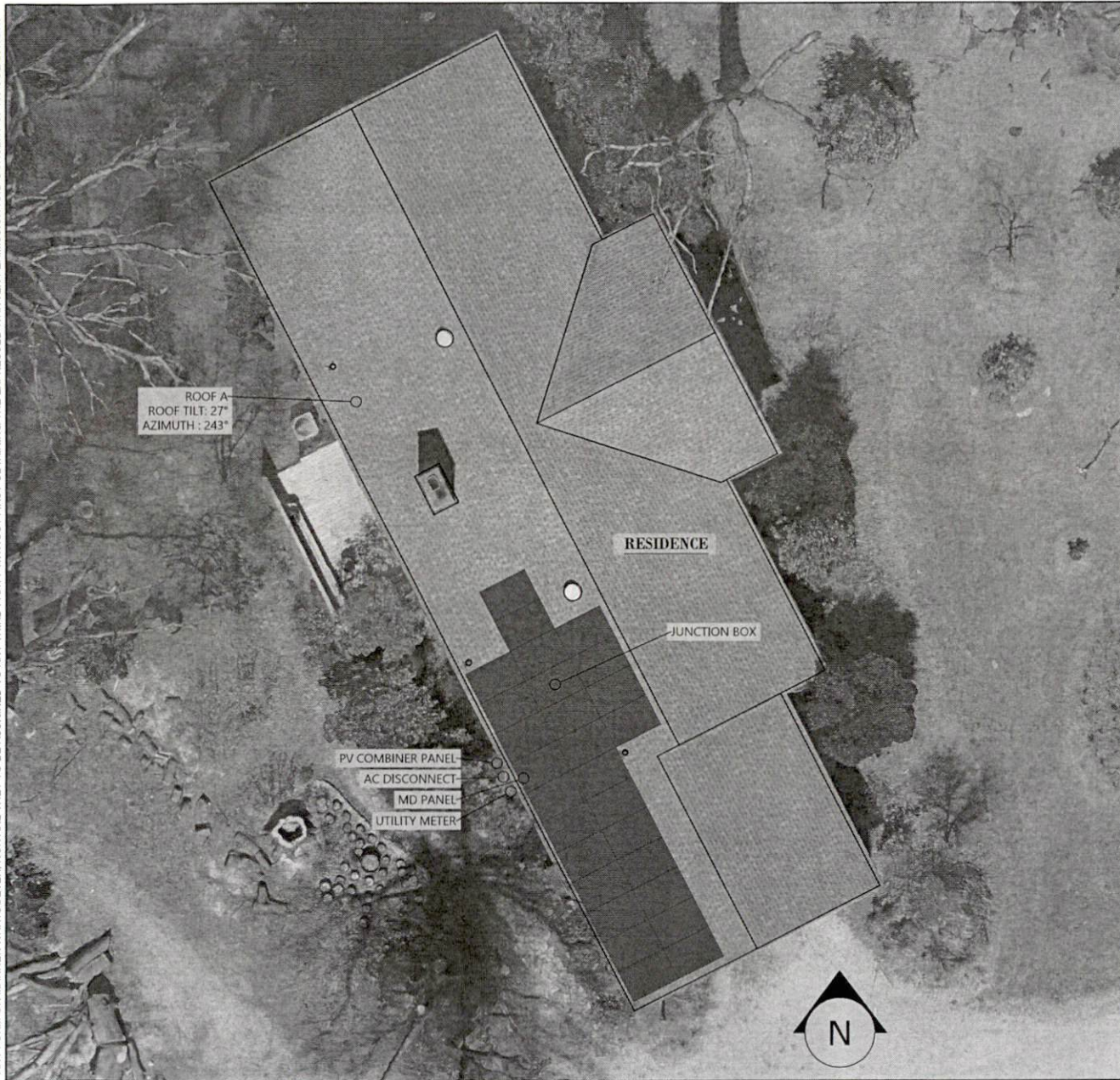


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PV MATERIAL SUMMARY: DISTRIBUTOR

FAM365E7C-BR	28
IQ7PLUS-72-2-US	28
Q-12-10-240	32
Q-SEAL-10	4
Q-TERM-10	3
XR-10-168B	4
XR-10-204B	9
XRT0-BOSS-01-M1	8
UFO-CL-01-B1	62
UFO-STP-35MM-B1	12
XR-LUG-03-A1	3
4 IN QB1	54
MI-BHW	28
GC66803 Geocel Sealant	4
SOLADECK 0799-5B	1
HEYCO S6468 EDGE SCREEN 8" X 100'	2
HEYCO S6438 EDGE SCREEN CLIPS (10)	13

NC  
SOLAR  
NOW



CLIENT INFO

RANDALL L HAMILTON JR  
808 MIDDLE ROAD  
DUNN, NC 28114

PROJECT INFO

DC INPUT: 10,220 kW  
AC EXPORT: 8,120 kW  
DOWNSPT METHOD: OPTION 2

CODE REFERENCES

NATION ELECTRICAL CODE v. 2017  
NC FIRE PROTECTION CODE v. 2018  
NC BUILDING CODE v. 2018  
NC RESIDENTIAL CODE v. 2018  
ACSE v. 7-10

