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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	THWN-2	1	10 AWG	THWN-2	2	3/4"	EXT/INT	2,4
C2	3	6 AWG	THWN-2	1	10 AWG	THWN-2	1	3/4"	EXT/INT	2,4
C3	3	12 AWG	THWN-2	1	12 AWG	THWN-2	1	1/2"	EXT/INT	2,4
C4	3	8 AWG	THWN-2	1	10 AWG	THWN-2	1	1"	EXT/INT	2,4
C5	2	12 AWG	THWN-2	1	12 AWG	THWN-2	1	1/2"	EXT/INT	2,4
C6	3	4/0 AWG ALUMINUM	XHHW	1	6 AWG	THWN-2	1	2"	EXT/INT	2,4
C7	2	12 AWG	THWN-2	1	12 AWG	THWN-2	1	1/2"	EXT/INT	2,4
C8	4	10 AWG	THWN	2	10 AWG	THWN	1	1/2"	EXT/INT	2,4
C9	4	10 AWG	THWN	-	-	-	1	1/2"	EXT/INT	2,4
XC	-	-	-	-	-	-	-	-	-	3

NOTES:

- MANUFACTURER PROVIDED, UL LISTED WIRING HARNESS FOR USE ON EXPOSED ROOFS
- CONDUIT SIZE SHOWN IS CODE MINIMUM. LARGER SIZES ARE ALLOWED.
- EXISTING CONDUCTORS, FIELD VERIFY
- EQUIPMENT TERMINAL RATING SHALL BE A MINIMUM OF 75°C AT BOTH END OF CONDUCTOR

ENERGY MANAGEMENT

MAKE	ENPHASE
MODEL	IQ SYSTEM CONTROLLER 3
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
DISCONNECT CURR.	200 AMPS
UL LIST. (Y/N)	YES
MAIN BREAKER (Y/N)	NO
MAIN BREAKER RATING	N/A

- BACK-FEED SOLAR OUTPUT VIA 60A BREAKER IN DESIGNATED PV BREAKER POSITION
- CONNECT IQ GATEWAY VIA 20A QUAD BREAKER
- FEED BACKED-UP LOADS PANEL VIA BACKUP LUGS
- BACK-FEED BATTERY OUTPUT VIA 40A BREAKER IN DESIGNATED POSITION

JUNCTION BOX (EXISTING)

MAKE	SOLADECK
PROTECT. RATING	NEMA TYPE 3R
UL LIST. (Y/N)	YES

DC / AC INVERTER (EXISTING)

MAKE	ENPHASE
MODEL	IQ7A-72-2-US
DC INPUT:	
POWER RANGE (WATTS)	295-460
MIN/MAX START VOLT.	33 / 58
OPERATING VOLT. RANGE	18-58
MAX. CURRENT	15 AMPS
MODULE COMPATIBILITY	60, 66, & 72 CELL
AC OUTPUT:	
MAX. POWER	366 WATTS
NOM. POWER	349 WATTS
NOM. VOLT.	211-240-264
MAX. CURR.	1.45 AMPS
DC DISC. (Y/N)	NO
RAPID SHUTDOWN (Y/N)	YES
PROTECT. RATING	NEMA TYPE 6
UL LIST. (Y/N)	YES
MAX BRANCH CIRCUIT	11

IQ LOAD CONTROLLER

MAKE	ENPHASE
MODEL	EP-NA-LKO2-040
ENCL. RATING	NEMA 4X
UL LIST. (Y/N)	YES
MAX AMPERAGE	32 A
MAX VOLTAGE	240 VAC

- INTERCEPT THE UP AND DOWN A/C UNIT CIRCUITS SO THAT THESE LOADS CAN BE SHED FROM THE BACKED-UP LOADS PANEL

PV COMBINER PANEL

MAKE	ENPHASE
MODEL	X2-IQ-AM1-240-5
INPUT:	
MAX BRANCH CIRCUITS	4 TOTAL
BRANCH CIRCUIT OCPD	50.00 AMPS
OUTPUT:	
MAX POWER	15600 WATTS
NOM. VOLTAGE	240 VOLTS
BUS RATING	125.00 AMPS
MAIN BREAKER Y/N	NO
ENCL. RATING	NEMA TYPE 3R
UL LIST. (Y/N)	YES

