTER

**PHOTOVOLTAIC SYSTEM ! DC DISCONNECT !**  
MAX SYSTEM VOLTAGE: 480VDC  
MAX CIRCUIT CURRENT: 12A  
MAX OUT CURRENT(DC TO DC CONV.): 15A

LABEL 6 - NEC 690.54  
APPLY TO MAIN PV AC DISCONNECT

**PHOTOVOLTAIC SYSTEM ! AC DISCONNECT !**  
RATED AC OUTPUT CURRENT: 42 x 1.21A = 50.82A  
NOMINAL OPERATING VOLTAGE: 240VAC

LABEL 7 - NEC 705.12(B)(3)  
APPLY TO MSP

**! WARNING !**  
DUAL POWER SUPPLY SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

LABEL 8 - NEC 705.12(B)(2)(3)(b)  
APPLY TO BACK-FED BREAKER, IF APPLICABLE

**! WARNING !**  
POWER SOURCE OUTPUT CONNECTION: DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL 9 - NEC 705.12(B)(2)(3)(c)  
PROVIDE AT PV COMBINER OR MSP IF APPLICABLE

**! WARNING !**  
DEDICATED SOLAR PANEL DO NOT CONNECT ANY OTHER LOADS

LABEL 10 - NFPA 1, 11.12.2.1.5  
INSTALLER INFORMATION LOCATED ADJACENT TO THE MAIN DISCONNECT, INDICATING THE NAME AND EMERGENCY TELEPHONE NUMBER OF THE COMPANY

**IN CASE OF EMERGENCY CALL INSTALLATION COMPANY**

**Contractor Info**  
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**Project Type - Photovoltaic**

**Project Location:**  
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**Parcel Number: --  
Assessor Phone # --**

**PV SYSTEM SPECIFICATIONS**

1. PV MODULE: 42 x Aptos DNA-120-MF26-365W; 15.33kWdc
2. INVERTER: IQ8+-72-2-US
3. RACKING: Ecofasten Rock-it
4. ROOF TYPE:SHINGLE
5. AZIMUTH:90°
6. ROOF SLOPE:22.62°

**Sheet Number and Title:**  
PV04 - ELEVATION

**Sheet Size:**  
ANSI full bleed B (17.00 x 11.00 Inches)

**Drawing history**

no.	drawn by	revision	date
01	DCG	----	10/11/22

**Permit manager**  
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**Electrical Calculations - Photovoltaic System**

Project Details			Microinverter			PV Module			Branch Circuit Summary		
<b>Project Name</b> --			Model Number IQ8+-72-2-US			Model Number DNA-120-MF26 365			PV Combiner A		
<b>Project Location</b> --			Max input PV Power 440 Wdc			Nominal Output @ STC, Pmp 365 Wdc			# of Microinverters 42		
Module - 42	Aptos	DNA-120-MF26 365	DC Max Voltage 60			Open Circuit Voltage, Voc 40.7 Vdc			Max Continuous Load (A) 64		
Inverter - 42	Enphase	IQ8+-72-2-US	Nominal Output Current 1.21 A			Max Power Point, Vmp 33.96 Vdc			# of branch Circuits 4		
Utility - 240	Vac		Nominal Voltage 240 Vac			Short Circuit Current, Isc 11.37 A			Busbar Calculation = 200 * 120% 240		
DC Rating 15.33	kW		AC Max Output Power 245 Wac			Max Power Point Current, Imp 10.75 A			Sum of OCP supplying bus 264		
AC Rating 10.29	kW		Max Continuous output Power 290 Wac			VOC Temp Coeff -0.29 %/°C			705.12(D)(2) NOT Satisfied; Must utilize supply side connection		
Min. Ambient Temp, °C 0		32 °F	CEC Weighted Efficiency 97 %			Dimensions, LxWxH (in) 69.1 x 40.9 x 1.57					
Max. Ambient Temp, °C 35		95 °F	Max Units per 20A Branch Circuit 13			Weight 45.19 lbs					

Branch Circuit Sizing					
Inputs	Branch Circuit Combiner A				
# of Branch Circuits	A	B	C	D	
Individual Branch Circuits	4				
Microinverters per Branch Circuit	11	11	10	10	
Output current per string (A)	13.31	13.31	12.10	12.10	
125% of Output for min. OCP (A)	16.64	16.64	15.13	15.13	
Min. Breaker Size (A)	20	20	20	20	

**Contractor Info**

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**Project Type - Photovoltaic**

**Project Location:**

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Parcel Number: --  
Assessor Phone # --

**PV SYSTEM SPECIFICATIONS**

1. PV MODULE: 42 x Aptos DNA-120-MF26-365W; 15.33kWdc
2. INVERTER: IQ8+-72-2-US
3. RACKING: Ecofasten Rock-it
4. ROOF TYPE: SHINGLE
5. AZIMUTH: 90°
6. ROOF SLOPE: 22.62°

