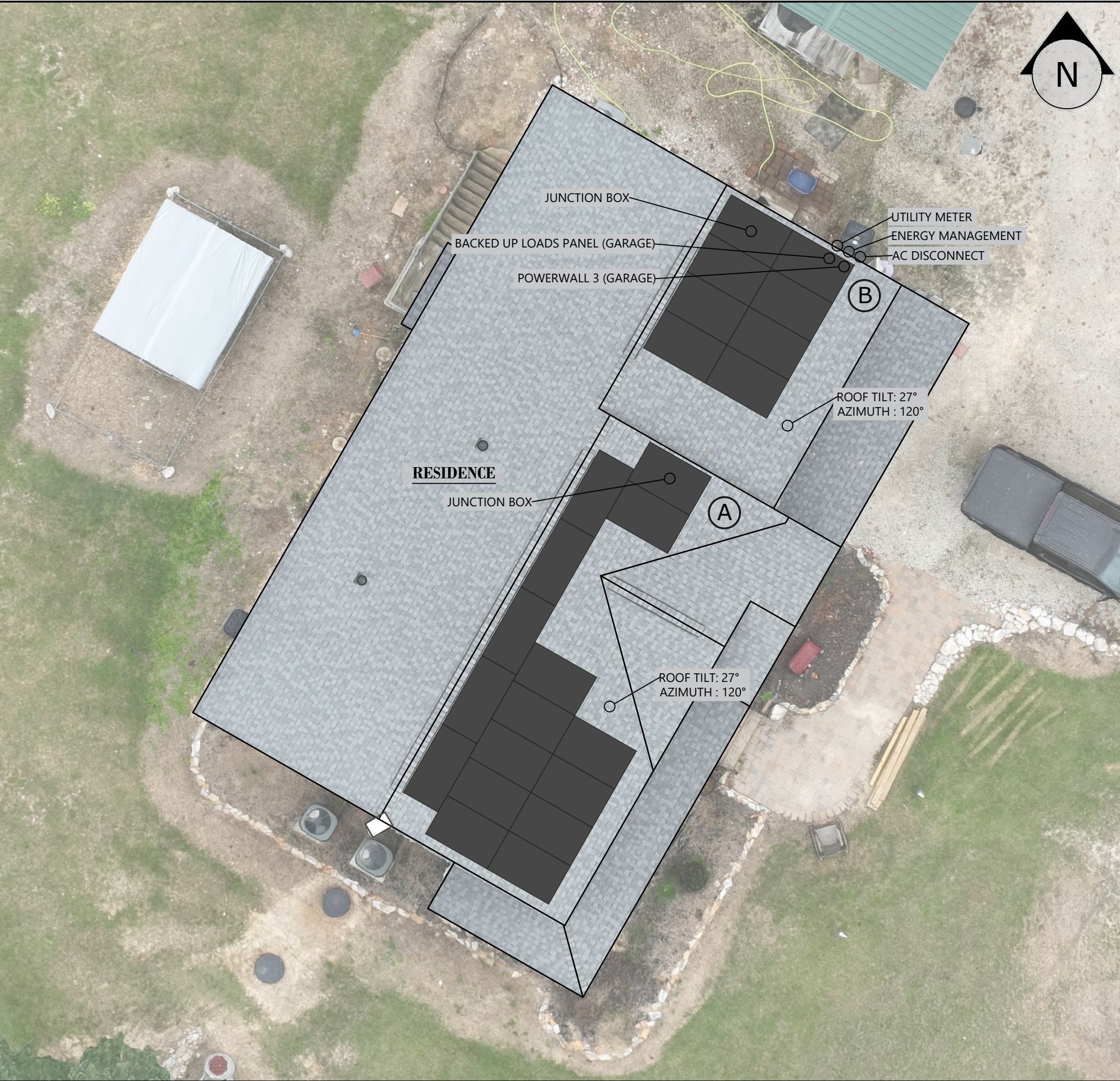


© 2024 NC SOLAR NOW EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF NC SOLAR NOW.



PV MATERIAL SUMMARY: DISTRIBUTOR	
REC420AA PURE 2	24
MCI-2	9
Tesla PW3 1707000-xx-y	1
Tesla GW3 1841000-01-y	1
XR-10-168B	3
XR-10-204B	11
XR10-BOSS-01-M1	4
UFO-CL-01-B1	36
UFO-END-01-B1	24
XR-LUG-03-A1	7
4 IN QB1	54
GC66803 Geocel Sealant	4
SOLADECK 0799-5B	2



CLIENT INFO
 RACHEL MARIE GOOSSEN
 249 MERCY LN
 BROADWAY NC 27505

PROJECT INFO
 DC INPUT: 10.080 kW
 AC OUTPUT: 11.500 kW
 DOI INSPT. METHOD: OPTION 2

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



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: 120 MPH
 RISK CATEGORY: II
 EXPOSURE: B
 SNOW: 15 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

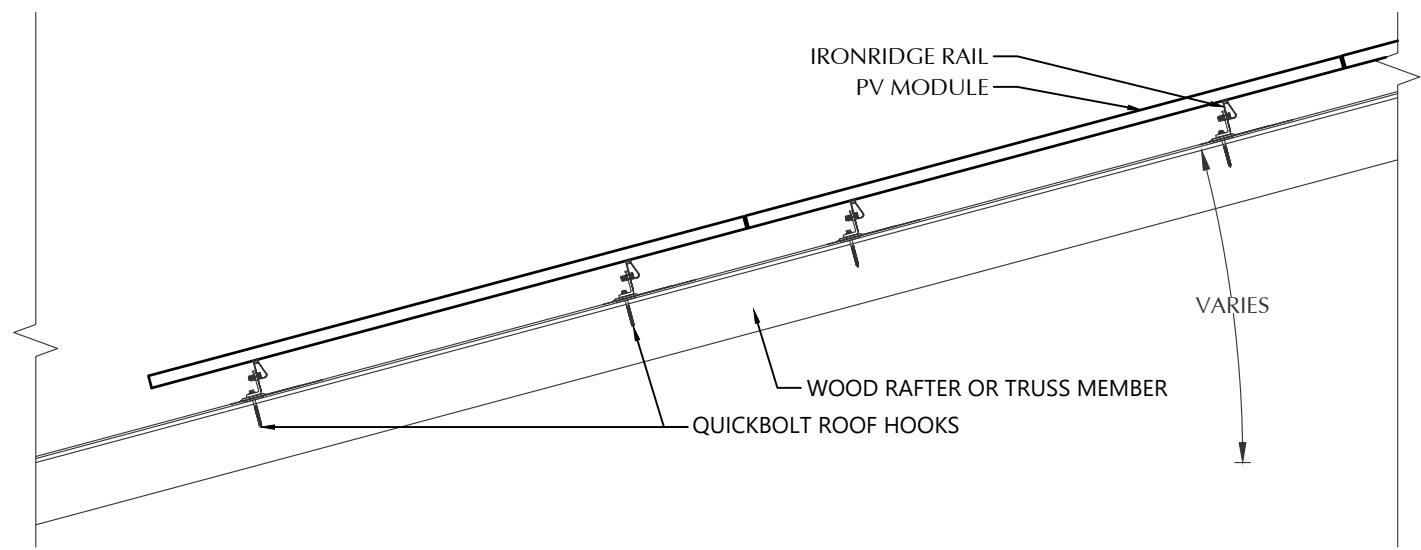
VERSIONS		
FOR:	DESIGNER	DATE
CONSTRUCTION	MCP	10/9/2024

PV SYSTEM COVER PAGE

PV-1.1



© 2024 NC SOLAR NOW EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF NC SOLAR NOW.

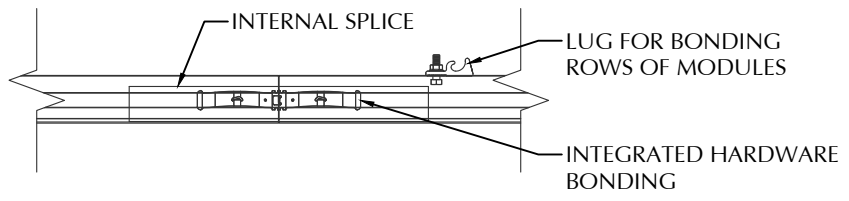


STATEMENT OF STRUCTURAL COMPLIANCE

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:



PV MODULES	
MAKE	REC
MODEL	REC420AA PURE 2
WIDTH	40.90 IN
LENGTH	73.40 IN
THICKNESS	30 MM
WEIGHT	47.60 LBS.
ARRAY AREA	334 SQFT.
ARRAY WEIGHT	834 LBS.

ROOF SUMMARY	
STRUCTURE:	
TYPE	TRUSSES
MATERIAL	SOUTHERN PINE #2
SIZE	2 X 4
SPACING	24 IN O.C.
ALLOWABLE SPAN	88 IN
PITCH	6/12
DENSITY	30 LBS./CU.FT.
DECKING:	
TYPE	OSB
MATERIAL	COMPOSITE
THICKNESS	7/16 IN
WEIGHT	1.60 LBS/SQFT
ROOFING:	
TYPE	ASPHALT SHINGLE
MATERIAL	ASPHALT
WEIGHT	2.30 LBS./SQFT.