ENERGY STORAGE SYSTEM

MAKE	ENPHASE
MODEL	5P
USABLE ENERGY	10.08 kWh
NOM. VOLT.	240 VOLTS
REAL POWER CONT.	3.84 kVA
UL LIST. (Y/N)	YES
PROTECTION RATING	NEMA 6

BACKED-UP LOADS PANEL (EXISTING)

MAKE	SIEMENS
MODEL	N/A
ENCL. RATING	NEMA TYPE 1
VOLT. RATING	240
BUS RATING	200 AMPS
UL LIST. (Y/N)	YES
MAIN BREAKER (Y/N)	YES
MAIN BREAKER RATING	200 AMPS

- REMOVE N/G BOND AND SEPARATE GROUND AND NEUTRAL WIRES
- REMOVE SUPPLY SIDE TAP OF EXISTING SOLAR PV SYSTEM AND RELOCATE SOLAR BACKFEED TO IQ SYSTEM CONTROLLER 3

PV MODULE (EXISTING)

MAKE	REC
MODEL	REC405AA PURE
NOM. POWER (PNOM)	405 WATTS
NOM. VOLT. (VMPP)	42.4 VOLTS
O.C. VOLT (VOC)	48.9 VOLTS
MAX. SYS. VOLT.	1000 VOLTS
NOM. CURR. (IMPP)	9.6 AMPS
S.C. CURR. (ISC)	10.3 AMPS
TEMP. COEF. (PMPP)	-0.26 %/C
TEMP. COEF. (Voc)	-0.24 %/C
MAX SERIES FUSE	25 AMPS
UL COMPLIANT (Y/N)	YES

RSD DEVICE

MAKE	ENPHASE
MODEL	EP200G-NA-02-RSD
PROTECT. RATING	NEMA TYPE 4X
UL LIST. (Y/N)	YES

- USE SPLICES (INCLUDED WITH THE ENPHASE ENERGY SYSTEM) TO CONNECT RSD PORT 16 AWG TO LARGER 12 OR 14 AWG WIRE

AC DISCONNECT 'A' & 'B'

MAKE	GENERIC
MODEL	NA
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
AMP RATING	60 AMPS
UL LIST. (Y/N)	YES
FUSED (Y/N)	NO
FUSE RATING	N/A

- 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



CLIENT INFO

JULIE BARAJAS
491 OLD FIELD LOOP
SANFORD, NC 27332

PROJECT INFO

DC INPUT: 13.365 kW
AC EXPORT: 11.517 kW
DOI INSPT. METHOD: OPTION 2

Model Energy

300 Fayetteville St.
#1430
Raleigh, NC 27602
919-274-9905
ModelEnergy.com
P-1194

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: 116 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