Sheet Number and Title:  
PV05 - LINE DIAGRAM

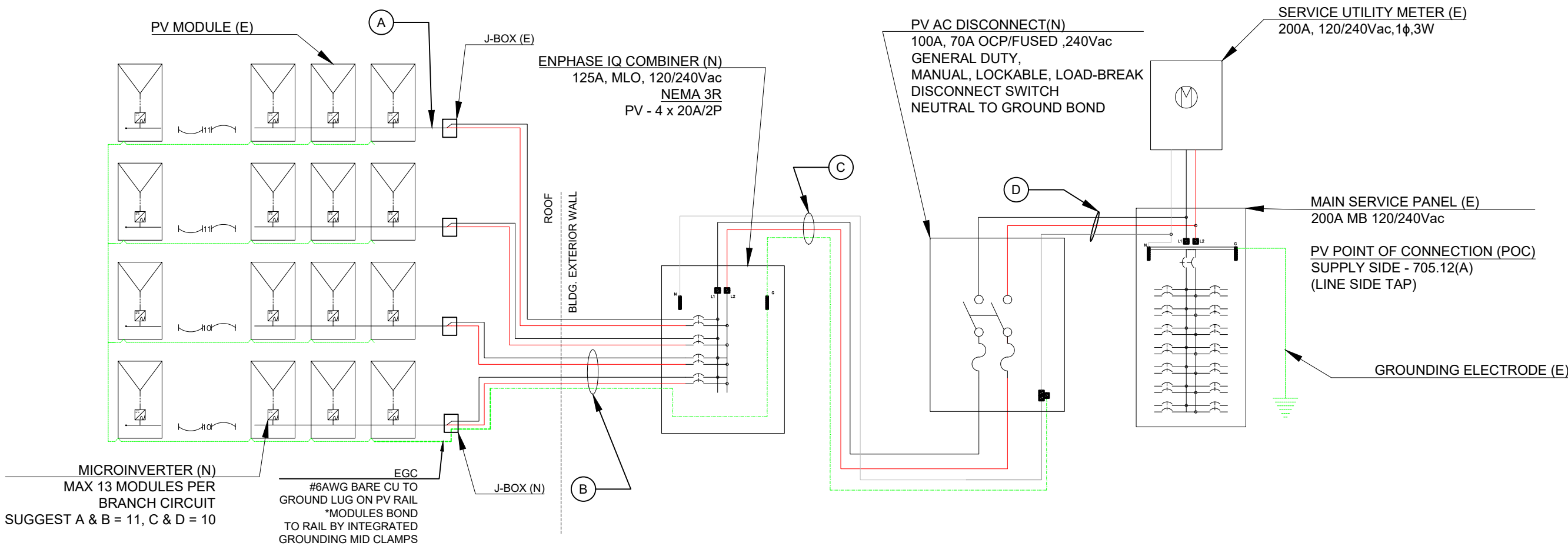
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**Drawing history**

no.	drawn by	revision	date
01	DCG	---	10/11/22

**Permit manager**

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**Conduit and Conductor Schedule**

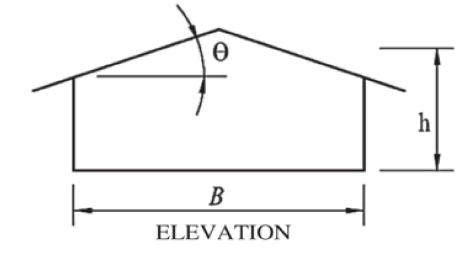
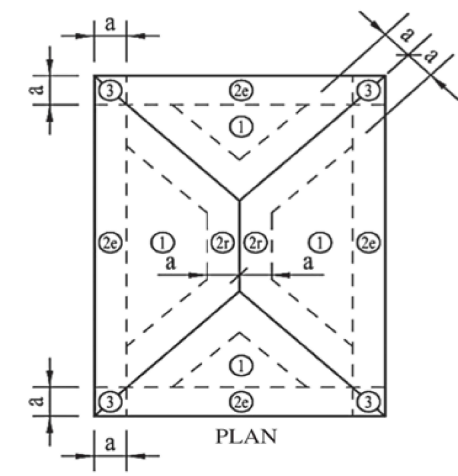
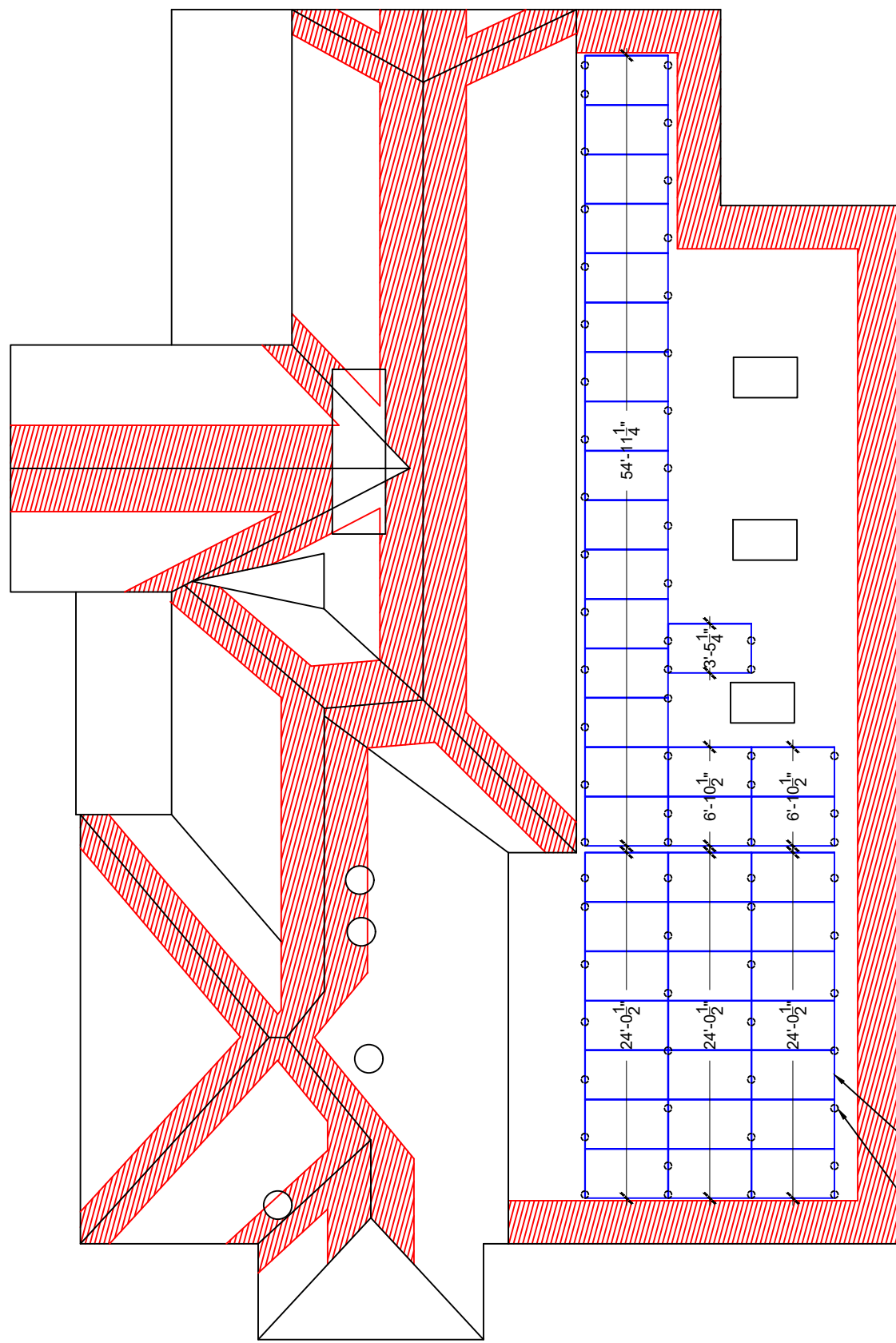
Tag	Description and Conductor Type	Min. Conductor Gauge	Number of Conductors	Typical Conduit Type	Min. Conduit Size	Max one way length (ft)
A	Enphase Q Cable	12AWG	(L <sub>1</sub> , L <sub>2</sub> ), (G)	FREE AIR	MFG CABLE	20
B	j-box to Combiner., THWN-2	12AWG	3 x (L <sub>1</sub> , L <sub>2</sub> ), G	*MC CABLE	MC	40
C	Combiner to Disco, THWN-2	6AWG	L <sub>1</sub> , L <sub>2</sub> , N, (#10 G)	PVC, EMT, or FMC	3/4"	5
D	Disco to POC, THWN-2	6AWG	L <sub>1</sub> , L <sub>2</sub> , N	PVC, EMT, or FMC	3/4"	5