SITE CONDITIONS

WIND SPEED: 119 MPH  
RISK CATEGORY: II  
EXPOSURE: B  
SNOW: 10 PSF

SHEET INDEX

PV-1 COVER SHEET  
PV-2 PV STRUCTURAL  
PV-3 PV ELECTRICAL  
PV-4 PV EQUIPMENT LABELS  
PV-5 PV INSTALL GUIDE

DESIGNER INFO

DESIGNER: CRM  
ENGINEER: AWK  
DATE: 1/28/2022  
VERSION: P1

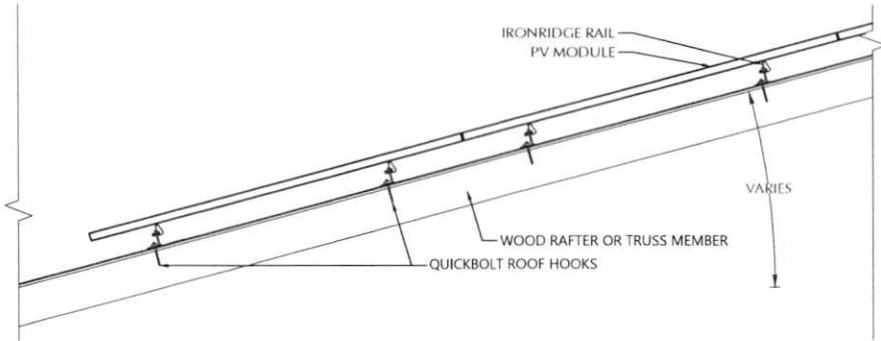
PV SYSTEM COVER  
PAGE

PV-1.1





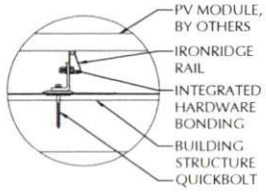
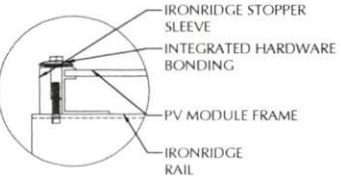
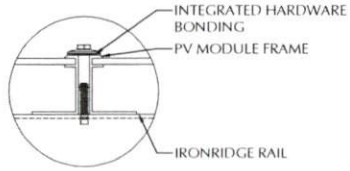
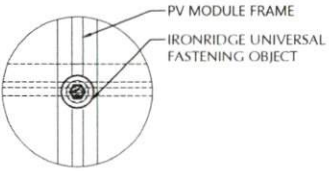
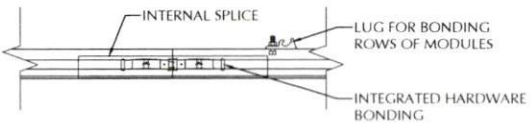
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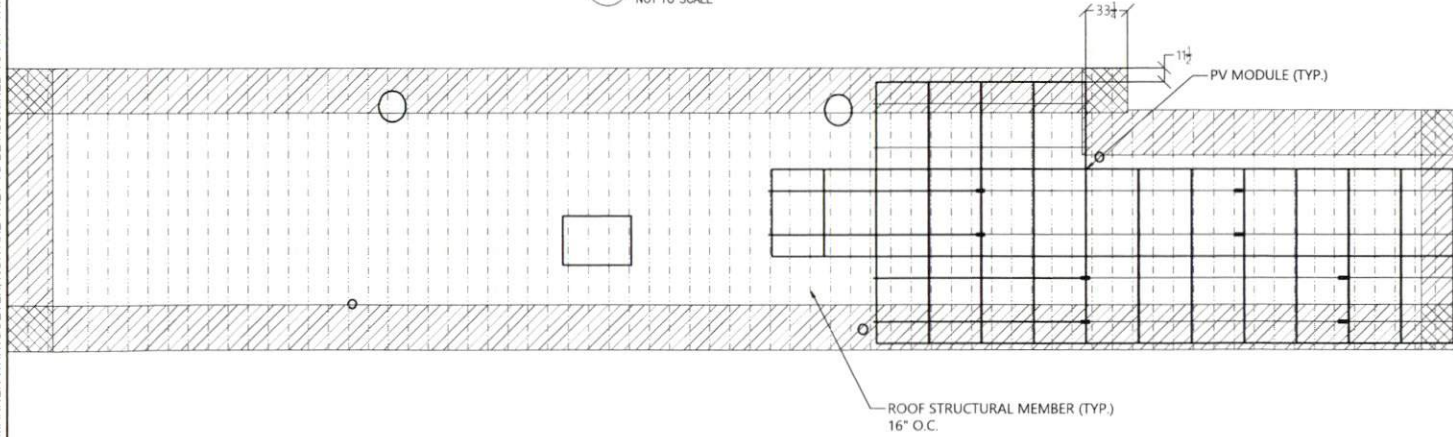
**STATEMENT OF STRUCTURAL COMPLIANCE**

THE EXISTING ROOF STRUCTURE HAS BEEN DESIGNED TO SUPPORT THE ADDITIONAL LOADS OF THE PROPOSED PV SYSTEM. IN ADDITION, THE RACKING AND FASTENING SYSTEM SHALL BE CAPABLE OF SECURING THE SYSTEM TO THE STRUCTURE UNDER DESIGN CONDITIONS WHEN INSTALLED PROPERLY AND IN ACCORDANCE WITH THE RACKING AND FASTENING ARRANGEMENT DETAILED WITHIN THESE DRAWINGS.

NAME: ANDREW W. KING, PE  
 SIGNED: *Andrew W. King*



**1** ROOF FASTENER DETAIL  
NOT TO SCALE



**2** ROOF ARRAY LAYOUT  
1/8" = 1'-0"

PV MODULES	
MAKE	URICO
MODEL	FAM365E7G-BB
WIDTH	41.26 IN
LENGTH	69.37 IN
THICKNESS	15 MM
WEIGHT	43.21 LBS
ARRAY AREA	357 SQFT
ARRAY WEIGHT	1391 LBS

ROOF SUMMARY	
STRUCTURE	TRUSSES
TYPE	SOUTHERN PINE #2
MATERIAL	2 X 4
SIZE	16 IN O.C.
SPACING	88 IN
ALLOWABLE SPAN	4/12
PITCH	30 LBS./CU.FT
DENSITY	COMPOSITE
DECKING	PLYWOOD
TYPE	COMPOSITE
MATERIAL	8/16 IN
THICKNESS	1.42 LBS/SQFT
WEIGHT	ASPHALT SHINGLE
ROOFING	ASPHALT
TYPE	2.30 LBS./SQFT
MATERIAL	
WEIGHT	