CLIENT INFO
 RACHEL MARIE GOOSSEN
 249 MERCY LN
 BROADWAY NC 27505

PROJECT INFO
 DC INPUT: 10.080 kW
 AC OUTPUT: 11.500 kW
 DOI INSPT. METHOD: OPTION 2

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



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: 120 MPH
 RISK CATEGORY: II
 EXPOSURE: B
 SNOW: 15 PSF

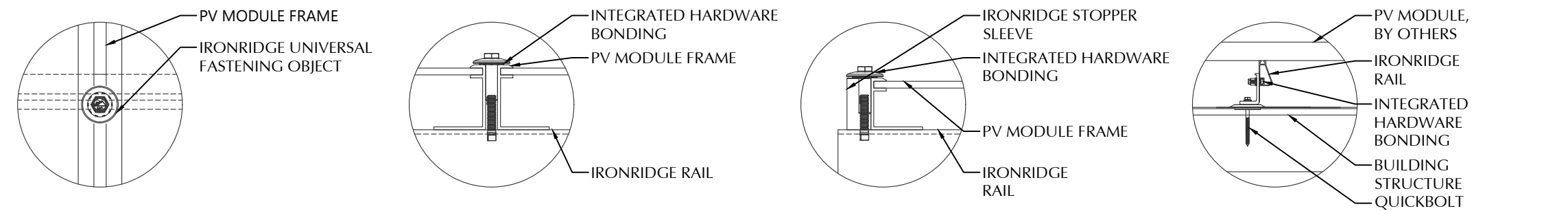
SHEET INDEX
 PV-1: COVER SHEET
 PV-2: PV STRUCTURAL
 PV-3: PV ELECTRICAL
 PV-4: PV EQUIPMENT LABELS
 PV-5: PV INSTALL GUIDE

VERSIONS

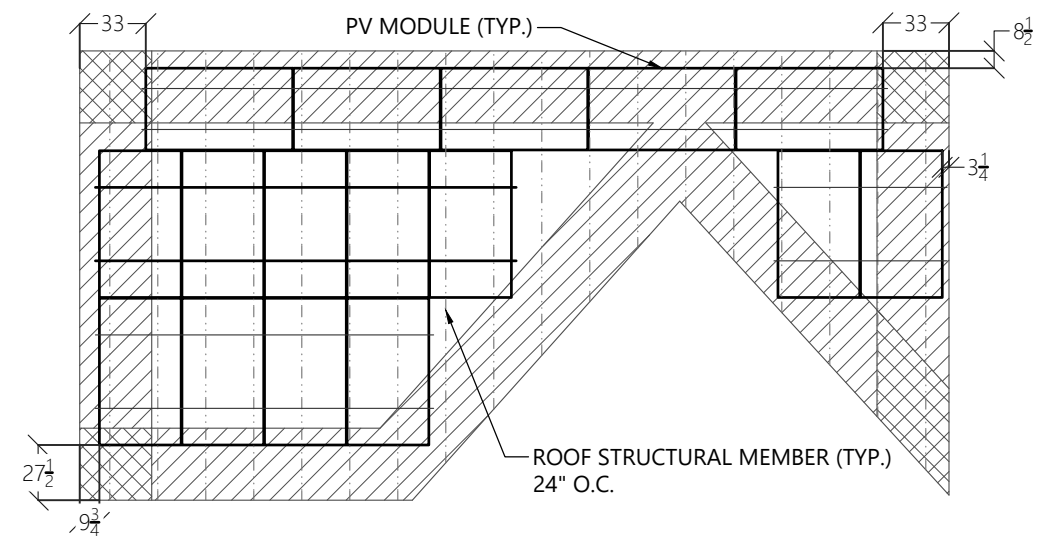
FOR:	DESIGNER:	DATE:
CONSTRUCTION	MCP	10/9/2024

PV SYSTEM STRUCTURAL

PV-2.1



1 ROOF FASTENER DETAIL
 NOT TO SCALE



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

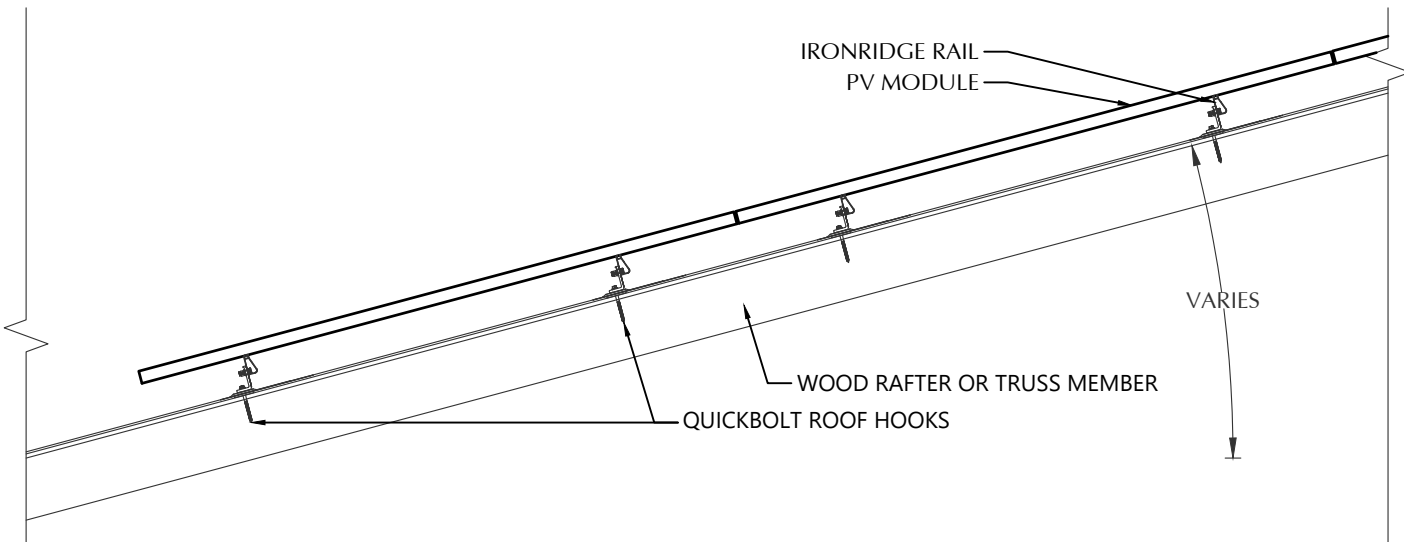
ROOF MOUNT SUMMARY		
MAXIMUM (IN)	MOUNT SPACING	RAIL OVERHANG
WIND ZONE 1	PORT 72 LAND 72	PORT 24 IN LAND 24 IN
WIND ZONE 2	PORT 48 LAND 48	PORT 23 IN LAND 24 IN
WIND ZONE 3	PORT 48 LAND 48	PORT 20 IN LAND 22 IN

ROOF LOADING	
GROUND SNOW LOAD:	15 LBS./SQFT.
LIVE LOAD	20 LBS./SQFT.
DEAD 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	PORT -448 LAND -251
UPLIFT ZONE 2	PORT -352 LAND -197
UPLIFT ZONE 3	PORT -352 LAND -197
DOWNWARD	PORT 419 LAND 234

ROOF MOUNT & FASTENER	
ROOF MOUNT:	
MAKE	QUICKBOLT
MODEL	4 IN QB1
MATERIAL	STAINLESS / EPDM
FASTENER:	
MAKE	QUICK SCREWS
MODEL	HANGER BOLT
MATERIAL	304 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	XR10
MATERIAL	ALUMINUM
WEIGHT	0.425 LBS/IN
SPACING	37 IN

© 2024 NC SOLAR NOW EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF NC SOLAR NOW.

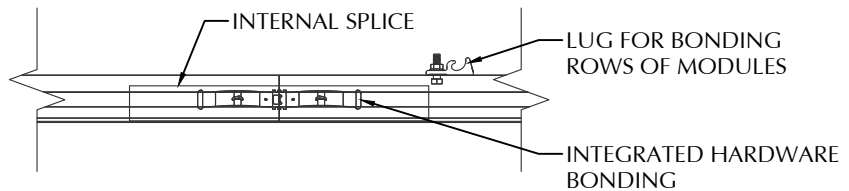


STATEMENT OF STRUCTURAL COMPLIANCE

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.

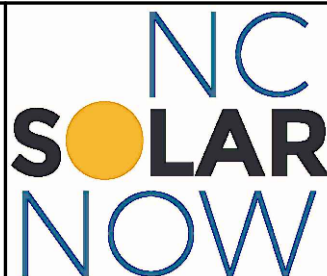
NAME: ANDREW W. KING, PE

SIGNED: *Andrew W. King*



PV MODULES	
MAKE	REC
MODEL	REC420AA PURE 2
WIDTH	40.90 IN
LENGTH	73.40 IN
THICKNESS	30 MM
WEIGHT	47.60 LBS.
ARRAY AREA	167 SQFT.
ARRAY WEIGHT	417 LBS.

ROOF SUMMARY	
STRUCTURE:	
TYPE	TRUSSES
MATERIAL	SOUTHERN PINE #2
SIZE	2 X 4
SPACING	24 IN O.C.
ALLOWABLE SPAN	88 IN
PITCH	6/12
DENSITY	30 LBS./CU.FT.
DECKING:	
TYPE	OSB
MATERIAL	COMPOSITE
THICKNESS	7/16 IN
WEIGHT	1.60 LBS./SQFT
ROOFING:	
TYPE	ASPHALT SHINGLE
MATERIAL	ASPHALT
WEIGHT	2.30 LBS./SQFT.