Notes: LFMC or LFNC can be used as necessary, if "uses permitted" of the current version of the NEC are met. (G) can be #8AWG THWN-2  
For Conduit sizing refer to Chapter 9 Tables, NEC

NEC 690.45-46,  
Table 250.66, Table 250.122

**Conductor Sizing**

Inverter output CKT			Combiner output ckt		
Distance above roof	1/2 in.-3 1/2 in.	310.15(B)c	PV Combiner A		
Amb. Temp. Adder for Rooftops (°F)	40		Design temperature (°F)	94	
Design temperature (°F)	135		Max Ambient Temp. Range (°F)	87-95	310.15(B)(2)(a)
Adjusted Temp. Range for Roof	132-140	310.15(B)(2)(a)	Temp. Rating of Conductor	75°C	
Temp. Rating of Conductor	75°C		No. of Current Carrying Cond.	<4	310.15(B)(3)(a)
No. of Current Carrying Cond.	<4	310.15(B)(3)(a)	Max Continuous Load (A)	64	
Overcurrent Protection (A)	20	690.8(B)(1)(a)	Overcurrent Protection (A)	70	
125% of Output for Min. OCP(A)	16.6	690.8(A)	Amb. Temp Correction Factor	0.94	310.15(B)(2)(a)
Amb. Temp Correction Factor	0.58	310.15(B)(2)(a)	Raceway Fill Adjustment Factor	100%	310.15(B)(3)(a)
Raceway Fill Adjustment Factor	100%	310.15(B)(3)(a)	Wire Size (AWG or MCM)	6	310.15(B)(16)
Wire Size (AWG or MCM)	12	310.15(B)(16)	Allowable Ampacity (Amps)	65	
Allowable Ampacity (Amps)	25		Adjusted Ampacity (Amps)	61	65*0.94*1=61.1
Adjusted Ampacity (Amps)	15	25*0.58*1=14.5			



I CERTIFY THAT THE SHEATHING AND FRAMING OF THIS STRUCTURE WILL SAFELY ACCOMMODATE CALCULATED WIND UPLIFT AND LATERAL FORCES AND EQUIPMENT DEAD LOADS. THIS IS ATTESTED TO BE MY SIGNATURE AND SEAL ON THIS DRAWING AT THE LOWER RIGHT BOTTOM.

- MATERIALS**
- a. MAX ALLOWABLE SPACING BETWEEN ATTACH POINTS: 4FT
  - b. MIN. NUMBER OF ATTACHMENT POINTS: 67
  - c. MID CLAMPS: 82
  - d. ENDS: 28
  - e. GROUND LUGS: 07

**Contractor Info**  
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**Project Type - Photovoltaic**

**Project Location:**  
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**Parcel Number:**  
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**Assessor Phone # --**

- PV SYSTEM SPECIFICATIONS**
1. PV MODULE: 42 x Aptos DNA-120-MF26-365W; 15.33kWdc
  2. INVERTER: IQ8+72-2-US
  3. RACKING: Ecofasten Rock-it
  4. ROOF TYPE: SHINGLE
  5. AZIMUTH: 90°
  6. ROOF SLOPE: 22.62°