VERSIONS

FOR:	DESIGNER	DATE
CONSTRUCTION	CRM	7/29/2024

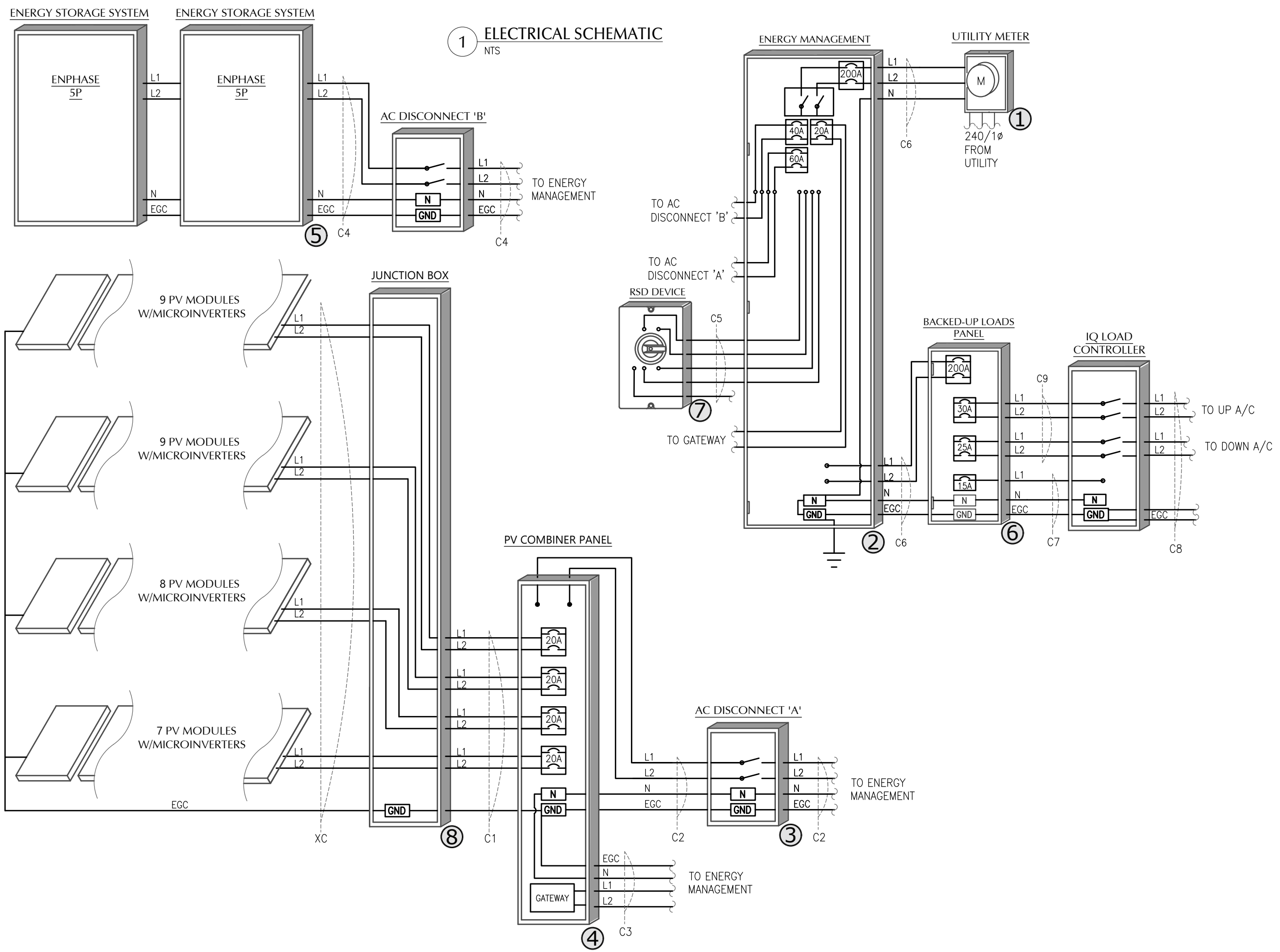
PV SYSTEM ELECTRICAL

PV-1.1

PV MATERIAL SUMMARY: DISTRIBUTOR

X-IQ-NA-HD-125A HOLD DOWN KIT	2
BRK-20A-2P-240V-B BOLT BREAKER	4
IQBATTERY-5P-1P-NA IQ5P BATTERY	2
SC200D111C240US01 IQ CONTROLLER 3	2
X-IQ-AM1-240-5C COMBINER PANEL	1
EP-NA-LKO2-040 LOAD CONTROLLER	1

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PV SYSTEM ELECTRICAL

PV-1.2

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⚠ WARNING
PHOTOVOLTAIC SYSTEM COMBINER PANEL
DO NOT ADD LOADS

④ NEC 705.12 (C)(3)
PLACE ON PV COMBINER PANEL

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

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

⚠ WARNING
THREE POWER SOURCES
SOURCES: UTILITY GRID, BATTERY AND PV SOLAR ELECTRIC SYSTEM

① ② ④ ⑥
NEC 705.12 (B)(3)
PLACE ON ALL EQUIPMENT THAT IS SUPPLIED BY BOTH POWER SOURCES

BATTERY DISCONNECT

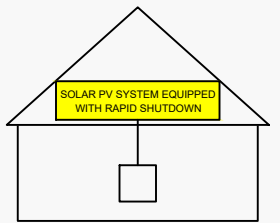
⑦ PLACE ON RSD DEVICE

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

③ NEC 690.56 (C)(3)
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



② 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 47.85 A

③ NEC 690.54
PLACE ON INTERCONNECTION 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.