CLIENT INFO

RACHEL MARIE GOOSSEN
249 MERCY LN
BROADWAY NC 27505

PROJECT INFO

DC INPUT: 10.080 kW
AC OUTPUT: 11.500 kW
DOI INSPT. METHOD: OPTION 2

Model Energy

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

P-1194



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: 120 MPH
RISK CATEGORY: II
EXPOSURE: B
SNOW: 15 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	MCP	10/9/2024

PV SYSTEM STRUCTURAL

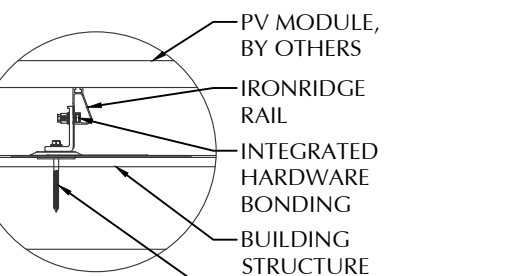
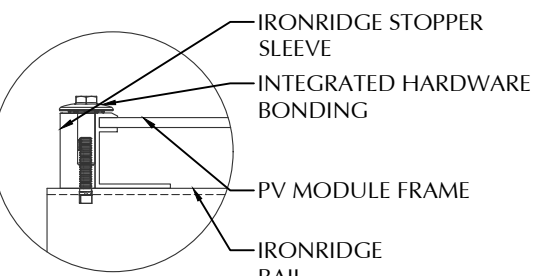
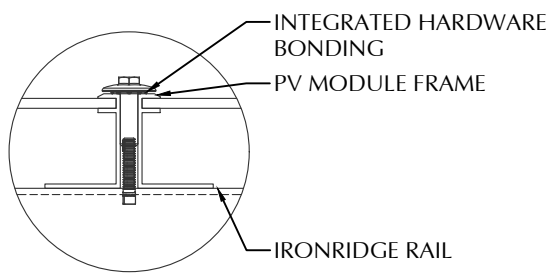
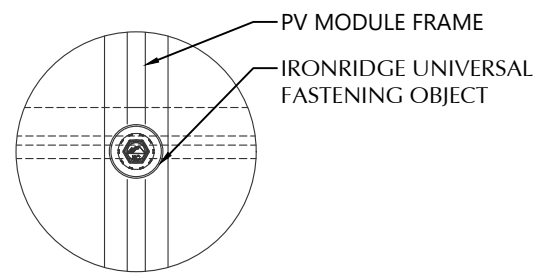
PV-2.2

ROOF MOUNT SUMMARY		
MAXIMUM (IN)	MOUNT SPACING	RAIL OVERHANG
WIND ZONE 1	72 IN	24 IN
WIND ZONE 2	48 IN	23 IN
WIND ZONE 3	48 IN	20 IN

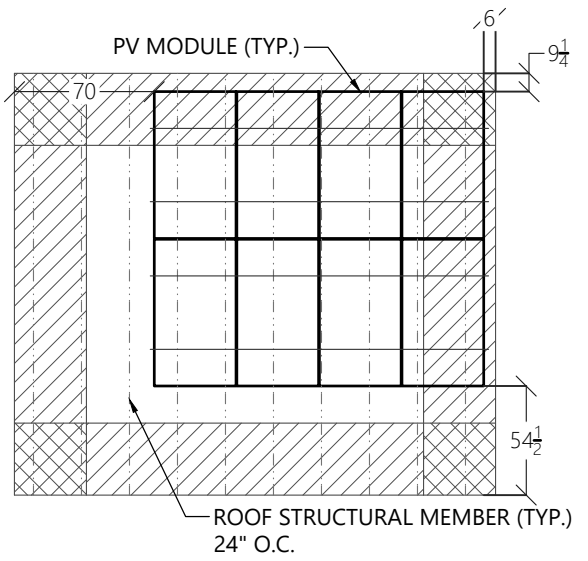
ROOF LOADING	
GROUND SNOW LOAD:	15 LBS./SQFT.
LIVE LOAD	20 LBS./SQFT.
DEAD LOAD	
ROOFING	3.9 LBS./SQFT.
PV ARRAY	2.5 LBS./SQFT.
TOTAL	6.4 LBS./SQFT.
WIND LOAD:	
UPLIFT ZONE 1	-24.6 LBS./SQFT.
UPLIFT ZONE 2	-29.0 LBS./SQFT.
UPLIFT ZONE 3	-29.0 LBS./SQFT.
DOWNWARD	23.0 LBS./SQFT.
FASTENER LOAD:	
UPLIFT ZONE 1	-448 LBS.
UPLIFT ZONE 2	-352 LBS.
UPLIFT ZONE 3	-352 LBS.
DOWNWARD	419 LBS.

ROOF MOUNT & FASTENER	
ROOF MOUNT:	
MAKE	QUICKBOLT
MODEL	4 IN QB1
MATERIAL	STAINLESS / EPDM
FASTENER:	
MAKE	QUICK SCREWS
MODEL	HANGER BOLT
MATERIAL	304 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	XR10
MATERIAL	ALUMINUM
WEIGHT	0.425 LBS/IN
SPACING	37 IN



1 ROOF FASTENER DETAIL
NOT TO SCALE



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

© 2024 NC SOLAR NOW EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF NC SOLAR NOW.

CONDUCTOR SCHEDULE

TAG	CURRENT CARRYING CONDUCTORS			GROUNDING CONDUCTORS			CONDUIT/RACEWAY			NOTES
	QTY.	SIZE	INSULATION	QTY.	SIZE	INSULATION	QTY.	SIZE	LOCATION	
C1	6	10 AWG	PV WIRE	1	6 AWG	BARE	-	-	FREE AIR	1
C2	6	10 AWG	THWN-2	1	10 AWG	THWN-2	1	3/4"	EXT/INT	2,4
C3	3	6 AWG	THWN-2	1	10 AWG	THWN-2	1	1"	EXTERIOR	2,4
C4	3	4/0 AWG ALUMINUM	XHHW	1	6 AWG	THWN-2	1	2"	EXT/INT	2,4
C5	3	4/0 AWG ALUMINUM	XHHW	-	-	-	1	2"	EXTERIOR	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	TESLA
MODEL	BACKUP GATEWAY 3
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
DISCONNECT CURR.	200 AMPS
UL LIST. (Y/N)	YES
MAIN BREAKER (Y/N)	YES
MAIN BREAKER RATING	200 AMPS

- TROUGH MAY BE USED IF NECESSARY
- INSTALL 200A MAIN BREAKER THAT WILL SERVE AS THE NEW SERVICE DISCONNECT SWITCH
- INSTALL BONDING JUMPER FROM NEUTRAL TO GROUND
- FEED BACKED-UP LOADS PANEL VIA BACKUP LUGS
- LAND POWERWALL 3 ON 60A BREAKER IN EXISTING GATEWAY INTERNAL PANELBOARD

PV MODULE

MAKE	REC
MODEL	REC420AA PURE 2
NOM. POWER (PNOM)	420 WATTS
NOM. VOLT. (VMPP)	42.2 VOLTS
O.C. VOLT (VOC)	49.1 VOLTS
MAX. SYS. VOLT.	1000 VOLTS
NOM. CURR. (IMPP)	10.0 AMPS
S.C. CURR. (ISC)	10.7 AMPS
TEMP. COEF. (PMPP)	-0.24 %/C
TEMP. COEF. (Voc)	-0.24 %/C
MAX SERIES FUSE	25 AMPS
UL COMPLIANT (Y/N)	YES

MAX. DC VOLTAGE CALCULATION

$V_{OC}MAX = V_{OC} * (1 + (TMIN - TSTC) * (VTC / 100))$	
$V_{OC}MAX$	53.47
MAX STRING VOLTAGE	481.2

MAX. DC CURRENT CALCULATION

$I_{SC}MAX = I_{SC} * TCX$	
$I_{SC}MAX$ (AMPS)	13.38

MID-CIRCUIT INTERRUPTER

MAKE	TESLA
MODEL	MCI-2
ENCL. RATING	NEMA 4X / IP65
DC INPUT:	
CONNECTOR TYPE	MC4
MAX IN-LINE PV MODULES	3
MAX MCI PER STRING	5
MAX. SYSTEM VOLTAGE	1000 VOLTS
NOM. CURRENT (Imp)	13.00 AMPS
MAX. CURRENT (Isc)	17.00 AMPS
RSD COMPLIANT (Y/N)	YES
UL COMPLIANT (Y/N)	YES

JUNCTION BOX

MAKE	SOLADECK
MODEL	0799-5B
PROTECT. RATING	NEMA TYPE 3R
UL LIST. (Y/N)	YES

EX. BACKED-UP LOADS PANEL

MAKE	SQUARE D
MODEL	QOC40UF
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