**Sheet Number and Title:**  
 PV06 - S\_PV SITE LAYOUT

**Sheet Size:**  
 ANSI full bleed B (17.00 x 11.00 Inches)

**Drawing history**

no.	drawn by	revision	date
01	DCG	---	10/11/22

**Permit manager**  
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**TABLE 1**

ASCE 7-16 CHAPTER 29 WIND LOADS - Rooftop Solar Panels Minimum Design Loads - Part 1: Enclosed(Gable,Hip,Flat h<60ft, 0°<θ<45°)

**Wind Load Parameters - Inputs**

Risk Category	II	Table 1.5-1
Basic Wind Speed (Ult)	150 mph	Figure 26.5-1B
Roof Angle	21° to 27°	
Roof Type	Hip	
Exposure Cat.	B,C, or D	Section 26.7
Mean Roof Height	h = 15.00 ft	
Roof attachment	5/16" x 4.75" Lag Screw	
Rafter/Truss Spacing	24 in O.C.	
No. of Rails	0	
No. of Modules - Portrait	42	
No. of Modules - Landscape	0	
Module Model Number	DNA-120-MF26 365	
bldg. least horizontal dim (typ.)	360 in	
Elevation	<1000 ft	
Est. # of attachment points	67	

**PV Dead Load**

**Module and Racking Specs**

# of Modules	42	Dimensions, LxWxH (in)	69.1 x 40.9 x 1.57
Module	W <sub>mod</sub> = 45 lbs	Width	3.50 ft
Array	W <sub>mods</sub> = 1898 lbs	Length	5.90 ft
Micro/optimizer	W <sub>mic</sub> = 168 lbs	Module Area	20.65 ft <sup>2</sup>
PV Rail	W <sub>PV rail</sub> = 0 lbs	Dead Load - Rail, Clamps, Mounts	1 lb/ft
Total Weight	W <sub>total</sub> = 2066 lbs	Total Rail Length	0 ft
Total Area	A <sub>T</sub> = 867.30 ft <sup>2</sup>	<b>Module load ratings</b>	
Dead Load	D <sub>PV</sub> = 2.73 psf	Load Rating - Snow(psf)	Ultimate Allowable
Weight/attachment	35.4 lbs	Load Rating - Wind(psf)	-113.4 -75.6

**PV Attachment - Results**

Roof Zones - Hip 21° to 27°

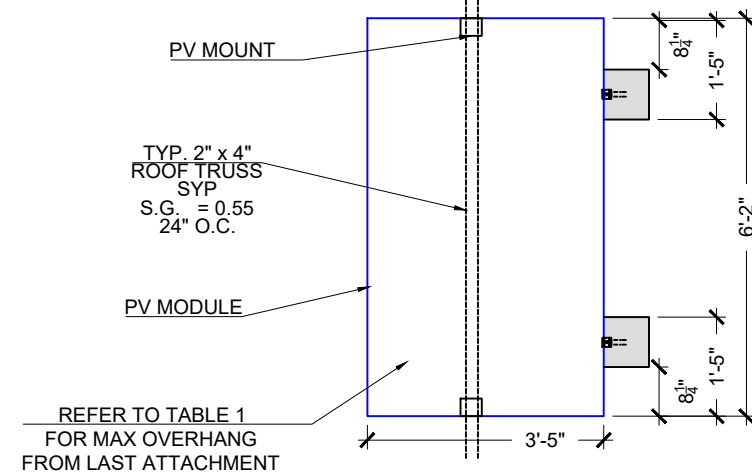
	1	2e	2r	3	
GC <sub>p</sub> - Uplift	-1.3	-1.8	-1.8	-1.8	
GC <sub>p</sub> - Down	0.7	0.7	0.7	0.7	
p = q <sub>s</sub> (GC <sub>p</sub> )(γ <sub>E</sub> )(γ <sub>a</sub> )	-30.1	-42.7	-42.7	-42.7	psf 29.4-7
p = q <sub>s</sub> (GC <sub>p</sub> )(γ <sub>E</sub> )(γ <sub>a</sub> )	17.7	17.7	17.7	17.7	psf 29.4-7
Max Allowable Span					ft *notes
Max Cantilever (in)					Max span * 33% (in)

**Notes**

- Eq.1 Point Load = Roof Zone psf \* TA
- Eq.2 TA = (Module Length / 2) \* Max Span
- Eq.3 \*Max span Equation, SF = Allowable pullout / Point Load
- Eq.4 Max Span = Allowable Pullout / (SF \* Roof Zone psf \* L/2)
- a) The Max span between attachment points must not exceed the rail spans provided by racking manufacture.
- b) Allowable Module load ratings are determined by SF = 1.5