ROOF MOUNT SUMMARY		
MAXIMUM (IN)	MOUNT SPACING	RAIL OVERHANG
WIND ZONE 1	64 IN	19 IN
WIND ZONE 2	48 IN	19 IN
WIND ZONE 3	48 IN	19 IN

ROOF LOADING	
GROUND SNOW LOAD:	15.1 LBS./SQFT
DEAD LOAD:	20 LBS./SQFT
TRAD LOAD:	
ROOFING:	3.9 LBS./SQFT
PV ARRAY:	2.5 LBS./SQFT
TOTAL:	6.4 LBS./SQFT
WIND LOAD:	
UPLIFT ZONE 1	-24.6 LBS./SQFT
UPLIFT ZONE 2	-29.0 LBS./SQFT
UPLIFT ZONE 3	-29.0 LBS./SQFT
DOWNWARD:	23.0 LBS./SQFT
FASTENER LOAD:	
UPLIFT ZONE 1	-376 LBS.
UPLIFT ZONE 2	-333 LBS.
UPLIFT ZONE 3	-333 LBS.
DOWNWARD:	352 LBS.

ROOF MOUNT & FASTENER	
ROOF MOUNT:	
MAKE	QUICKBOLT
MODEL	4 IN QB1
MATERIAL	STAINLESS / EPDM
FASTENER:	
MAKE	QUICK SCREWS
MODEL	HANGER BOLT
MATERIAL	301 SS
SIZE	5/16-18 X 5-1/4"
GENERAL:	
WEIGHT	0.56 LBS.
FASTENERS PER MOUNT	1
MAX. PULL-OUT FORCE	960.0 LBS.
SAFETY FACTOR	2
DESIGN PULL-OUT FORCE	480.0 LBS.

MOUNTING RAILS	
MAKE	IRONRIDGE
MODEL	ART0
MATERIAL	ALUMINUM
WEIGHT	0.425 LBS/IN
SPACING	35 IN

**NC SOLAR NOW**



**CLIENT INFO**  
 RANDALL L HAMILTON JR  
 808 MIDDL ROAD  
 DUNN, NC 28314

**PROJECT INFO**  
 DC INPUT: 10.220 kW  
 AC EXPORT: 8.120 kW  
 DC INSP. METHOD: OPTION 2

**CODE REFERENCES**  
 NATION ELECTRICAL CODE v. 2017  
 NC FIRE PROTECTION CODE v. 2018  
 NC BUILDING CODE v. 2018  
 NC RESIDENTIAL CODE v. 2018  
 ACSE v. 7-10

**SITE CONDITIONS**  
 WIND SPEED: 119 MPH  
 RISK CATEGORY: B  
 EXPOSURE: B  
 SNOW: 10 PSI

**SHEET INDEX**  
 PV-1 COVER SHEET  
 PV-2 PV STRUCTURAL  
 PV-3 PV ELECTRICAL  
 PV-4 PV EQUIPMENT LABELS  
 PV-5 PV INSTALL GUIDE

**DESIGNER INFO**  
 DESIGNER: CRM  
 ENGINEER: AWK  
 DATE: 3/28/2022  
 VERSION: P1

**PV SYSTEM STRUCTURAL**

**PV-2.1**

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CONDUCTOR SCHEDULE										
TAG	CURRENT CARRYING CONDUCTORS			GROUNDING CONDUCTORS			CONDUIT/RACEWAY			NOTES
	QTY.	SIZE	INSULATION	QTY.	SIZE	INSULATION	QTY.	SIZE	LOCATION	
C1	6	10 AWG	DC CABLE	1	6 AWG	BARE	-	-	FREE AIR	1
C2	6	10 AWG	THWN	1	10 AWG	THWN	1	3/4"	EXT/INT	2,4
C3	3	8 AWG	THWN	1	10 AWG	THWN	1	3/4"	EXTERIOR	2,4
C4	3	6 AWG	THWN	-	-	-	-	-	EXT/INT	2,4
XC	-	-	-	-	-	-	-	-	-	3

PV MODULE	
MAKE	URECO
MODEL	EAM365L7G-BB
NOM. POWER (PNOM)	365 WATTS
NOM. VOLT. (VNMP)	34.2 VOLTS
O.C. VOLT. (VOC)	40.7 VOLTS
MAX. SYS. VOLT	1000 VOLTS
NOM. CURR. (IMPP)	10.7 AMPS
S.C. CURR. (ISC)	11.4 AMPS
TEMP. COEF. (PMPP)	-0.35 %/C
TEMP. COEF. (VOC)	-0.27 %/C
MAX. SERIES FUSE	20 AMPS
UL LIST. (VNI)	YES

PV COMBINER PANEL	
MAKE	ENPHASE
MODEL	X-1Q-AM1-240-4
INPUT:	
MAX BRANCH CIRCUITS	4 TOTAL
BRANCH CIRCUIT (OCPP)	50 AMPS
OUTPUT:	
MAX POWER	15000 WATTS
NOM. VOLTAGE	240 VOLTS
BUS RATING	125 AMPS
MAIN BREAKER (YN)	NO
ENCL. RATING	NEMA TYPE 3R
UL LIST. (VNI)	YES

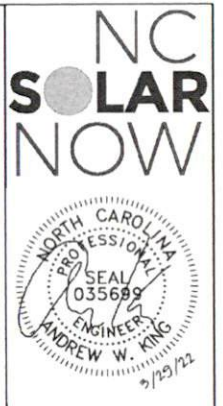
DC / AC INVERTER	
MAKE	ENPHASE
MODEL	IQ7P11S-72-24US
DC INPUT:	
POWER RANGE (WATTS)	235-440
MIN/MAX START VOLT	22/60
OPERATING VOLT. RANGE	14-60
MAX. CURRENT	15 AMPS
MODULE COMPATIBILITY	60 & 72 CELL
AC OUTPUT:	
MAX. POWER	295 WATTS
NOM. POWER	290 WATTS
NOM. VOLT	211-240-264
MAX. CURR.	1.21 AMPS
DC DISC. (VNI)	NO
RAPID SHUTDOWN (VNI)	YES
PROTECT. RATING	NEMA TYPE 6
UL LIST. (VNI)	YES
MAX BRANCH CIRCUIT	13