DC/AC INVERTER & BATTERY

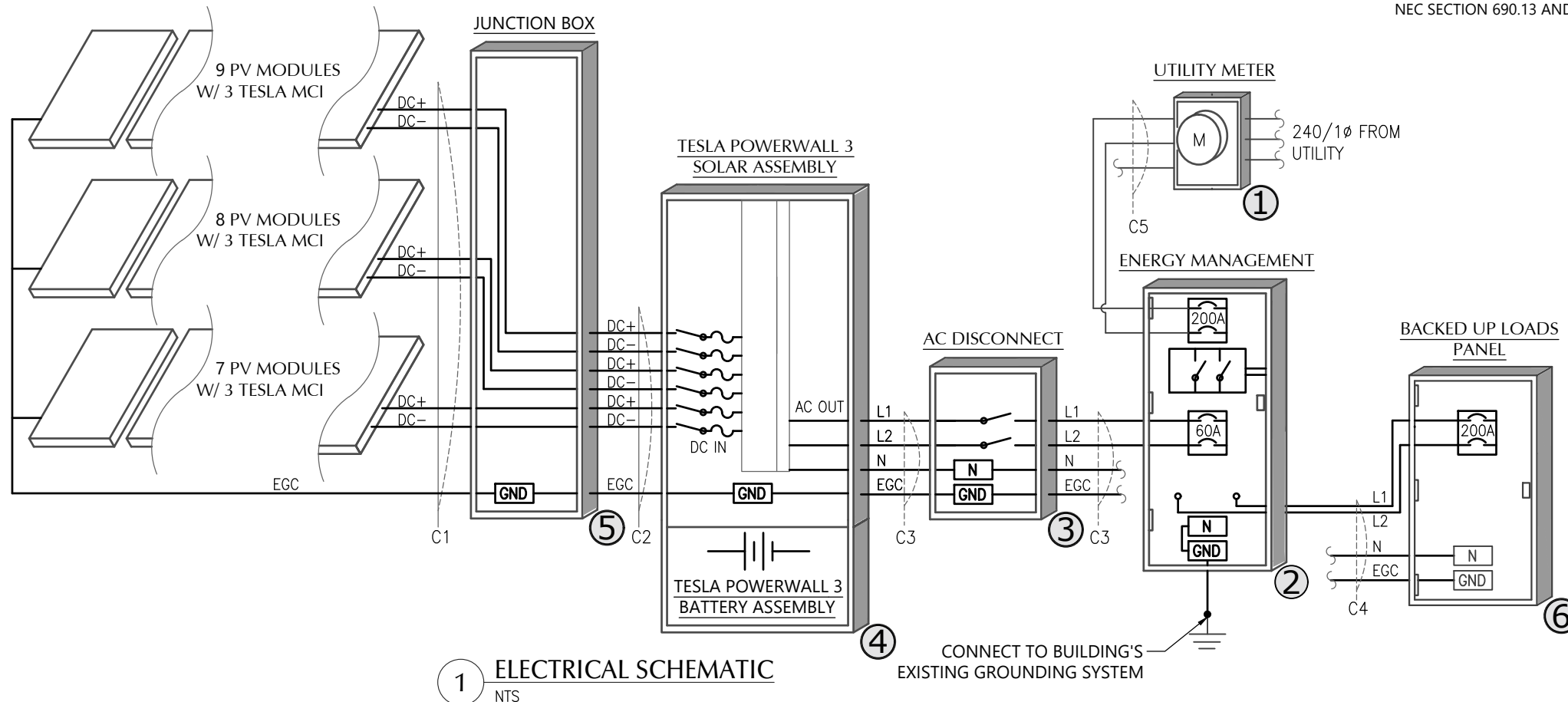
MAKE	TESLA POWERWALL 3
MODEL	1707000-XX-Y
INVERTER INFO:	
DC INPUT:	
MAX POWER	20000 WATTS
INPUT VOLT. RANGE	60-550 VOLTS
MPPT VOLT. RANGE	60-480 VOLTS
MAX. MPPT CUR.	13 AMPS
STRING INPUTS	6 MPPTs
AC OUTPUT:	
MAX. CONT. POWER	11500 WATTS
NOM. VOLT.	240 VOLTS
MAX. CONT. CURRENT	48.00 AMPS
RAPID SHUTDOWN (Y/N)	YES
PROTECT. RATING	NEMA TYPE 3R
BATTERY INFO:	
USABLE ENERGY	13.5 kWh
NOM. VOLT.	240 VOLTS
MAX. CONT. CHARGE	5000 WATTS
UL LIST. (Y/N)	YES

AC DISCONNECT

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

- RE-FEED BACKED-UP LOADS PANEL VIA GATEWAY OUTPUTS
- REMOVE N/G BOND IN BACKED-UP LOADS PANEL ONLY

- 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
- DISCONNECT MARKED AND RATED PER NEC SECTION 690.13 AND 705.10



1 ELECTRICAL SCHEMATIC
NTS

CONNECT TO BUILDING'S EXISTING GROUNDING SYSTEM



CLIENT INFO

RACHEL MARIE GOOSSEN
249 MERCY LN
BROADWAY NC 27505

PROJECT INFO

DC INPUT: 10.080 kW
AC OUTPUT: 11.500 kW
DOI INSPT. METHOD: OPTION 2

Model Energy

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

P-1194



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: 120 MPH
RISK CATEGORY: II
EXPOSURE: B
SNOW: 15 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	MCP	10/9/2024

PV SYSTEM
ELECTRICAL

PV-3.1

© 2024 NC SOLAR NOW EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF NC SOLAR NOW.

WARNING: PHOTOVOLTAIC POWER SOURCE

5 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.
NEC 690.31 (G)(3)&(4)

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)(c)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

3 PLACE ON RAPID SHUTDOWN SWITCH OR EQUIPMENT WITH INTEGRATED RAPID SHUTDOWN *REFLECTIVE*
NEC 690.56 (C)(3)

PV SYSTEM DISCONNECT

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

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.

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

2

WARNING
 THREE POWER SOURCES

1 2 6 SOURCES: UTILITY GRID, BATTERY AND PV SOLAR ELECTRIC SYSTEM
NEC 705.12(B)(3)
 PLACE ON ALL EQUIPMENT THAT IS SUPPLIED BY THREE POWER SOURCES

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

PHOTOVOLTAIC SYSTEM AC DISCONNECT

OPERATING VOLTAGE	240	VOLTS
OPERATING CURRENT	48.0	AMPS

3 PLACE ON INTERCONNECTION DISCONNECTING MEANS
NEC 690.54

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

2 6 PLACE ON BACKED UP LOAD PANEL(S).

DIRECT CURRENT PHOTOVOLTAIC POWER SOURCE

MAXIMUM VOLTAGE	600	VDC
MAX CIRCUIT CURRENT	40.14	AMPS

4 PLACE ON ALL DC DISCONNECTING MEANS
NEC 690.53

SERVICE DISCONNECT LOCATED:
 NORTH WALL OF RESIDENCE

BATTERY DISCONNECT LOCATED:
 NORTH WALL OF RESIDENCE

PV DISCONNECT LOCATED:
 NORTH WALL OF RESIDENCE

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

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 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



CLIENT INFO
 RACHEL MARIE GOOSSEN
 249 MERCY LN
 BROADWAY NC 27505

PROJECT INFO
 DC INPUT: 10.080 kW
 AC OUTPUT: 11.500 kW
 DOI INSP. METHOD: OPTION 2

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



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: 120 MPH
 RISK CATEGORY: II
 EXPOSURE: B
 SNOW: 15 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

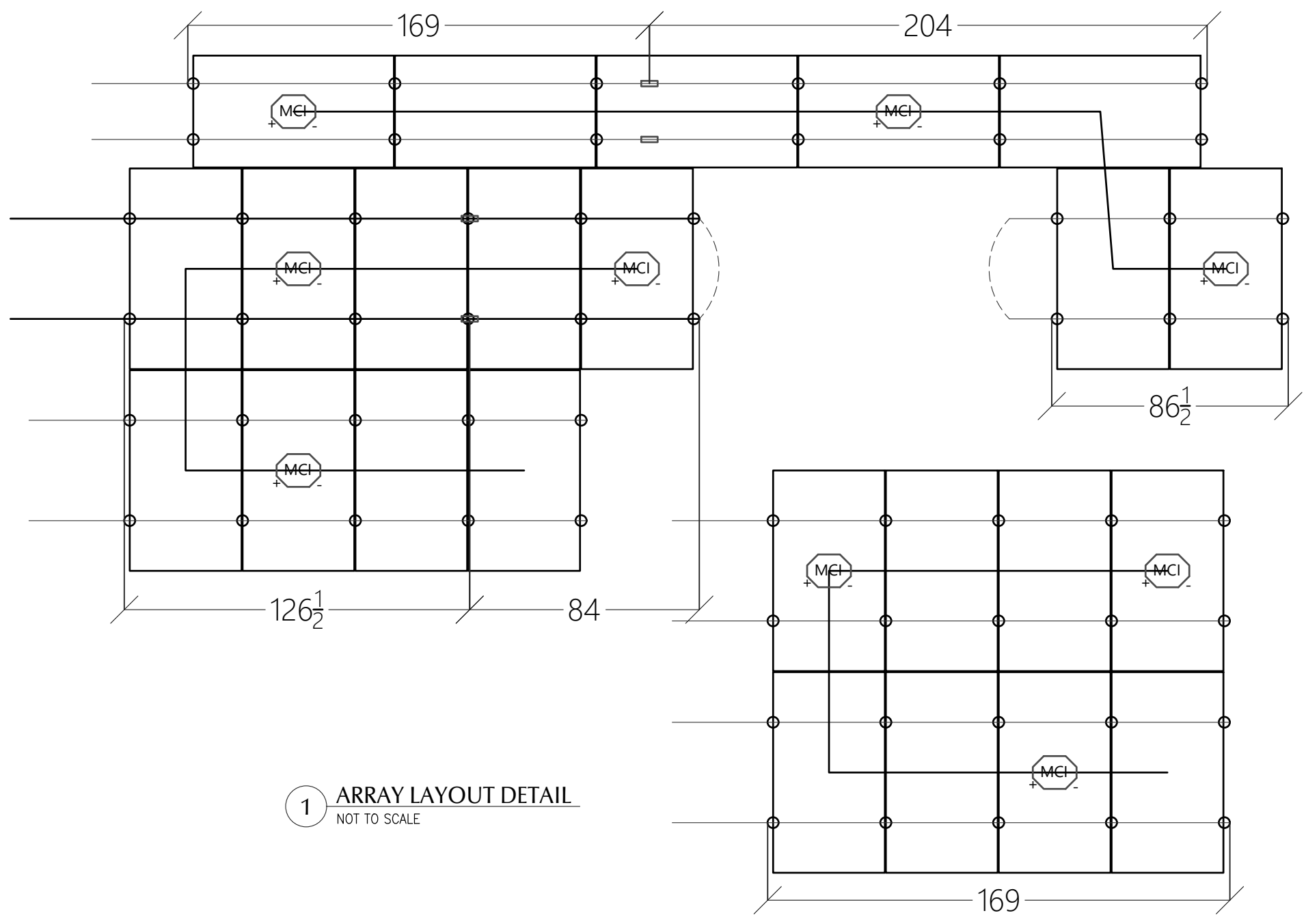
VERSIONS

FOR:	DESIGNER	DATE
CONSTRUCTION	MCP	10/9/2024

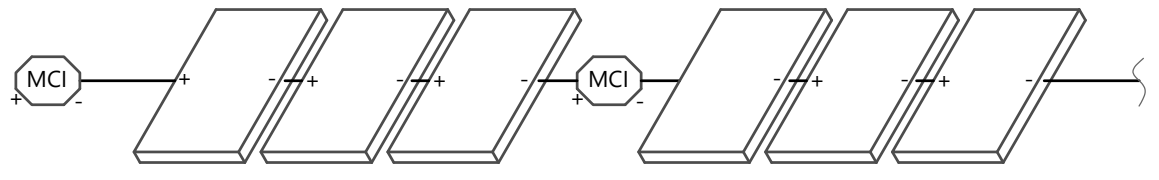
PV SYSTEM EQUIPMENT LABELS

PV-4.1

© 2024 NC SOLAR NOW EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF NC SOLAR NOW.