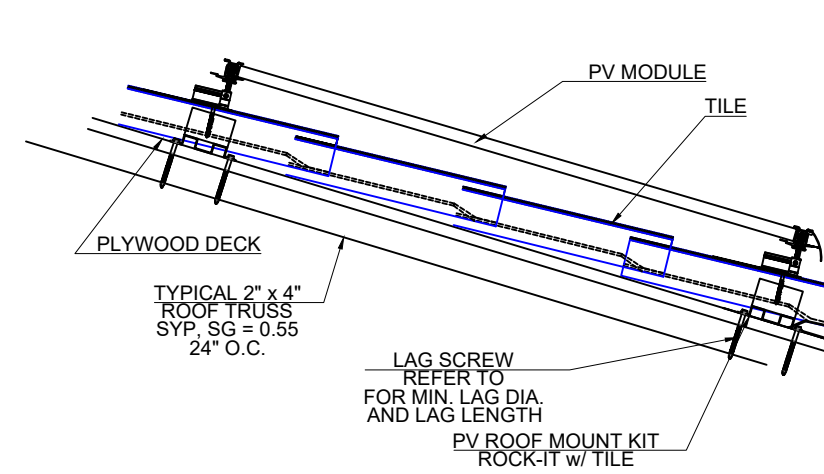
**Wind Load Parameters**

Wind Speed (asd)	116	mph	FRC R301.2.1.3
Effective Wind Area	20.65	ft <sup>2</sup>	26.20
Wind Directionality	K <sub>d</sub> = 0.85		Table 26.6-1
Topographic factor	K <sub>zt</sub> = 1.00		26.8 or 26.8.2
Ground Elevation Factor	K <sub>e</sub> = 1.00		Table 26.9-1
Velocity Exposure Coefficient	K <sub>z</sub> = 0.85		Table 26.10-1
Array Edge Factor	γ <sub>E</sub> = 1.50		29.4.4 *Modules are considered Exposed
Solar Panel Equalization Factor	γ <sub>a</sub> = 0.67		Fig. 29.4-8
Velocity Pressure	q <sub>h</sub> = 24.97	psf	q <sub>h</sub> = 0.00256 K <sub>z</sub> K <sub>zt</sub> K <sub>d</sub> K <sub>e</sub> V <sup>2</sup>
Added Safety Factor	1.2		
Allowable Pullout per mount	859.2	lbs	
0.4h or 0.6h	6.00	ft	Flat - 0.6h, Gable, Hip - 0.4h
10% of least horizontal dim	3.00	ft	10% of least hor. Dim. Or 0.4h, whichever is smaller, but not less than either 4% of Least hor. Or 3ft. (flat roof - 0.6h)
Roof Zone Set Back	a = 3.00	ft	
h <sub>2</sub>	5	in	Not > 10in(panel height above roof)
2h <sub>2</sub>	10	in	*min distance array shall be from the roof edge, Gable Ridge, or hip ridge
	0.25	in	min gap between all panels but not > 6.7ft
d1	1.00	ft	Horizontal distance orthogonal to panel edge
d2	0.25	ft	Horizontal distance from edge of one panel to the nearest edge in the next row
0.5h	7.50	ft	*modules are considered exposed that are within 1.5Lp from roof edge



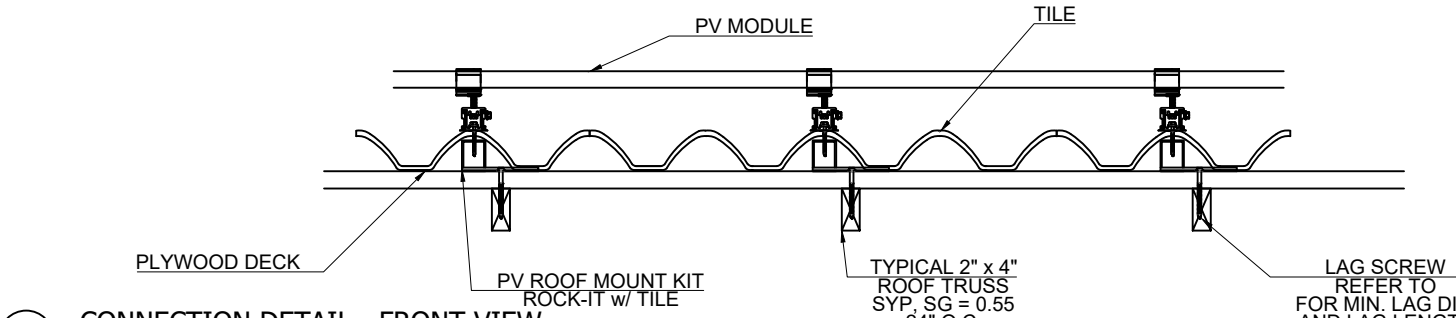
**A ALLOW. CLAMPING AREA - TOP DOWN**

Scale: 3/8" = 1'-0"