JUNCTION BOX	
MAKE	SOLADECK
PROTECT. RATING	NEMA TYPE 3R
UL LIST. (VNI)	YES

MD PANEL (EXISTING)	
MAKE	SQUARE D
MODEL	QOC40U
ENCL. RATING	NEMA TYPE 1
VOLT. RATING	240
BUS RATING	200 AMPS
UL LIST. (VNI)	YES
MAIN BREAKER (VNI)	YES
MAIN BREAKER RATING	200 AMPS

AC DISCONNECT	
MAKE	GENERIC
MODEL	NA
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
AMP RATING	60 AMPS
UL LIST. (VNI)	YES
FUSED (VNI)	YES
FUSE RATING	45 AMPS

- BACK-FEED SOLAR OUTPUT VIA SUPPLY SIDE TAP INSIDE OF MD PANEL
- MAIN BREAKER SERVES AS SERVICE DISCONNECT
- LOAD-BREAK RATED
- VISIBLE OPEN
- LOCKABLE IN OPEN POSITION
- INSTALL ADJACENT TO METER
- DISCONNECT TO BE READILY ACCESSIBLE TO UTILITY COMPANY PERSONNEL AT ALL TIMES
- SERVICE RATED
- PROVIDE NEUTRAL/GROUND BONDING JUMPER



**CLIENT INFO**  
 RANDALL HAMILTON JR  
 808 KIBBEH ROAD  
 DUNN, NC 28334

**PROJECT INFO**  
 DC INPUT: 10,220 kW  
 AC EXPORT: 8,120 kW  
 DISINSP. METHOD: OPTION 2

**CODE REFERENCES**  
 NATIONAL ELECTRICAL CODE v. 2017  
 NC FIRE PROTECTION CODE v. 2018  
 NC BUILDING CODE v. 2018  
 NC RESIDENTIAL CODE v. 2018  
 ACSE v. 7-10

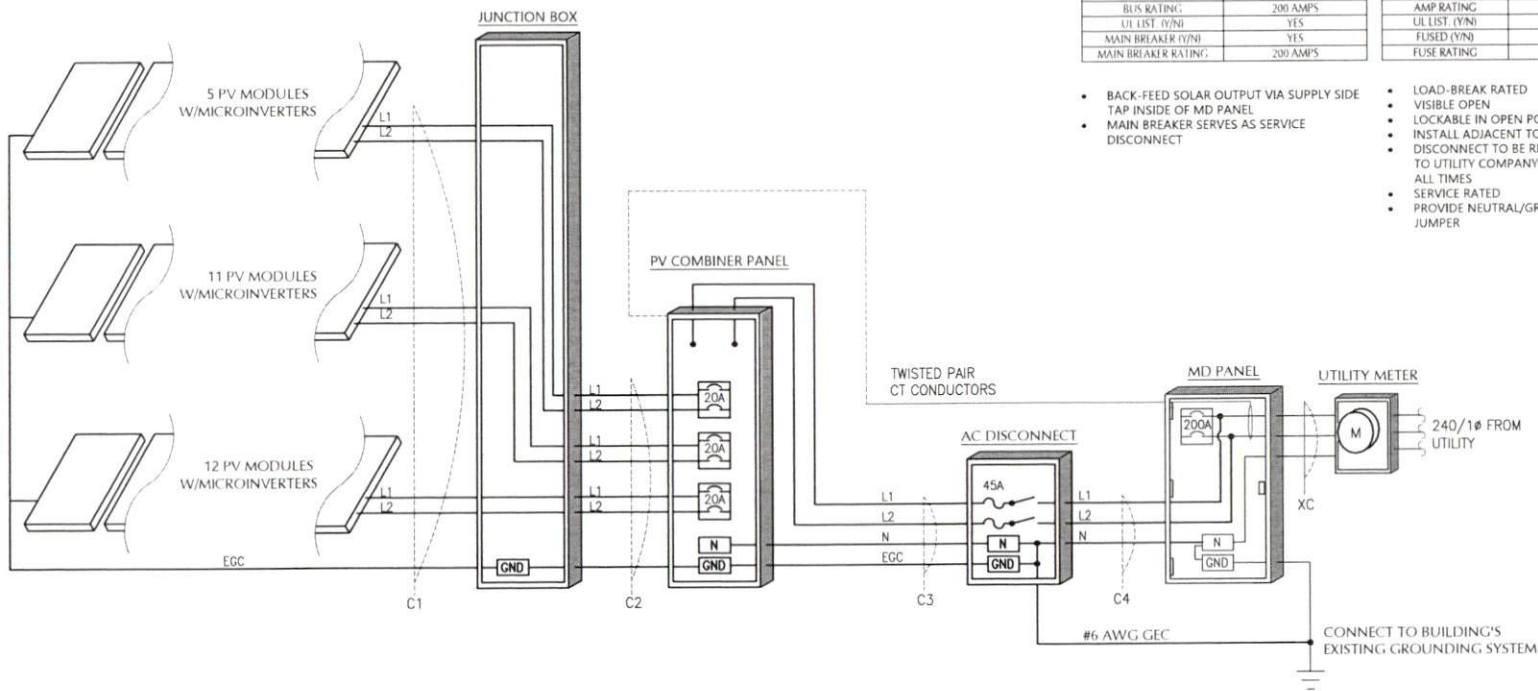
**SITE CONDITIONS**  
 WIND SPEED: 119 MPH  
 RISK CATEGORY: B  
 EXPOSURE: B  
 SNOW: 10 PSF

**SHEET INDEX**  
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 PV-2 PV STRUCTURAL  
 PV-3 PV ELECTRICAL  
 PV-4 PV EQUIPMENT LABELS  
 PV-5 PV INSTALL GUIDE

**DESIGNER INFO**  
 DESIGNER: CRM  
 ENGINEER: ASVR  
 DATE: 3/28/2022  
 VERSION: P1

**PV SYSTEM ELECTRICAL**

**PV-3.1**



1 ELECTRICAL SCHEMATIC  
 NTS



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

NEC 690.13 (B)  
 PLACE ON PV SYSTEM DISCONNECTING MEANS.