1 ARRAY LAYOUT DETAIL
NOT TO SCALE



2 STRING WIRING + MCI DETAIL
NOT TO SCALE



CLIENT INFO
 RACHEL MARIE GOOSSEN
 249 MERCY LN
 BROADWAY NC 27505

PROJECT INFO
 DC INPUT: 10.080 kW
 AC OUTPUT: 11.500 kW
 DOI INSPT. METHOD: OPTION 2

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



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: 120 MPH
 RISK CATEGORY: II
 EXPOSURE: B
 SNOW: 15 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	MCP	10/9/2024

PV SYSTEM INSTALL GUIDE

PV-5.1

SOLAR'S MOST TRUSTED



REC ALPHA PURE-R SERIES

PRODUCT SPECIFICATIONS

COMPACT PANEL SIZE

9 A MODULE CURRENT
COMPATIBLE WITH MLPE

430 WP
20.7 $\frac{W}{FT^2}$
22.3% EFFICIENCY



LEAD-FREE
ROHS COMPLIANT

EXPERIENCE
 α
PERFORMANCE

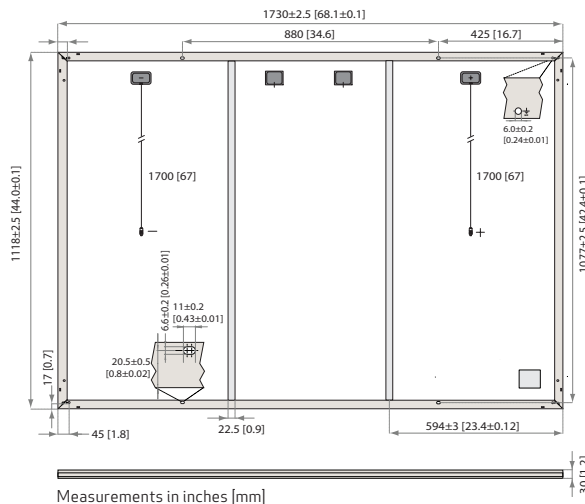
REC ALPHA PURE-R SERIES

PRODUCT SPECIFICATIONS



GENERAL DATA

Cell type:	80 half-cut REC bifacial, heterojunction cells with lead-free, gapless technology
Glass:	0.13in (3.2mm) solar glass with anti-reflective surface treatment in accordance with EN 12150
Backsheet:	Highly resistant polymer (black)
Frame:	Anodized aluminum (black)
Junction box:	4-part, 4 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 (4 mm ²) PV wire, 67 + 67 in (1.7 + 1.7 m) in accordance with EN 50618
Dimensions:	68.1 x 44.0 x 1.2 in (20.77 ft ²) / 1730 x 1118 x 30 mm (1.93 m ²)
Weight:	47.4 lbs (21.5 kg)
Origin:	Made in Singapore



ELECTRICAL DATA

Product Code*: RECxxxAA PURE-R

STC

	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)	48.8	49.4	50.0	50.5
Nominal Power Current - I _{MPP} (A)	8.20	8.30	8.40	8.52
Open Circuit Voltage - V _{OC} (V)	58.9	59.2	59.4	59.7
Short Circuit Current - I _{SC} (A)	8.80	8.86	8.91	8.97
Power Density (W/ft ²)	19.3	19.7	20.2	20.7
Panel Efficiency (%)	20.7	21.2	21.8	22.3

NMOT

	305	312	320	327
Power Output - P _{MAX} (Wp)	305	312	320	327
Nominal Power Voltage - V _{MPP} (V)	46.0	46.6	47.1	47.6
Nominal Power Current - I _{MPP} (A)	6.64	6.70	6.80	6.88
Open Circuit Voltage - V _{OC} (V)	55.5	55.8	56.0	56.3
Short Circuit Current - I _{SC} (A)	7.11	7.16	7.20	7.24

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

CERTIFICATIONS

IEC 61215:2016, IEC 61730:2016, UL 61730	
IEC 62804	PID
IEC 61701	Salt Mist
IEC 62716	Ammonia Resistance
UL 61730	Fire Type Class 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

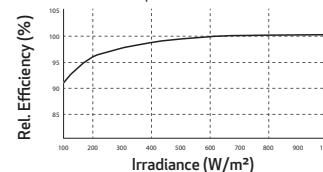
*The temperature coefficients stated are linear values

DELIVERY INFORMATION

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

LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC:



Available from:

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.

REC Solar PTE. LTD.
20 Tuas South Ave. 14
Singapore 637312
post@recgroup.com



Specifications subject to change without notice.

Ref: PD-DS-AAPR Rev 3 02.23

Powerwall 3

Power Everything

—
Powerwall 3 is a fully integrated solar and battery system, designed to accelerate the transition to sustainable energy. Customers can receive whole home backup, cost savings, and energy independence by producing and consuming their own energy while participating in grid services. Once installed, customers can manage their system using the Tesla App to customize system behavior to meet their energy goals.

Powerwall 3 achieves this by supporting up to 20 kW DC of solar and providing 11.5 kW AC of continuous power per unit. It has the ability to start heavy loads up to 150 A LRA, meaning a single unit can support the power needs of most homes. Powerwall 3 is designed for mass production, fast and efficient installations, easy system expansion, and simple connection to any electrical service.



Powerwall 3 Technical Specifications

System Technical Specifications

Model Number	1707000-xx-y
Nominal Grid Voltage (Input & Output)	120/240 VAC
Grid Type	Split phase
Frequency	60 Hz
Overcurrent Protection Device	Configurable up to 60 A
Solar to Battery to Grid Round Trip Efficiency	89% ^{1,2}
Solar to Grid Efficiency	97% ³
Supported Islanding Devices	Backup Gateway 2, Backup Switch
Connectivity	Wi-Fi (2.4 and 5 GHz), Dual-port switched Ethernet, Cellular (LTE/4G ⁴)
Hardware Interface	Dry contact relay, Rapid Shutdown (RSD) certified switch and 2-pin connector, RS-485 for meters
AC Metering	Revenue Grade (+/- 0.5%)
Protections	Integrated arc fault circuit interrupter (AFCI), Isolation Monitor Interrupter (IMI), PV Rapid Shutdown (RSD) using Tesla Mid-Circuit Interrupters
Customer Interface	Tesla Mobile App
Warranty	10 years

Solar Technical Specifications

Maximum Solar STC Input	20 kW
Withstand Voltage	600 V DC
PV DC Input Voltage Range	60 – 550 V DC
PV DC MPPT Voltage Range	150 – 480 V DC
MPPTs	6
Maximum Current per MPPT (I_{mp})	13 A ⁵
Maximum Short Circuit Current per MPPT (I_{sc})	15 A ⁵

Battery Technical Specifications

Nominal Battery Energy	13.5 kWh AC ²
Maximum Continuous Discharge Power	11.5 kW AC
Maximum Continuous Charge Power	5 kW AC
Output Power Factor Rating	0 - 1 (Grid Code configurable)
Maximum Continuous Current	48 A
Maximum Output Fault Current	10 kA
Load Start Capability (1 s)	150 A LRA
Power Scalability	Up to 4 Powerwall 3 units supported

¹ Typical solar shifting use case.

² Values provided for 25°C (77°F), at beginning of life. 3.3 kW charge/discharge power.

³ Tested using CEC weighted efficiency methodology.

⁴ Cellular connectivity subject to network service coverage and signal strength.

⁵ Where the DC input current exceeds the MPPT rating, a jumper can be used to combine two MPPTs into a single input to intake DC current up to 26 A I_{mp} / 30 A I_{sc} .

Powerwall 3 Technical Specifications

Environmental Specifications

Operating Temperature	-20°C to 50°C (-4°F to 122°F) ⁶
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	-20°C to 30°C (-4°F to 86°F), up to 95% RH, non-condensing, State of Energy (SOE): 25% initial
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Rating	NEMA 3R
Ingress Rating	IPX7 (Battery & Power Electronics) IPX5 (Wiring Compartment)
Pollution Rating	PD3
Operating Noise @ 1 m	< 50 db(A) typical < 62 db(A) maximum

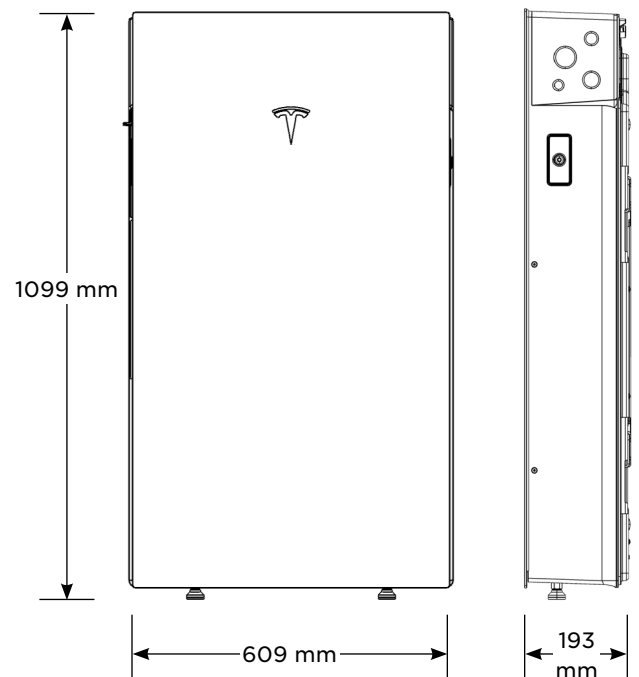
⁶ Performance may be de-rated at operating temperatures above 40°C (104°F).