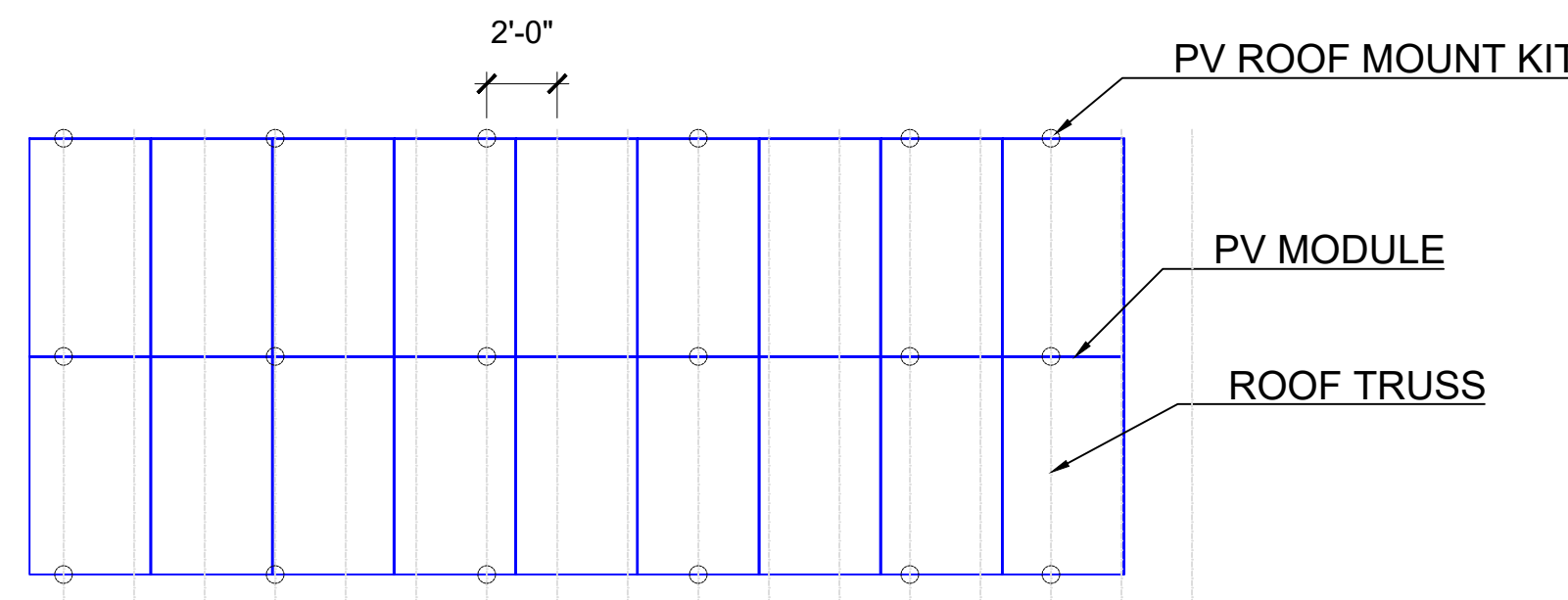
**B CONNECTION DETAIL - SIDE VIEW**

Scale: 1:16



**C CONNECTION DETAIL - FRONT VIEW**

Scale: 3/4" = 1'



**D MODULE ATTACHMENT PLAN W/ RAIL LENGTHS**

Scale: 3/16" = 1'-0"

**Contractor Info**

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**Project Type - Photovoltaic**

**Project Location:**

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Parcel Number: --  
Assessor Phone # --

**PV SYSTEM SPECIFICATIONS**

1. PV MODULE: 42 x Aptos DNA-120-MF26-365W; 15.33kWdc
2. INVERTER: IQ8+72-2-US
3. RACKING: Ecofasten Rock-it
4. ROOF TYPE: SHINGLE
5. AZIMUTH: 90°
6. ROOF SLOPE: 22.62°

**Sheet Number and Title:**

PV07 - PV ATTACH PLAN

**Sheet Size:**

ANSI full bleed B (17.00 x 11.00 Inches)

**Drawing history**

no.	drawn by	revision	date
01	DCG	---	10/11/22


**Permit manager**


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Residential | Commercial

### Designed & Engineered in Silicon Valley 370W | 365W | 360W

Our DNA™ Split Cell Series impressively combines advanced solar technologies to maximize performance. Our patented Dual Nano Absorber (DNA™) Technology allows the panel to operate at high-efficiencies in extreme temperatures. Contact our sales team today to learn more about our line of high-efficiency solar panels.

 Patented DNA™ technology boosts power performance & module efficiency

 Advanced split cell technology with 9 ultra-thin busbars allows for less resistance and more photon capture

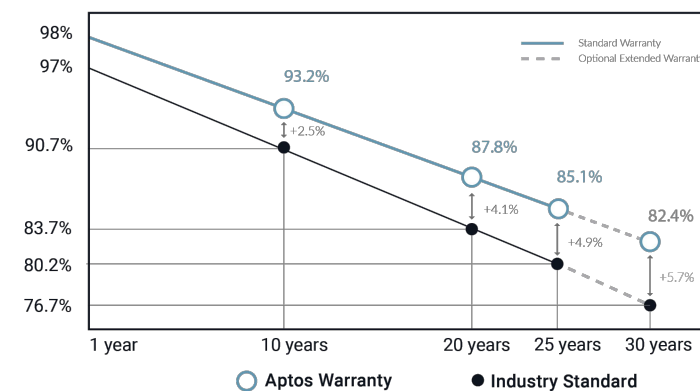
 Ideal solution for applications affected by shading

 All-black design for pristine aesthetics  
No excessive silver bussing or ribbons

 Robust product design is resilient in extreme weather. Up to 5400 Pa snow load and 210 mph wind speeds