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

NEC 705.12 (B)(2)(3)(b)  
 PLACE ADJACENT TO BACK-FED BREAKER

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

NEC 705.12 (B)(3)  
 PLACE ON ALL EQUIPMENT THAT IS SUPPLIED BY BOTH POWER SOURCES

**WARNING: PHOTOVOLTAIC POWER SOURCE**

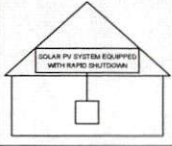
NEC 690.31 (C)(3)(b)(4)  
 PLACE ON ALL JUNCTION BOXES, EXPOSED RACEWAYS, AND OTHER WIRING METHODS EVERY 10' AND ON EVERY SECTION SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILING, OR FLOORS.

**RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM**

NEC 690.56 (C)(1)(a)  
 PLACE ON RAPID SHUTDOWN SWITCH OR EQUIPMENT WITH INTEGRATED RAPID SHUTDOWN \*REFLECTIVE\*

**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



NEC 690.56 (C)(1)(a)  
 PLACE WITHIN 3FT OF SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED AND SHALL INDICATE THE LOCATIONS OF RAPID SHUTDOWN SWITCHES

**PHOTOVOLTAIC POWER SOURCE**  
 OPERATING AC VOLTAGE 240 V  
 MAXIMUM OPERATING AC OUTPUT CURRENT 33.88 A

NEC 690.54  
 PLACE ON INTERCONNECTION DISCONNECTING MEANS

**PV SYSTEM DISCONNECT**

NEC 690.13 (B)  
 PLACE ON PV SYSTEM DISCONNECTING MEANS.

**⚠ WARNING**  
 THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE SHALL NOT EXCEED AMPACITY OF BUSBAR.

NEC 705.12 (B)(2)(3)(a)  
 PLACE ON PV COMBINER PANEL.

SERVICE DISCONNECT LOCATED:  
 INTERIOR SW WALL OF RESIDENCE

PV DISCONNECT LOCATED:  
 EXTERIOR SW WALL OF RESIDENCE

NEC 705.16  
 PLACE AT SERVICE EQUIPMENT AND PV SYSTEM DISCONNECTING MEANS. FIELD VERIFY EQUIPMENT LOCATIONS AND LABEL ACCORDINGLY.

**LABEL NOTES**

1. LABELS SHOWN ARE HALF THEIR ACTUAL REQUIRED SIZE.
2. LABEL MATERIAL SHALL BE SUITABLE FOR THE EQUIPMENT ENVIRONMENT.
3. DC CONDUIT SHALL BE MARKED WITH REQUIRED LABEL EVERY 10 FEET.
4. LABELS WILL BE APPLIED IN ACCORDANCE WITH THE NEC. SOME LABELS MAY NOT BE NECESSARY.

**DC WIRING NOTES**

1. CONDUCTORS SHALL BE COPPER, RATED AT NOT LESS THAN 600 VOLTS FOR RESIDENTIAL CONSTRUCTION AND NOT LESS THAN 1000 VOLTS FOR COMMERCIAL CONSTRUCTION.
2. MINIMUM SIZE SHALL BE #10 AWG UNLESS OTHERWISE NOTED ON THE DRAWINGS.
3. EXPOSED WIRING CONDUCTOR INSULATION SHALL BE TYPE PV WIRE, USE-2, OR RHW-2 WHERE THE OUTER LAYER OF THE INSULATION IS UV, SUNLIGHT, AND MOISTURE RESISTANT.
6. EXTERIOR WIRING CONDUCTOR INSULATION SHALL BE TYPE THWN-2 AND INSTALLED IN ELECTRICAL METALLIC TUBING(EMT) OR RIGID POLYVINYL CHLORIDE CONDUIT(PVC). ALTERNATIVELY, METAL CLAD CABLE(MC) CAN BE USED AS WELL WHEN RATED FOR USE IN WET LOCATIONS.
7. INTERIOR WIRING CONDUCTOR INSULATION SHALL BE TYPE THHN-2 AND INSTALLED IN ELECTRICAL METALLIC TUBING(EMT), FLEXIBLE METAL CONDUIT(FMC), OR METAL CLAD CABLE(MC).
6. USE SCHEDULE 40 PVC OUTDOORS WHERE NOT SUBJECT TO PHYSICAL DAMAGE OR BELOW FLOOR SLAB. USE SCHEDULE 80 PVC OUTDOORS WHERE SUBJECT TO PHYSICAL DAMAGE
7. MINIMUM CONDUIT SIZE TO BE 1/2".
8. WIRING METHODS TO CONFORM TO ARTICLES 330, 334, 348, 350, 352, 356, AND 358 OF THE 2017 NEC.