Compliance Information

Certifications	UL 1642, UL 1699B, UL 1741, UL 1741 SA, UL 1741 SB, UL 3741, UL 1973, UL 1998, UL 9540, IEEE 1547-2018, IEEE 1547.1, UN 38.3
Grid Connection	United States
Emissions	FCC Part 15 Class B
Environmental	RoHS Directive 2011/65/EU
Seismic	AC156, IEEE 693-2005 (high)
Fire Testing	Meets the unit level performance criteria of UL 9540A

Mechanical Specifications

Dimensions	1099 x 609 x 193 mm (43.25 x 24 x 7.6 in)
Weight	130 kg (287 lb)
Mounting Options	Floor or wall mount



Solar Shutdown Device Technical Specifications

The Solar Shutdown Device is a Mid-Circuit Interrupter (MCI) and is part of the PV system rapid shutdown (RSD) function in accordance with Article 690 of the applicable NEC. When paired with Powerwall 3, solar array shutdown is initiated by any loss of AC power.

Electrical Specifications	Model	MCI-1	MCI-2
	Nominal Input DC Current Rating (I_{MP})	12 A	13 A
	Maximum Input Short Circuit Current (I_{SC})	19 A	17 A
	Maximum System Voltage (PVHCS)	600 V DC	1000 V DC ⁷
⁷ Maximum System Voltage is limited by Powerwall to 600 V DC.			
RSD Module Performance	Maximum Number of Devices per String	5	5
	Control	Power Line Excitation	Power Line Excitation
	Passive State	Normally Open	Normally Open
	Maximum Power Consumption	7 W	7 W
	Warranty	25 years	25 years
Environmental Specifications	Operating Temperature	-40°C to 50°C (-40°F to 122°F)	-45°C to 70°C (-49°F to 158°F)
	Storage Temperature	-30°C to 70°C (-22°F to 158°F)	-30°C to 70°C (-22°F to 158°F)
	Enclosure Rating	NEMA 4X / IP65	NEMA 4X / IP65
Mechanical Specifications	Electrical Connections	MC4 Connector	MC4 Connector
	Housing	Plastic	Plastic
	Dimensions	125 x 150 x 22 mm (5 x 6 x 1 in)	173 x 45 x 22 mm (6.8 x 1.8 x 1 in)
	Weight	350 g (0.77 lb)	120 g (0.26 lb)
	Mounting Options	ZEP Home Run Clip M4 Screw (#10) M8 Bolt (5/16") Nail / Wood screw	Wire Clip
Compliance Information	Certifications	UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)	
	RSD Initiation Method	External System Shutdown Switch or Powerwall 3 Enable Switch	

UL 3741 PV Hazard Control (and PVRSA) Compatibility

The following categories of solar module meet the UL 3741 PVHCS listing when installed with Powerwall 3 and Solar Shutdown Devices.

Tesla Solar Roof	PV Hazard Control System: BIPV compliance document
Tesla or Hanwha (Q.Peak Duo BLK or BLK-G6+) Modules certified for use with ZEP racking	PV Hazard Control System: ZS PVHCS compliance document
Other module and racking combinations	PV Hazard Control System: Generic PV Array compliance document

POWERWALL

Backup Gateway 2

The Backup Gateway 2 for Tesla Powerwall provides energy management and monitoring for solar self-consumption, time-based control, and backup.

The Backup Gateway 2 controls connection to the grid, automatically detecting outages and providing a seamless transition to backup power. When equipped with a main circuit breaker, the Backup Gateway 2 can be installed at the service entrance. When the optional internal panelboard is installed, the Backup Gateway 2 can also function as a load center.

The Backup Gateway 2 communicates directly with Powerwall, allowing you to monitor energy use and manage backup energy reserves from any mobile device with the Tesla app.



PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240V
Feed-In Type	Split Phase
Grid Frequency	60 Hz
Current Rating	200 A
Maximum Input Short Circuit Current	10 kA ¹
Overcurrent Protection Device	100-200A; Service Entrance Rated ¹
Overvoltage Category	Category IV
AC Meter	Revenue accurate (+/- 0.2 %)
Primary Connectivity	Ethernet, Wi-Fi
Secondary Connectivity	Cellular (3G, LTE/4G) ²
User Interface	Tesla App
Operating Modes	Support for solar self-consumption, time-based control, and backup
Backup Transition	Automatic disconnect for seamless backup
Modularity	Supports up to 10 AC-coupled Powerwalls
Optional Internal Panelboard	200A 6-space / 12 circuit Eaton BR Circuit Breakers
Warranty	10 years

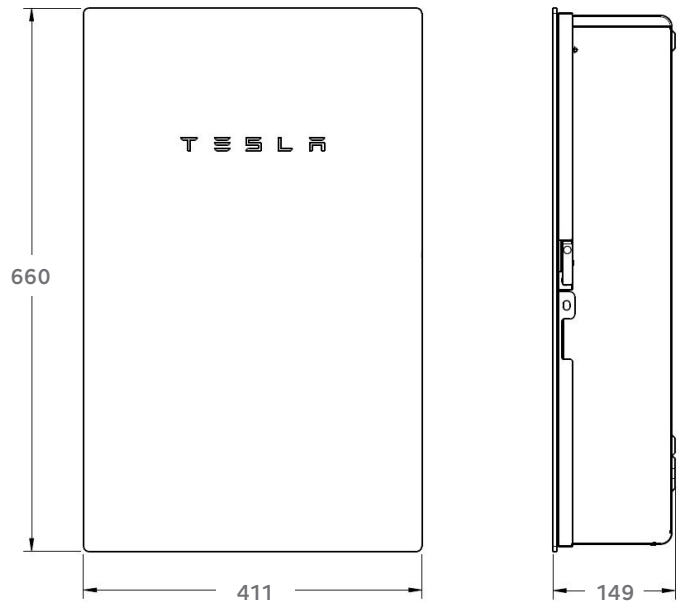
¹ When protected by Class J fuses, Backup Gateway 2 is suitable for use in circuits capable of delivering not more than 22kA symmetrical amperes.
² The customer is expected to provide internet connectivity for Backup Gateway 2; cellular should not be used as the primary mode of connectivity. Cellular connectivity subject to network operator service coverage and signal strength.

COMPLIANCE INFORMATION

Certifications	UL 67, UL 869A, UL 916, UL 1741 PCS CSA 22.2 0.19, CSA 22.2 205
Emissions	FCC Part 15, ICES 003

MECHANICAL SPECIFICATIONS

Dimensions	660 mm x 411 mm x 149 mm (26 in x 16 in x 6 in)
Weight	20.4 kg (45 lb)
Mounting options	Wall mount, Semi-flush mount



ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Operating Humidity (RH)	Up to 100%, condensing
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R

Backup Switch

The Tesla Backup Switch controls connection to the grid in a Powerwall system, and can be easily installed behind the utility meter or in a standalone meter panel downstream of the utility meter.

The Backup Switch automatically detects grid outages, providing a seamless transition to backup power. It communicates directly with Powerwall, allowing home energy usage monitoring from any mobile device with the Tesla app.

Performance Specifications

Model Number	1624171-xx-y
Continuous Load Rating	200 A, 120/240 V split phase
Maximum Supply Short Circuit Current	22 kA with breaker ¹⁰
Communication	CAN
AC Meter	Revenue accurate (+/- 0.5%)
Expected Service Life	21 years
Warranty	10 years

¹⁰ Breaker maximum supply short circuit current rating must be equal to or greater than the available fault current.

Environmental Specifications

Operating Temperature	-40°C to 50°C (-40°F to 122°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Enclosure Rating	NEMA 3R
Pollution Rating	PD3

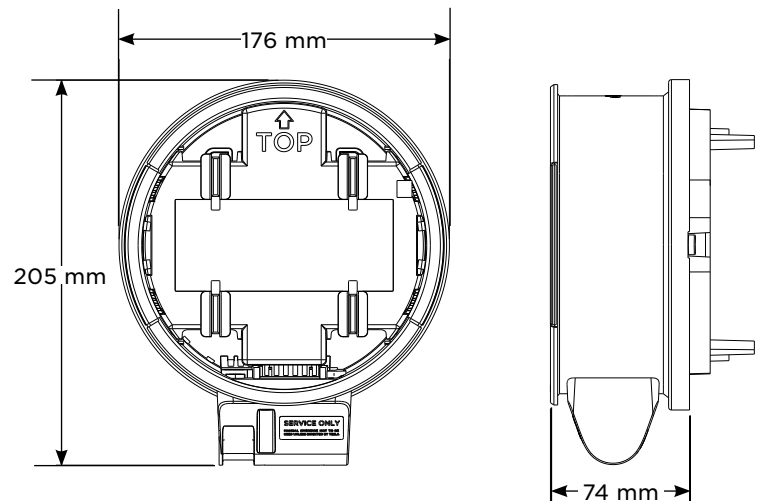
Compliance Information

Safety Standards	USA: UL 414, UL 2735, UL 916, CA Prop 65
Emmissions	FCC, ICES

Mechanical Specifications

Dimensions	176 x 205 x 74 mm (6.9 x 8.1 x 2.9 in)
Weight	2.8 lb
Meter and Socket Compatibility	ANSI Type 2S, ringless or ring type
External Service Interface	Contactor manual override ¹¹ Reset button
Conduit Compatibility	1/2-inch NPT