② ④ NEC 705.12 (B)(2)(3)(c)
PLACE ON PV COMBINER PANEL AND IQ SYSTEM CONTROLLER

PV SYSTEM DISCONNECT

③ NEC 690.13 (B)
PLACE ON PV SYSTEM DISCONNECTING MEANS.

GENERATION PANEL:
IN THE EVENT OF AN EMERGENCY, TURN OFF ALL BREAKERS TO DISCONNECT BACKUP POWER SOURCE(S).

② PLACE ON IQ SYSTEM CONTROLLER

SERVICE DISCONNECT LOCATED:
EXTERIOR EAST WALL OF RESIDENCE

BATTERY DISCONNECT LOCATED:
EXTERIOR EAST WALL OF RESIDENCE

PV DISCONNECT LOCATED:
EXTERIOR EAST WALL OF RESIDENCE

② ③ ⑤ NEC 705.10
PLACE AT SERVICE EQUIPMENT AND PV SYSTEM DISCONNECTING MEANS.

WARNING:
IN THE EVENT OF A UTILITY OUTAGE, THIS PANEL IS FED FROM ENERGY STORAGE SYSTEM.

② ⑥

WARNING: PHOTOVOLTAIC POWER SOURCE

⑧ NEC 690.31 (G)(3)&(4)
PLACE ON ALL JUNCTION BOXES, EXPOSED RACEWAYS, AND OTHER WIRING METHODS EVERY 10' AND ON EVERY SECTION SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS.

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

② NEC 690.13 (B)
PLACE ON PV SYSTEM DISCONNECTING MEANS.

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 DAMMAGE
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 OR ALUMINUM 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 METAL CONDUIT(LFMC), OR LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT(LFNC) . 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 DAMMAGE
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



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ACSE v. 7-10

SITE CONDITIONS

WIND SPEED: 116 MPH
RISK CATEGORY: II
EXPOSURE: B
SNOW: 10 PSF

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PV SYSTEM EQUIPMENT LABELS

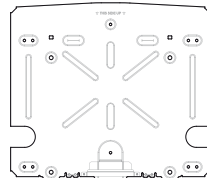
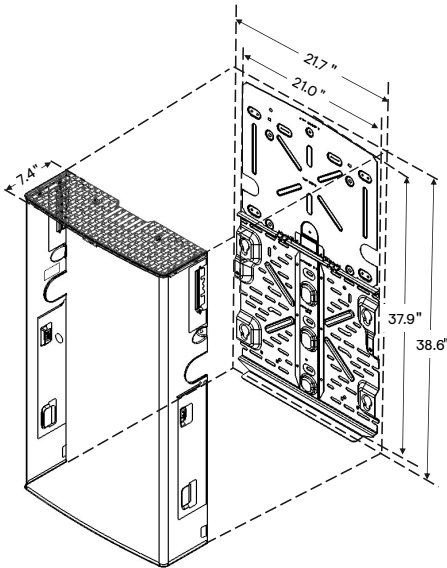
PV-2.1



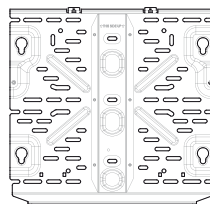
IQ Battery 5P

The IQ Battery 5P all-in-one AC-coupled system is powerful, reliable, simple, and safe. It has a total usable energy capacity of 5.0 kWh and includes six embedded grid-forming microinverters with a 3.84 kVA continuous power rating. It provides backup capability, and installers can quickly design the right system size to meet the customer needs.