**AC WIRING NOTES**

1. CONDUCTORS SHALL BE COPPER RATED AT NOT LESS THAN 600 VOLTS.
2. MINIMUM SIZE SHALL BE #14 AWG UNLESS OTHERWISE NOTED ON THE DRAWINGS.
3. EXTERIOR WIRING CONDUCTOR INSULATION SHALL BE TYPE THWN AND INSTALLED IN ELECTRICAL METALLIC TUBING(EMT), RIGID POLYVINYL CHLORIDE CONDUIT(PVC), LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT(LFNC), OR LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT(LFMC). ALTERNATIVELY, METAL CLAD CABLE(MC) CAN BE USED AS WELL WHEN RATED FOR USE IN WET LOCATIONS.
4. INTERIOR WIRING CONDUCTOR INSULATION SHALL BE TYPE THHN AND INSTALLED IN ELECTRICAL METALLIC TUBING(EMT), FLEXIBLE METAL CONDUIT(FMC), METAL CLAD CABLE(MC), OR ROMEX.
5. USE SCHEDULE 40 PVC OUTDOORS WHERE NOT SUBJECT TO PHYSICAL DAMAGE OR BELOW FLOOR SLAB. USE SCHEDULE 80 PVC OUTDOORS WHERE SUBJECT TO PHYSICAL DAMAGE
6. MINIMUM CONDUIT SIZE TO BE 1/2"
7. WIRING METHODS TO CONFORM TO ARTICLES 330, 334, 348, 350, 352, 356, AND 358 OF THE 2017 NEC.

**CONSTRUCTION NOTES**

1. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE NEC, STATE, AND LOCAL APPLICABLE CODES.
2. FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS, BEST PRACTICES, AND SPECIFICATIONS.
3. ENSURE REQUIRED MAINTENANCE ACCESS AND CLEARANCES ARE MAINTAINED.
4. WIRES SHALL BE RATED AND LABELED "SUNLIGHT RESISTANT" WHERE EXPOSED TO AMBIENT CONDITIONS.
5. FUSES 0 - 600 AMPS SHALL BE UL CLASS "RK-1" LOW PEAK DUAL ELEMENT TIME DELAY WITH 200,000 AMPERE INTERRUPTING RATING AS MANUFACTURED BY BUSSMANN, UNLESS NOTED OTHERWISE.
6. ALL TERMINALS/LUGS SHALL BE 75" RATED. ALL TERMINALS, SPLICING CONNECTORS, LUGS, ETC SHALL BE IDENTIFIED FOR USE WITH THE MATERIAL (CU/AL) OF THE CONDUCTOR AND SHALL BE PROPERLY INSTALLED.
7. PROVIDE A PULLWIRE IN ALL EMPTY CONDUITS.
8. ALL PENETRATIONS THROUGH EXTERIOR ROOFS SHALL BE FLASHED IN A WATERPROOF MANNER.
9. ALL PENETRATIONS THROUGH ATTIC FIRE BARRIERS SHALL BE SEALED WITH FIRE-BARRIER SEALANT CAULK.
10. SUPPORT ALL CONDUIT AND EQUIPMENT IN ACCORDANCE W/ NEC. ANY SUSPENDED MATERIALS SHALL BE DIRECTLY SUPPORTED BY THE BUILDING STRUCTURE.
11. METAL CONDUIT COUPLINGS CAN BE COMPRESSION TYPE, THREADED, OR BE SET-SCREW TYPE. PLASTIC CONDUIT COUPLINGS TO BE SOCKET GLUED TYPE.
12. A COMPLETE GROUNDING SYSTEM SHALL BE PRESENT OR PROVIDED AND INSTALLED IN ACCORDANCE WITH ARTICLE 250 OF THE NEC, AND AS SHOWN ON THE DRAWINGS.
13. EACH ELECTRICAL APPLIANCE SHALL BE PROVIDED WITH A NAMEPLATE GIVING THE IDENTIFYING NAME AND THE RATING IN VOLTS AND AMPERES, OR VOLTS AND WATTS. IF THE APPLIANCE IS TO BE USED ON A SPECIFIC FREQUENCY OR FREQUENCIES, IT SHALL BE SO MARKED. WHERE MOTOR OVERLOAD PROTECTION EXTERNAL TO THE APPLIANCES IS REQUIRED, THE APPLIANCE SHALL BE SO MARKED.
14. WHERE APPLICABLE, GROUNDING ELECTRODE CONDUCTOR TO BE CONTINUOUS. GROUNDING CRIMPS TO BE IRREVERSIBLE.
15. PHOTOVOLTAIC SYSTEMS SHALL BE PERMANENTLY MARKED AT VARIOUS EQUIPMENT LOCATIONS TO IDENTIFY THAT A PHOTOVOLTAIC SYSTEM IS INSTALLED AND THAT VARIOUS DANGERS ARE PRESENT.
16. EACH PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS SHALL BE PERMANENTLY MARKED TO IDENTIFY IT AS A PHOTOVOLTAIC SYSTEM DISCONNECT.
17. WHERE ALL TERMINALS OF A DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A WARNING SIGN SHALL BE MOUNTED ON OR ADJACENT TO THE DISCONNECT.
18. A PERMANENT LABEL FOR THE DIRECT-CURRENT PHOTOVOLTAIC POWER SOURCE SHALL BE PROVIDED AT THE DC DISCONNECT MEANS.
19. A PERMANENT PLAQUE OR DIRECTORY, DENOTING ALL ELECTRIC POWER SOURCES SERVING THE PREMISES, SHALL BE INSTALLED AT EACH SERVICE EQUIPMENT LOCATION AND AT LOCATIONS OF ALL POWER PRODUCTION SOURCES.
20. ALL MODULE GROUND CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH NEC SECTION 690.4 (C)
21. A NORTH CAROLINA REGISTERED DESIGN PROFESSIONAL WILL BE REQUIRED TO SEAL THE STRUCTURAL DESIGN AT THE TIME OF PERMIT APPLICATION IF ANY OF THE FOLLOWING EXIST AND ARE ATTESTED TO BY THE APPLICANT:
  - I. THE WEIGHT OF THE PV SYSTEM EXCEEDS THREE (3) POUNDS PER SQUARE FOOT(PSF)
  - II. THE ROOF POSSESSES MORE THAN ONE (1) LAYER OF ASPHALT SHINGLES
  - III. THE ROOFING MATERIAL CONSISTS OF A TYPE OTHER THAN ASPHALT SHINGLES OR METAL
  - IV. THE ROOF IS LOCATED IN A 140 MPH OR GREATER WIND ZONE