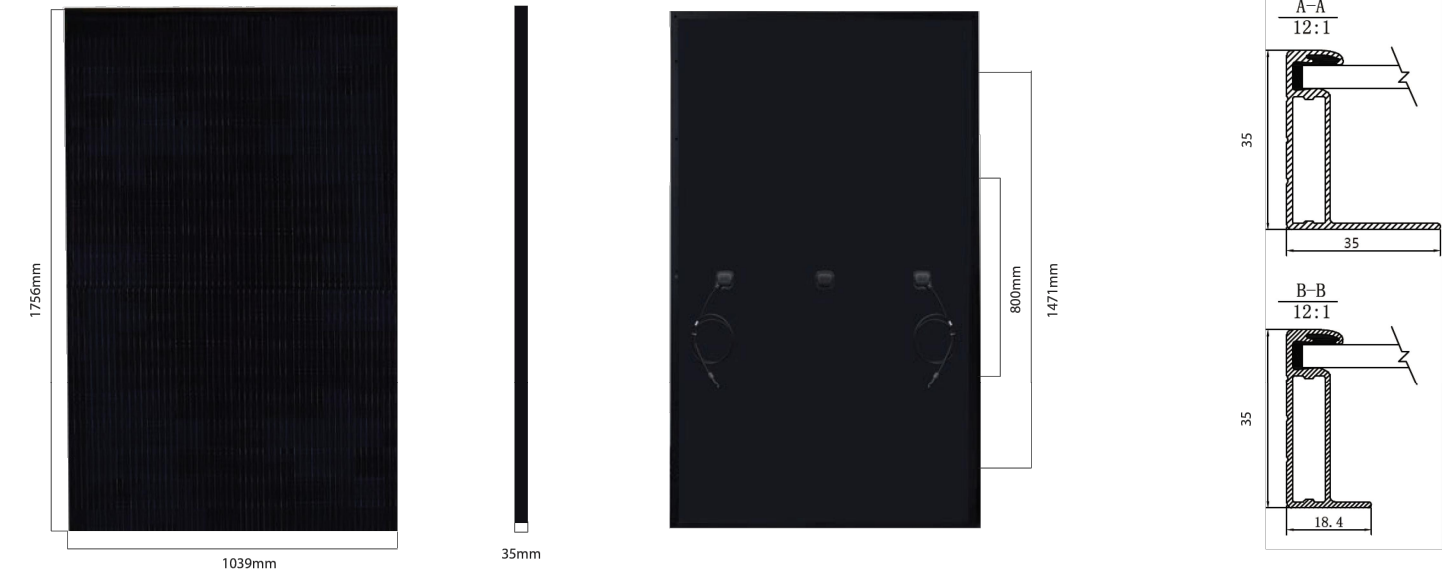
#### Linear Performance Warranty



30 Year Warranty | 3X IEC Standards | RETC Top Performer



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



Electrical Specifications	DNA-120-MF26-360W	DNA-120-MF26-365W	DNA-120-MF26-370W
STC Rated Output P <sub>mpp</sub> (W)	360W	365W	370W
Module Efficiency	19.73%	20.01%	20.29%
Open Circuit Voltage V <sub>VOC</sub> (V)	40.6	40.7	40.8
Short Circuit Current I <sub>SC</sub> (A)	11.24	11.36	11.51
Rated Voltage V <sub>mpp</sub> (V)	33.8	33.96	34.06
Rated Voltage I <sub>mpp</sub> (A)	10.66	10.75	10.87

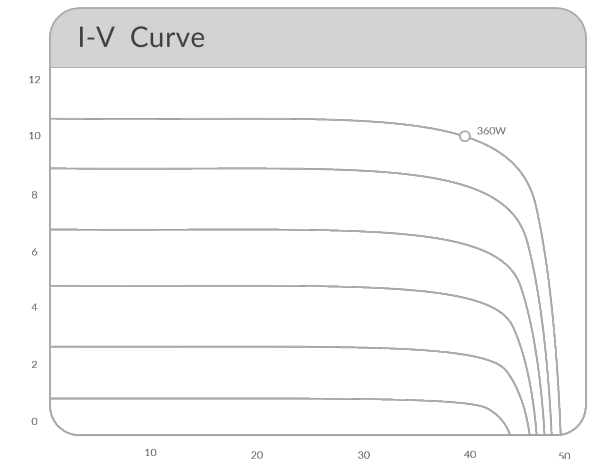
Standard Test Conditions for front-face of panel: 1000 W/m<sup>2</sup>, 25°C, measurement uncertainty <3%

Temperature Coefficients	
Temperature Coefficients P <sub>mpp</sub>	-0.36%
Temperature Coefficients I <sub>sc</sub>	+0.05%/°C
Temperature Coefficients V <sub>oc</sub>	-0.29%/°C
Normal Operating Cell Temperature (NOCT)	44°C

Test Operating Conditions	
Maximum Series Fuse	20A
Maximum System Voltage	1,000 VDC (UL&IEC)
Maximum Load Capacity (Per UL 1703)	5400 PA Snow Load / 210mph Wind Rating
Fire Performance Class	Class C/Type 1

Packaging Configuration	
Number of Modules per Pallet	30
Number of Pallets per 40ft. Container	26
Pallet Dimensions	1770 X 1090 X 2365
Pallet Weight (kg)	640
Container Weight (kg)	16640

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	1756 X 1039 X 35mm
Output Cable	4mm <sup>2</sup> (EU)12AWG,39.37in.(1200mm)
Weight	45.19lbs.(20.5kg)
Cable Length	1200mm
Encapsulant	POE



Certifications
Intertek, CE, State of California Energy Commission
UL61730-1, UL61730-2







## IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.



IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.



IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

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IQ8SP-DS-0002-01-EN-US-2021-10-19

### Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

### High productivity and reliability

- Produce power even when the grid is down
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

### Microgrid-forming

- Complies with the latest advanced grid support
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

## IQ8 and IQ8+ Microinverters

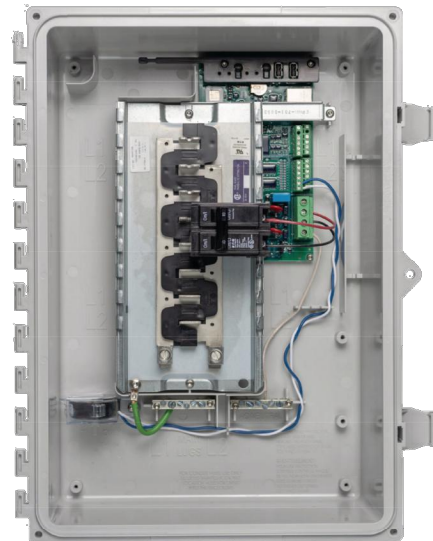
INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings <sup>1</sup>	W	235 - 350	235 - 440
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell and 72-cell/144 half-cell
MPPT voltage range	V	27 - 37	29 - 45
Operating range	V	25 - 48	25 - 58
Min/max start voltage	V	30 / 48	30 / 58
Max input DC voltage	V	50	60
Max DC current <sup>2</sup> [module Isc]	A		15
Overtoltage class DC port			II
DC port backfeed current	mA		0
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range <sup>3</sup>	V	240 / 211 - 264	
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	50 - 68	
Max units per 20 A (L-L) branch circuit <sup>4</sup>		16	13
Total harmonic distortion		<5%	
Overtoltage class AC port		III	
AC port backfeed current	mA	30	
Power factor setting		1.0	
Grid-tied power factor (adjustable)		0.85 leading - 0.85 lagging	
Peak efficiency	%	97.5	97.6
CEC weighted efficiency	%	97	97
Night-time power consumption	mW	60	
MECHANICAL DATA			
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)	
Relative humidity range		4% to 100% (condensing)	
DC Connector type		MC4	
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight		1.08 kg (2.38 lbs)	
Cooling		Natural convection - no fans	
Approved for wet locations		Yes	
Acoustic noise at 1 m		<60 dBA	
Pollution degree		PD3	
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating		NEMA Type 6 / outdoor	
COMPLIANCE			
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01	
		This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.	