Dimensions



Top shield



Bottom mounting bracket



15-year limited warranty



LISTED



UL 9540A Certified

Powerful

- Provides 3.84 kVA continuous and 7.68 kVA peak power
- Doubles the available power per kWh of prior generations of IQ Battery
- Includes six embedded IQ8D-BAT Microinverters

Reliable

- 15-year limited warranty
- Cools passively with no moving parts or fans
- Uses wired communication for fast and consistent connection
- Updates software and firmware remotely

Simple

- Fully integrated AC battery system
- Installs and commissions easily
- Supports Backup, Self-Consumption, and time-of-use (TOU) modes
- Offers homeowners remote monitoring and control from the Enphase App
- Field replaceable components

Safe

- Evaluated to UL 9540A for large scale fire testing and reduced separation distance as required in 2021 IRC R328.3.1, 2021 IFC 1207.1.5, and 2023 NFPA 855 15.3.1 and 9.1.5.¹
- Uses lithium iron phosphate (LFP) chemistry for maximum safety and longevity

¹Follow all installation instructions when installing Enphase ESS.

IQ Battery 5P

MODEL NUMBER	
IQBATTERY-5P-1P-NA	The IQ Battery 5P system with integrated IQ Microinverters and battery management system (BMS) with battery controller
WHAT'S IN THE BOX	
IQ Battery 5P unit	IQ Battery 5P unit (B05-T02-US00-1-3)
ID cover and conduit cover	IQ Battery 5P cover with two conduit covers for the left and right sides of the unit
Bottom mounting bracket and top shield	Bottom mounting bracket for mounting the battery on the wall. One top shield is required for UL9540A
M5 seismic screws	Two M5 seismic screws for securing the battery unit on the bottom mounting bracket
M4 grounding screws	Two M4 grounding screws for securing the top shield on the bottom mounting bracket
M5 ID cover grounding screws	Two M5 ID cover grounding screws for the EMI/EMC requirement
Cable ties	Six cable ties for securing field cables to the unit
Control (CTRL) connector	Spare CTRL connector without resistor for CTRL wiring
Control (CTRL) connector with resistor	Spare CTRL connector with resistor for CTRL wiring
Quick Install Guide (QIG)	QIG for IQ Battery unit installation instructions
OPTIONAL ACCESSORIES AND REPLACEMENT PARTS	
IQ8D-BAT-RMA	IQ8D-BAT Microinverter for field replacement
B05-T02-US00-1-3-RMA	IQ Battery 5P Battery unit for field replacement
B05-CX-0550-O	IQ Battery 5P cover for field replacement
B05-PI-0550-O	IQ Battery 5P pedestal mount
B05-CP-096-O	IQ Battery 5P conduit plates for field replacement. Includes one left-side and one right-side conduit plate
B05-WB-0543-O	IQ Battery 5P wall bracket for field replacement. Includes one bottom mounting bracket and one top shield
IQBATTERY-HNDL-5	IQ Battery 5P lifting handles. Includes one left-side and one right-side lifting handle
B05-ACFB-080-O	IQ Battery 5P AC filter board for field replacement
B05-BMSNA-0490-O	IQ Battery 5P BMS board for field replacement
B05-CANB-063-O	IQ Battery 5P control communication board for field replacement
B05-NICS-0524-O, B05-NUCS-0524-O	IQ Battery 5P control switch is preinstalled on the wiring cover for field replacement
OUTPUT [AC]	
	@ 240 VAC ²
Rated (continuous) output power	3.84 kVA
Peak output power	7.68 kVA (3 seconds), 6.14 kVA (10 seconds)
Nominal voltage/range	240/211–264 VAC
Nominal frequency/range	60/57–63 Hz
Rated output current (@240 VAC)	16 A
Peak output current (@240 VAC)	32 A (3 seconds), 25.6 A (10 seconds)
Load start capability	Up to 48 A LRA ³
Power factor (adjustable)	0.85 leading...0.85 lagging
Maximum units per 20 A branch circuit	One unit (single-phase)
Maximum conductor size supported	3 AWG
Overcurrent protection device (OCPD) for 3 AWG cable	80 A
Interconnection	Single-phase
AC round-trip efficiency ⁴	90%