**NC SOLAR NOW**



**CLIENT INFO**  
 RANDALL HAMILTON JR  
 808 MIDDLE ROAD  
 DUNN, NC 28334

**PROJECT INFO**  
 DC INPUT: 10.220 kW  
 AC EXPORT: 8.120 kW  
 DC INSP. METHOD: OPTION 2

**CODE REFERENCES**  
 NATION ELECTRICAL CODE v. 2017  
 NC FIRE PROTECTION CODE v. 2018  
 NC BUILDING CODE v. 2018  
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**SITE CONDITIONS**  
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**SHEET INDEX**  
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**DESIGNER INFO**  
 DESIGNER CRM  
 ENGINEER AVK  
 DATE 3/28/2022  
 VERSION P1

**PV SYSTEM EQUIPMENT LABELS**

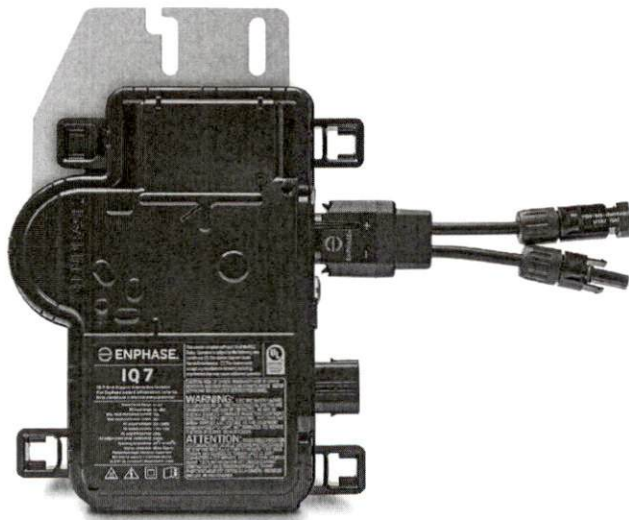
**PV-4.1**

# Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready Enphase IQ 7 Micro™ and Enphase IQ 7+ Micro™ dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.



## Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

## Productive and Reliable

- Optimized for high powered 60-cell and 72-cell\* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

## Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

\* The IQ 7+ Micro is required to support 72-cell modules.



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





## Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US / IQ7-60-B-US		IQ7PLUS-72-2-US / IQ7PLUS-72-B-US	
Commonly used module pairings <sup>1</sup>	235 W - 350 W +		235 W - 440 W +	
Module compatibility	60-cell PV modules only		60-cell and 72-cell PV modules	
Maximum input DC voltage	48 V		60 V	
Peak power tracking voltage	27 V - 37 V		27 V - 45 V	
Operating range	16 V - 48 V		16 V - 60 V	
Min/Max start voltage	22 V / 48 V		22 V / 60 V	
Max DC short circuit current (module Isc)	15 A		15 A	
Overtoltage class DC port	II		II	
DC port backfeed current	0 A		0 A	
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit			
OUTPUT DATA (AC)	IQ 7 Microinverter		IQ 7+ Microinverter	
Peak output power	250 VA		295 VA	
Maximum continuous output power	240 VA		290 VA	
Nominal (L-L) voltage/range <sup>2</sup>	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current	1.0 A (240 V)	1.15 A (208 V)	1.21 A (240 V)	1.39 A (208 V)
Nominal frequency	60 Hz		60 Hz	
Extended frequency range	47 - 68 Hz		47 - 68 Hz	
AC short circuit fault current over 3 cycles	5.8 Arms		5.8 Arms	
Maximum units per 20 A (L-L) branch circuit <sup>3</sup>	16 (240 VAC)	13 (208 VAC)	13 (240 VAC)	11 (208 VAC)
Overtoltage class AC port	III		III	
AC port backfeed current	0 A		0 A	
Power factor setting	1.0		1.0	
Power factor (adjustable)	0.85 leading ... 0.85 lagging		0.85 leading ... 0.85 lagging	
EFFICIENCY	@240 V	@208 V	@240 V	@208 V
Peak efficiency	97.6 %	97.6 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %
MECHANICAL DATA				
Ambient temperature range	-40°C to +65°C			
Relative humidity range	4% to 100% (condensing)			
Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US)	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)			
Connector type (IQ7-60-B-US & IQ7PLUS-72-B-US)	Friends PV2 (MC4 intermateable). Adaptors for modules with MC4 or UTX connectors: - PV2 to MC4: order ECA-S20-S22 - PV2 to UTX: order ECA-S20-S25			
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)			
Weight	1.08 kg (2.38 lbs)			
Cooling	Natural convection - No fans			
Approved for wet locations	Yes			
Pollution degree	PD3			
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure			
Environmental category / UV exposure rating	NEMA Type 6 / outdoor			
FEATURES				
Communication	Power Line Communication (PLC)			
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.			
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.			
Compliance	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 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.			

1. No enforced DC/AC ratio. See the compatibility calculator at <https://enphase.com/en-us/support/module-compatibility>.

2. Nominal voltage range can be extended beyond nominal if required by the utility.

3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

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FAM\_E7G-BB / 120 cells  
 345W - 365 W  
 Mono-Crystalline PV Module

URE Peach module uses URE state-of -the art cell cutting technology, and advanced module manufacturing experiences.