(1) No enforced DC/AC ratio. See the compatibility calculator at <https://link.enphase.com/module-compatibility> (2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-DS-0002-01-EN-US-2021-10-19

## Enphase IQ Combiner 3 (X-IQ-AM1-240-3)

The **Enphase IQ Combiner 3™** with Enphase IQ Envoy™ consolidates interconnection equipment into a single enclosure and streamlines PV and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.



### Smart

- Includes IQ Envoy for communication and control
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and optional consumption monitoring

### Simple

- Reduced size from previous combiner
- Centered mounting brackets support single stud mounting
- Supports back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80 A total PV or storage branch circuits

### Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year warranty
- UL listed



To learn more about Enphase offerings, visit [enphase.com](http://enphase.com)



## Enphase IQ Combiner 3

MODEL NUMBER	
IQ Combiner 3 X-IQ-AM1-240-3	IQ Combiner 3 with Enphase IQ Envoy™ printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional* consumption monitoring (+/- 2.5%).
ACCESSORIES and REPLACEMENT PARTS (not included, order separately)	
Enphase Mobile Connect™ CELLMODEM-03 (4G / 12-year data plan) CELLMODEM-01 (3G / 5-year data plan) CELLMODEM-M1 (4G based LTE-M / 5-year data plan)	Plug and play industrial grade cellular modem with data plan for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.)
Consumption Monitoring* CT CT-200-SPLIT	Split core current transformers enable whole home consumption metering (+/- 2.5%).
Circuit Breakers BRK-10A-2-240 BRK-15A-2-240 BRK-20A-2P-240	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220
EPLC-01	Power line carrier (communication bridge pair), quantity 2
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 3 (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Envoy printed circuit board (PCB) for Combiner 3
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating (output to grid)	65 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. continuous current rating (input from PV)	64 A
Max. total branch circuit breaker rating (input)	80A of distributed generation / 90A with IQ Envoy breaker included
Production Metering CT	200 A solid core pre-installed and wired to IQ Envoy
MECHANICAL DATA	
Dimensions (WxHxD)	49.5 x 37.5 x 16.8 cm (19.5" x 14.75" x 6.63"). Height is 21.06" (53.5 cm with mounting brackets).
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	<ul style="list-style-type: none"> <li>• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors</li> <li>• 60 A breaker branch input: 4 to 1/0 AWG copper conductors</li> <li>• Main lug combined output: 10 to 2/0 AWG copper conductors</li> <li>• Neutral and ground: 14 to 1/0 copper conductors</li> </ul> Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
Cellular	Optional, CELLMODEM-01 (3G) or CELLMODEM-03 (4G) or CELLMODEM-M1 (4G based LTE-M) (not included)
COMPLIANCE	
Compliance, Combiner	UL 1741 CAN/CSA C22.2 No. 107.1 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production)
Compliance, IQ Envoy	UL 60601-1/CAN/CSA 22.2 No. 61010-1

\* Consumption monitoring is required for Enphase Storage Systems.

To learn more about Enphase offerings, visit [enphase.com](http://enphase.com)

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2018-09-13





# ROCKIT

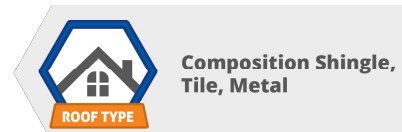
## COMPLETE RAIL-LESS RACKING SYSTEM

The RockIt system is the industry's premier rail-less PV racking system for composition shingle, tile, and metal roofs. Designed in conjunction with the needs of installers, RockIt quickly & easily installs with a single tool. Featuring an easy-to-position alignment slide and a top-down leveling system, RockIt is logistically intelligent with no need to ship or transport long rails. Components are available in a black finish that complements both commercial and residential applications. Conforms to UL 2703.

### FEATURES & BENEFITS

- Patented watertight technology
- Fully integrated bonding
- Top-down leveling system
- North-South adjustability
- Single tool install

## STREAMLINED INSTALLATION WITH MINIMAL ROOF PENETRATIONS



## ROCKIT

### COUPLING

The fast installing RockIt Coupling easily attaches to the module frame to bridge the gaps between modules.

### SKIRT

The sleek black Skirt installs first and acts as an alignment guide for the entire array. The Skirt End Cap does double duty as a skirt coupling device and an aesthetically-pleasing finishing touch.

### ROCKIT MOUNT

Featuring integrated bonding pins, the RockIt Mount connects to the Slide and can easily be positioned for fast installation. Features top-down leveling.



### ROCKIT SLIDE

Available in three variations, the RockIt Slide allows installation on composition shingle, tile, and metal roofs.

### FRAME MLPE MOUNT

Attaches and fully bonds MLPE's (Module Level Power Electronics) to the module frame with a single bolt clip.