²Supported in both grid-connected and backup/off-grid operation

³ Load start capability may vary

⁴ AC to the battery to AC at 50% power rating

IQ Battery 5P

BATTERY

Total capacity	5.0 kWh
Usable capacity	5.0 kWh
DC round-trip efficiency	96%
Nominal DC voltage	76.8 V
Maximum DC voltage	86.4 V
Ambient operating temperature range (charging)	-20°C to 50°C (-4°F to 122°F) non-condensing
Ambient operating temperature range (discharging)	-20°C to 55°C (-4°F to 131°F) non-condensing
Optimum operating temperature range	0°C to 30°C (32°F to 86°F)
Chemistry	Lithium iron phosphate (LFP)

MECHANICAL DATA

Dimensions (HxWxD)	980 mm x 550 mm x 188 mm (38.6 in x 21.7 in x 7.4 in)
Lifting weight	66.3 kg (146.1 lbs)
Total installed weight	78.9 kg (174 lbs)
Enclosure	Outdoor-NEMA 3R
IQ8D-BAT Microinverter enclosure	NEMA type 6
Cooling	Natural convection
Altitude	Up to 2,500 meters (8,202 feet)
Mounting	Wall-mount or pedestal-mount (sold separately)

FEATURES AND COMPLIANCE

Compatibility	Compatible with IQ and M Series Microinverters, IQ System Controller 3/3G, IQ Combiner 5/5C, and IQ Gateway for grid-tied and backup operation
Communication	Wired control communication
Services	Backup, Self-Consumption, TOU, and NEM integrity
Monitoring	Enphase Installer Platform and Enphase App monitoring options; API integration
Compliance	CA Rule 21 (UL 1741-SA), IEEE 1547:2018 (UL 1741-SB, 3rd Ed.) CAN/CSA C22.2 No. 107.1-16 UL 9540, UL 9540A, UN 38.3, UL 1998, UL 991, NEMA Type 3R, AC156 EMI: 47 CFR, Part 15, Class B, ICES 003 Cell module: UL 1973, UN 38.3 Inverters: UL 62109-1, IEC 62109-2

LIMITED WARRANTY

Limited warranty	>60% capacity, up to 15 years or 6,000 cycles ⁵
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⁵ Whichever occurs first. Restrictions apply

Revision history

REVISION	DATE	DESCRIPTION
DSH-00010-2.0	July 2023	<ul style="list-style-type: none">• Added battery isometric view on the first page.• Editorial updates.
DSH-00010-1.0	May 2023	Initial release.

Enphase IQ 7A Microinverter

The high-powered smart grid-ready **Enphase IQ 7A Micro™** dramatically simplifies the installation process while achieving the highest system efficiency for systems with 60-cell and 72-cell modules.

Part of the Enphase IQ System, the IQ 7A Micro integrates with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

The 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.



High Power

- Peak output power 366 VA @ 240 VAC and 295 VA @ 208 VAC

Easy to Install

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

Efficient and Reliable

- Optimized for high powered 60-cell and 72-cell modules
- Highest CEC efficiency of 97%
- 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
- Envoy and Internet connection required
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)