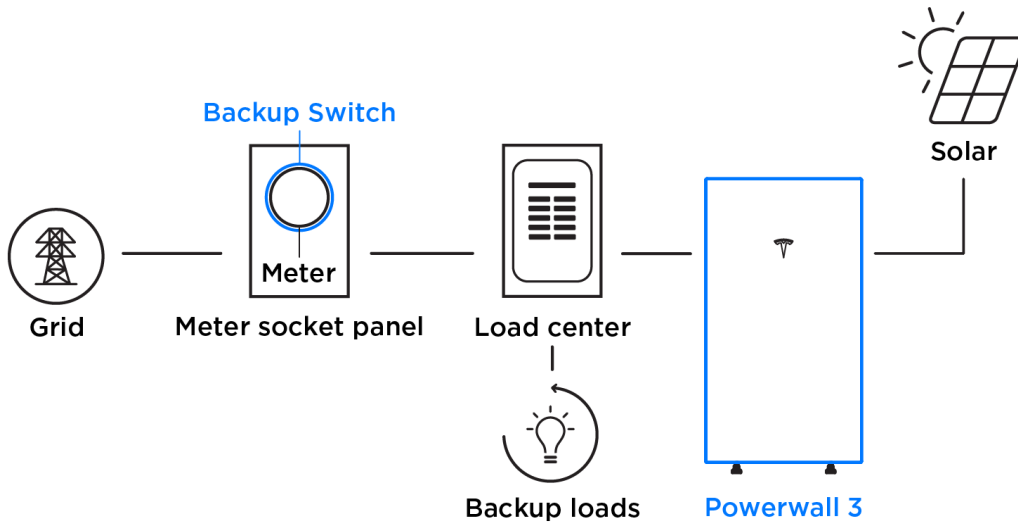
¹¹ Manually overrides the contactor position during a service event.



Powerwall 3 Example System Configurations

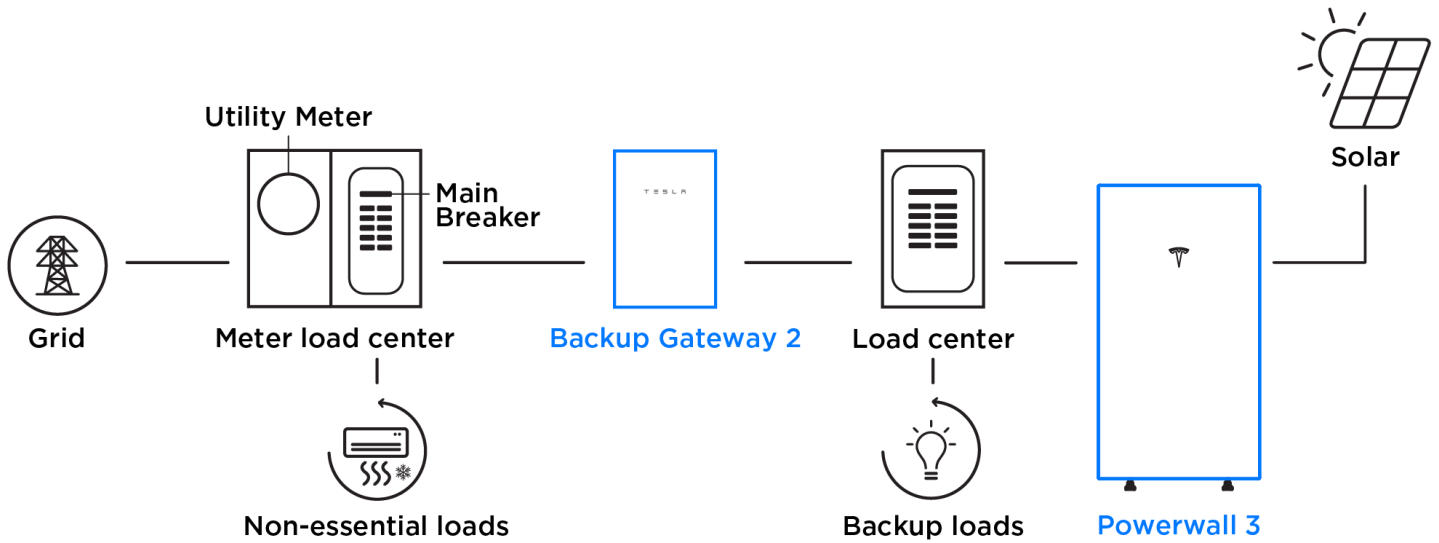
Powerwall 3 with Backup Switch

Whole Home Backup



Powerwall 3 with Backup Gateway 2

Partial Home Backup



RSTC Enterprises, Inc.
2214 Heimstead Road
Eau Claire, WI 54703
715-830-9997



Outdoor Photovoltaic Enclosures

Composition/Cedar Roof System

ETL listed and labeled

Report # 3171411PRT-002 Revised May, 2018

- UL50 Type 3R, 11 Edition Electrical equipment enclosures
- CSA C22.2 No. 290 Nema Type 3R
- Conforms to UL 1741 Standard

0799 Series Includes:

- | | |
|----------|------------------|
| 0799 - 2 | Wire size 2/0-14 |
| 0799 - 5 | Wire size 14-6 |
| 0799 - D | Wire size 14-8 |

Models available in Grey, Black or Stainless Steel

Basic Specifications

Material options:

- Powder coated, 18 gauge galvanized 90 steel (1,100 hours salt spray)
- Stainless steel

Process - Seamless draw (stamped)

Flashing - 15.25" x 17.25"

Height - 3"

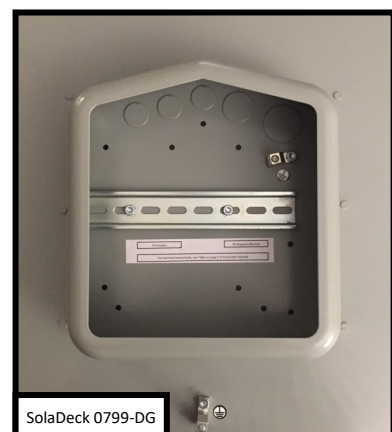
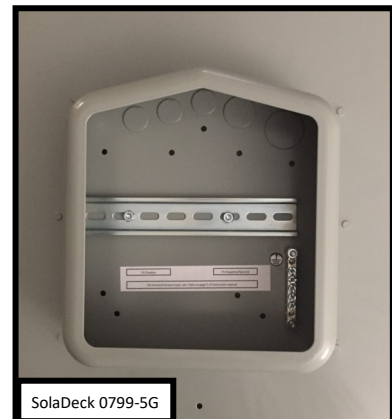
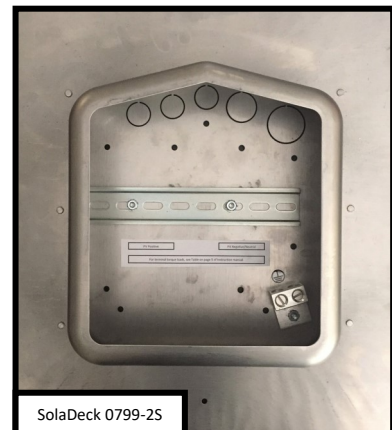
Cavity - 255 Cubic inches

Base Plate:

- Fastened to base using toggle fastening system
- 5 roof deck knockouts
- Knockout sizes: (3) .5", (1) .75" and (1) 1"
- 8", 35mm slotted din rail
- Ground Block

Passthrough and combiner kits are available for either AC or DC applications.

0799 Series



Product data sheet

Specifications

SQUARE D

Green Premium™



Safety switch, general duty, non fusible, 60A, 2 pole, 10hp, 240VAC, NEMA 3R, bolt on provision

DU222RB

Product availability : Stock - Normally stocked in distribution facility

Price* : 353.00 USD

Main

Product	Single Throw Safety Switch
Duty Rating	General duty
Device Application	Residential
Disconnect Type	Non-fusible disconnect switch
Factory Installed Neutral	None
Phase	3 phase
Number of Poles	2
Current Rating	60 A
Voltage Rating	240 V AC
Enclosure Rating NEMA	NEMA 3R
Motor power hp	10 hp at 240 V AC 60 Hz for 1 phase motors

Complementary

Mounting Type	Surface
Electrical Connection	Lugs
Wiring configuration	2 wires
Wire Size	AWG 12...AWG 3 aluminium AWG 14...AWG 3 copper
Tightening torque	35 lbf.in (3.95 N.m) 0.00...0.01 in ² (2.08...5.26 mm ²) (AWG 14...AWG 10) 35 lbf.in (3.95 N.m) (AWG 14...AWG 10) 45 lbf.in (5.08 N.m) 0.01 in ² (8.37 mm ²) (AWG 8) 45 lbf.in (5.08 N.m) 0.02...0.03 in ² (12.3...21.12 mm ²) (AWG 6...AWG 4) 50 lbf.in (5.65 N.m) 0.04 in ² (26.67 mm ²) (AWG 3)
Depth	3.75 in (95.25 mm)
Width	7.75 in (196.85 mm)
Height	9.63 in (244.60 mm)
Net Weight	16.98 lb(US) (7.7 kg)

Environment

Certifications	UL listed file E2875
----------------	----------------------

* Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

Ordering and shipping details

Category	00106-D & DU SW,NEMA3R, 30-200A
Discount Schedule	DE1A
GTIN	785901491491
Returnability	Yes
Country of origin	MX