## Key Features



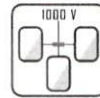
Positive power tolerance  
 +0 ~ +5 watt



100% EL inline inspection  
 Better module reliability



Withstand heavy loading  
 front load 5400 Pa & rear load 2400 Pa



Design for 1000 VDC  
 Reduce the system BOS effectively



Excellent low light performance  
 3.5% relative eff. Reduction at low  
 (200W/m<sup>2</sup>)





## Electrical Data

Model - STC		FAM345E7G-BB	FAM350E7G-BB	FAM355E7G-BB	FAM360E7G-BB	FAM365E7G-BB
Maximum Rating Power (Pmax)	[W]	345	350	355	360	365
Module Efficiency	[%]	18.68	18.95	19.22	19.50	19.77
Open Circuit Voltage (Voc)	[V]	39.90	40.10	40.30	40.50	40.70
Maximum Power Voltage	[V]	33.40	33.60	33.80	34.00	34.20
Short Circuit Current (Isc)	[A]	11.13	11.19	11.26	11.35	11.43
Maximum Power Current	[A]	10.33	10.42	10.51	10.59	10.68

\*Standard Test Condition (STC): Cell Temperature 25 °C, Irradiance 1000 W/m<sup>2</sup>, AM 1.5

\*Values without tolerance are typical numbers. Measurement tolerance: ± 3%

## Mechanical Data

Item	Specification
Dimensions	1762 mm (L) <sup>1</sup> x 1048 mm (W) <sup>1</sup> x 35 mm (D) <sup>2</sup> / 69.37" (L) <sup>1</sup> x 41.26" (W) <sup>1</sup> x 1.38" (D) <sup>2</sup>
Weight	19.6 kg / 43.21 lbs
Solar Cell	Mono / 83 mm x 166mm
Front Glass	White toughened safety glass, 3.2mm thickness
Frame	Black anodized aluminum profile
Junction Box	IP ≥67, 3 diodes
Connectors Type	MC4 Compatible
Cable	500mm (cable length can be customized), 4mm <sup>2</sup>
Packaging Configuration	31 pcs Per Pallet, 806 pcs per 40' HQ container

<sup>1</sup> : With assembly tolerance of ± 2 mm [ ± 0.08" ]

<sup>2</sup> : With assembly tolerance of ± 0.8 mm [ ± 0.03" ]

## Operating Conditions

Item	Specification
Mechanical Load	5400 Pa
Maximum System Voltage	1000 VDC
Series Fuse Rating	20 A
Operating Temperature	-40 to 85 °C

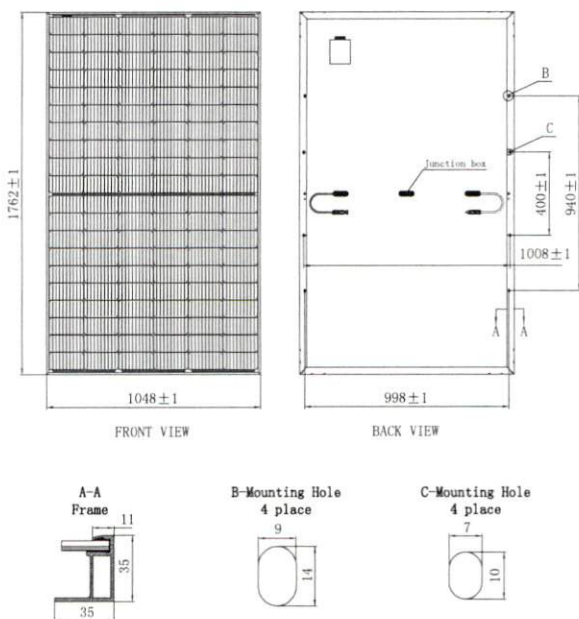
## Temperature Characteristics

Item	Specification
Nominal Module Operating Temperature	45 °C ± 2°C
Temperature Coefficient of Isc	0.048 % / °C
Temperature Coefficient of Voc	-0.27 % / °C
Temperature Coefficient of Pmax	-0.35 % / °C

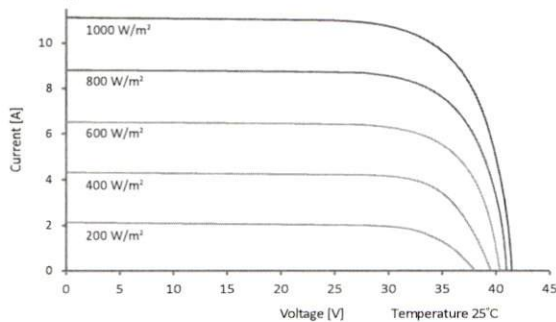
\*Nominal module operating temperature (NMOT): Air mass AM 1.5, irradiance 800W/m<sup>2</sup>, temperature 20°C, windspeed 1 m/s.

\*Reduction in efficiency from 1000W/m<sup>2</sup> to 200W/m<sup>2</sup> at 25°C: 3.5 ± 2%.

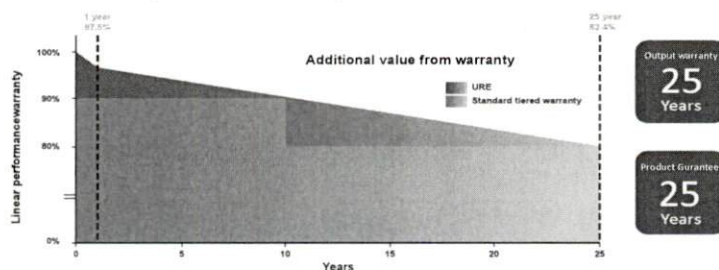
## Engineering Drawing (mm)



## Dependence on Irradiance



## Reliability with Warranty



For more information, please visit us at [www.urecorp.com](http://www.urecorp.com)

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Taipei Office

9F, NO. 295, Sec. 2, Tiding Blvd.,  
Neihu Dist., Taipei 11493, Taiwan

Tel : +886-2-2656-2000  
Fax : +886-2-2656-0593  
e-mail : sales@urecorp.com

Headquarters

No. 7, Li-Hsin 3rd Road, Hsinchu Science Park  
Hsinchu city 30078, Taiwan

Tel : +886-3-578-0011  
Fax : +886-3-578-1255

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