Enphase IQ 7A Microinverter

INPUT (DC)		IQ7A-72-2-US	
Commonly used module pairings ¹	295 W–460 W +		
Module compatibility	60-cell, 66-cell, and 72-cell PV modules		
Maximum input DC voltage	58 V		
Power point tracking voltage range ²	18 V–58 V		
Min/Max start voltage	33 V / 58 V		
Max DC short circuit current (module I _{sc}) ³	15 A		
Overvoltage class DC port	II		
DC port backfeed current	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 (AC)		@ 240 VAC	@ 208 VAC
Peak output power	366 VA	295 VA	
Maximum continuous output power	349 VA	290 VA	
Nominal (L-L) voltage/range ⁴	240 V / 211–264 V	208 V / 183–229 V	
Maximum continuous output current	1.45 A (240 VAC)	1.39 A (208 VAC)	
Nominal frequency	60 Hz		
Extended frequency range	47–68 Hz		
AC short circuit fault current over 3 cycles	5.8 Arms		
Maximum units per 20 A (L-L) branch circuit ⁵	11 (240 VAC)	11 (208 VAC)	
Overvoltage class AC port	III		
AC port backfeed current	18 mA		
Power factor setting	1.0		
Power factor (adjustable)	0.85 leading ... 0.85 lagging		
EFFICIENCY		@240 VAC	@208 VAC
CEC weighted efficiency	97.0 %	96.5%	
MECHANICAL			
Ambient temperature range	-40°C to +60°C		
Relative humidity range	4% to 100% (condensing)		
Connector type: DC (IQ7A-72-2-US)	MC4		
Dimensions (HxWxD)	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 Compatible with 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. CEC peak power tracking voltage range is 38 V to 43 V.

3. Maximum continuous input DC current is 10.2A.

4. Voltage range can be extended beyond nominal if required by the utility.

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

To learn more about Enphase offerings, visit enphase.com

SOLAR'S MOST TRUSTED



REC ALPHA[®] PURE 2 SERIES PRODUCT SPECIFICATIONS



COMPACT PANEL SIZE

430 WP
20.6 W/FT²
22.2% EFFICIENCY




LEAD-FREE
ROHS COMPLIANT

EXPERIENCE

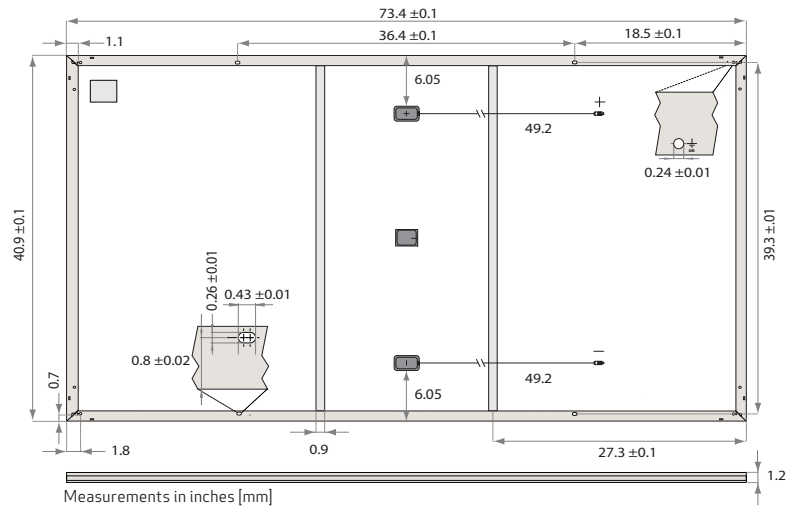
PERFORMANCE

REC ALPHA PURE 2 SERIES

PRODUCT SPECIFICATIONS

GENERAL DATA

Cell type:	132 half-cut REC heterojunction cells with lead-free, gapless technology, 6 strings of 22 cells in series
Glass:	0.12 in solar glass with anti-reflective surface treatment in accordance with EN12150
Backsheet:	Highly resistant polymer (black)
Frame:	Anodized aluminum (black)
Junction box:	3-part, 3 bypass diodes, lead-free IP68 rated, in accordance with IEC 62790
Connectors:	Stäubli MC4 PV-KBT4/KST4 (12 AWG) in accordance with IEC 62852, IP68 only when connected
Cable:	12 AWG solar cable, 49.2 + 49.2 in in accordance with EN 50618
Dimensions:	73.4 x 40.9 x 1.2 in (20.88 sq-ft)
Weight:	47.6 lbs (21.6 kg)
Origin:	Made in Singapore



ELECTRICAL DATA

Product Code*: RECxxxAA PURE 2

	400	410	420	430
Power Output - P_{MAX} (Wp)	400	410	420	430
Watt Class Sorting - (W)	0/+10	0/+10	0/+10	0/+10
Nominal Power Voltage - V_{MPP} (V)	41.1	41.6	42.2	42.8
Nominal Power Current - I_{MPP} (A)	9.74	9.86	9.96	10.05
Open Circuit Voltage - V_{OC} (V)	48.5	48.8	49.1	49.3
Short Circuit Current - I_{SC} (A)	10.60	10.67	10.74	10.81
Power Density (W/ft ²)	19.2	19.6	20.1	20.6
Panel Efficiency (%)	20.6	21.1	21.7	22.2
Power Output - P_{MAX} (Wp)	304	312	320	327
Nominal Power Voltage - V_{MPP} (V)	38.7	39.2	39.8	40.3
Nominal Power Current - I_{MPP} (A)	7.86	7.96	8.05	8.12
Open Circuit Voltage - V_{OC} (V)	45.7	45.8	46.0	46.2
Short Circuit Current - I_{SC} (A)	8.50	8.62	8.68	8.73

Values at standard test conditions (STC: air mass AM1.5, irradiance 10.75 W/sq ft (1000 W/m²), temperature 77°F (25°C), based on a production spread with a tolerance of P_{MAX} , V_{OC} & I_{SC} ±3% within one watt class. Nominal module operating temperature (NMOT: air mass AM1.5, irradiance 800 W/m², temperature 68°F (20°C), windspeed 3.3 ft/s (1 m/s). *Where xxx indicates the nominal power class (P_{MAX}) at STC above.

MAXIMUM RATINGS

Operational temperature:	-40... +85°C
System voltage:	1000 V
Test load (front):	+ 7000 Pa (146 lbs/ft ²)*
Test load (rear):	- 4000 Pa (83.5 lbs/ft ²)*
Series fuse rating:	25 A
Reverse current:	25 A

* See installation manual for mounting instructions.
Design load = Test load / 1.5 (safety factor)

WARRANTY

	Standard	REC ProTrust	
Installed by an REC Certified Solar Professional	No	Yes	Yes
System Size	All	≤25 kW	25-500 kW
Product Warranty (yrs)	20	25	25
Power Warranty (yrs)	25	25	25
Labor Warranty (yrs)	0	25	10
Power in Year 1	98%	98%	98%
Annual Degradation	0.25%	0.25%	0.25%
Power in Year 25	92%	92%	92%

See warranty documents for details. Conditions apply

Available from:

CERTIFICATIONS

IEC 61215:2016, IEC 61730:2016, UL 61730	
IEC 62804	PID
IEC 61701	Salt Mist
IEC 62716	Ammonia Resistance
UL 61730	Fire Type 2
IEC 62782	Dynamic Mechanical Load
IEC 61215-2:2016	Hailstone (35mm)
IEC 62321	Lead-free acc. to RoHS EU 863/2015
ISO 14001, ISO 9001, IEC 45001, IEC 62941	



TEMPERATURE RATINGS*

Nominal Module Operating Temperature:	44°C (±2°C)
Temperature coefficient of P_{MAX} :	-0.24 %/°C
Temperature coefficient of V_{OC} :	-0.24 %/°C
Temperature coefficient of I_{SC} :	0.04 %/°C

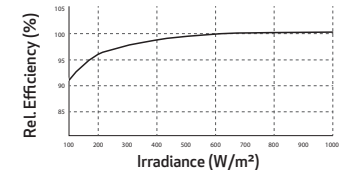
*The temperature coefficients stated are linear values

DELIVERY INFORMATION

Panels per pallet:	33
Panels per 40 ft GP/high cube container:	792 (24 pallets)
Panels per 53 ft truck:	858 (26 pallets)

LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC:



Founded in 1996, REC Group is an international pioneering solar energy company dedicated to empowering consumers with clean, affordable solar power. As Solar's Most Trusted, REC is committed to high quality, innovation, and a low carbon footprint in the solar materials and solar panels it manufactures. Headquartered in Norway with operational headquarters in Singapore, REC also has regional hubs in North America, Europe, and Asia-Pacific.

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