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	5.30 in (13.462 cm)
Package 1 Width	7.20 in (18.288 cm)
Package 1 Length	10.00 in (25.4 cm)
Package 1 Weight	4.65 lb(US) (2.109 kg)
Unit Type of Package 2	PAL
Number of Units in Package 2	120
Package 2 Height	36.50 in (92.71 cm)
Package 2 Width	40.00 in (101.6 cm)
Package 2 Length	48.00 in (121.92 cm)
Package 2 Weight	610.00 lb(US) (276.691 kg)
Unit Type of Package 3	CAR
Number of Units in Package 3	5
Package 3 Height	10.70 in (27.178 cm)
Package 3 Width	10.20 in (25.908 cm)
Package 3 Length	23.50 in (59.69 cm)
Package 3 Weight	24.60 lb(US) (11.158 kg)

Offer Sustainability

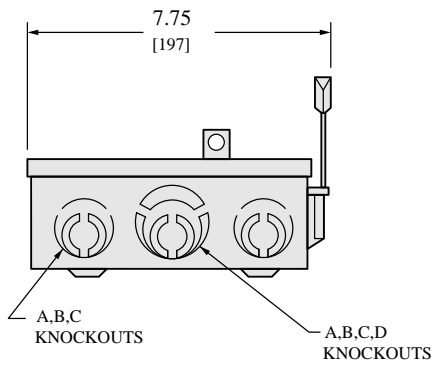
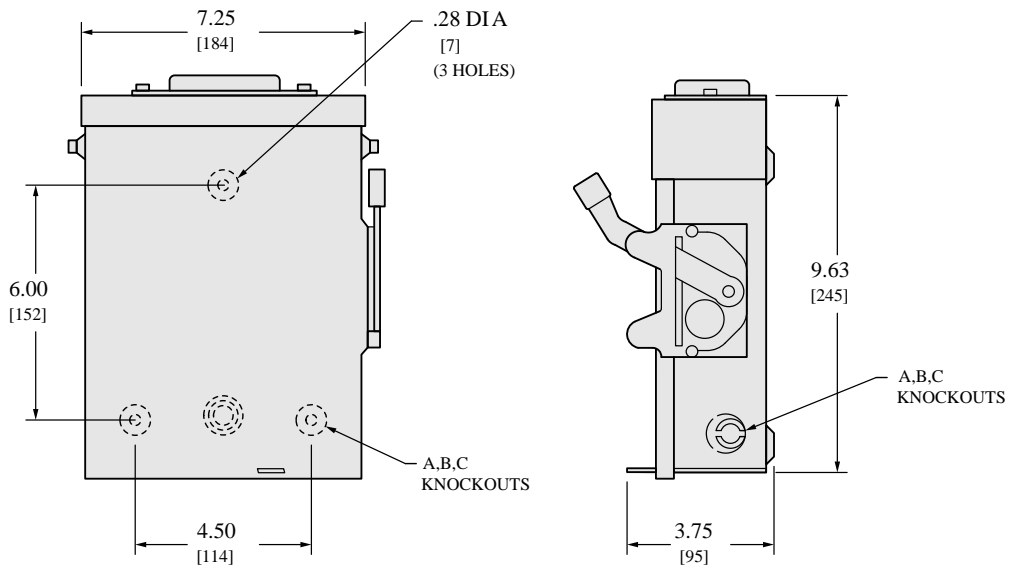
Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov
REACH Regulation	REACH Declaration
REACH free of SVHC	Yes
EU RoHS Directive	Compliant EU RoHS Declaration
Toxic heavy metal free	Yes
Mercury free	Yes
China RoHS Regulation	China RoHS declaration Pro-active China RoHS declaration (out of China RoHS legal scope)
RoHS exemption information	Yes
Environmental Disclosure	Product Environmental Profile
PVC free	Yes

Contractual warranty

Warranty

18 months

Dimensions



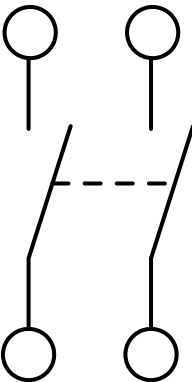
NEMA TYPE 3R

IN.
 [mm]

KNOCKOUTS				
SYMBOL	A	B	C	D
CONDUIT SIZE (IN.)	.50	.75	1	1.25

TOP OF NEMA TYPE 3R SWITCHES HAVE PROVISIONS FOR MAXIMUM 2 1/2" BO LT-ON HUB.
 ALL DIMENSIONS ARE APPROXIMATE. REFER TO TECHNICAL DRAWINGS AND DOCUMENTATION.

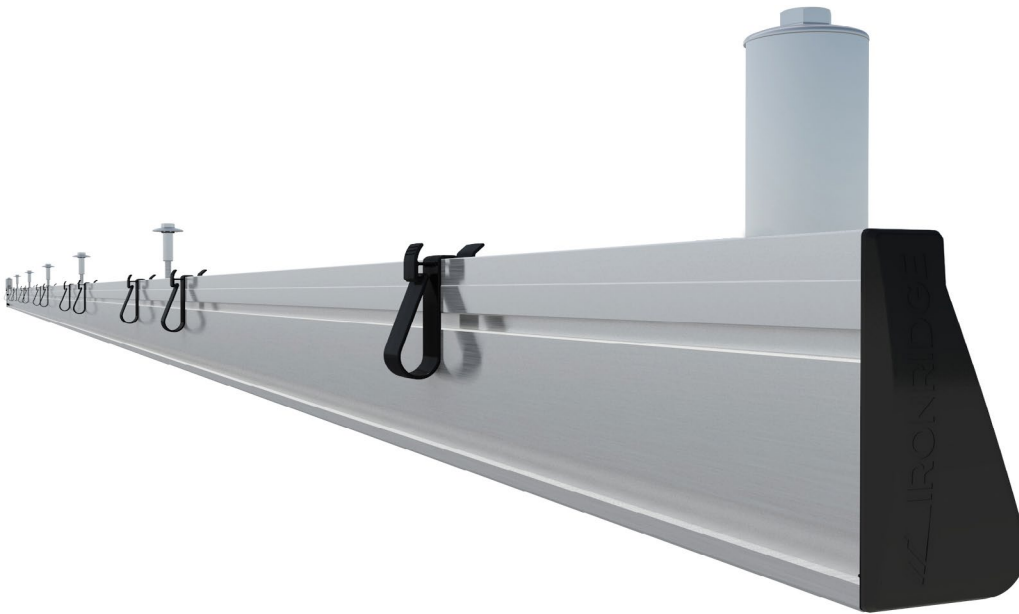
Wiring Diagram



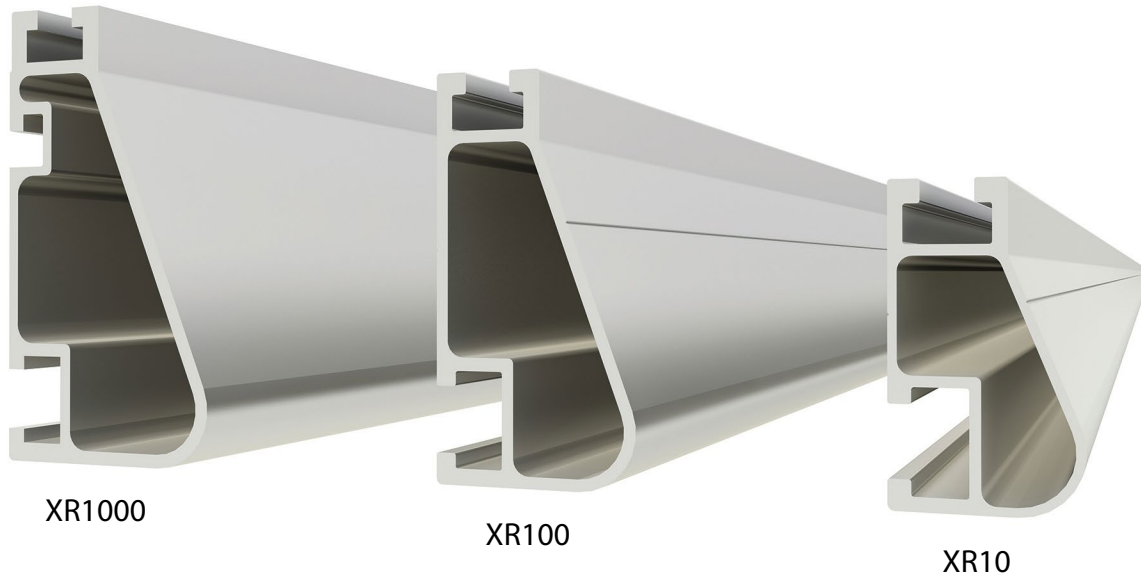
DU222RB

Recommended replacement(s)

XR Rail[®] Assembly Overview



Our product development team strives to keep things simple and intuitive for installers while accommodating a wide range of mounting scenarios. As a result, we offer three complementary types of rail within the XR Rail[®] Family. Please refer to our website or contact our customer service team so that we can best assist in determining which rail assembly is best for you and your specific project.

XR Rail®


Item Number	Description	Item Number	Description
XR-1000-168A	XR1000, Rail 168" (14 Feet) Clear	XR-10-168A	XR10, Rail 168" (14 Feet) Clear
XR-1000-204A	XR1000, Rail 204" (17 Feet) Clear	XR-10-168B	XR10, Rail 168" (14 Feet) Black
XR-100-168A	XR100, Rail 168" (14 Feet) Clear	XR-10-204A	XR10, Rail 204" (17 Feet) Clear
XR-100-168B	XR100, Rail 168" (14 Feet) Black	XR-10-204B	XR10, Rail 204" (17 Feet) Black
XR-100-204A	XR100, Rail 204" (17 Feet) Clear		
XR-100-204B	XR100, Rail 204" (17 Feet) Black		

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match. XR1000® is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans 12 feet or more for commercial applications. XR100® is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans. XR10® is a sleek, low-profile mounting rail, perfectly matched to regions with light or no snow. It achieves 6 foot spans, while also staying light and economical.

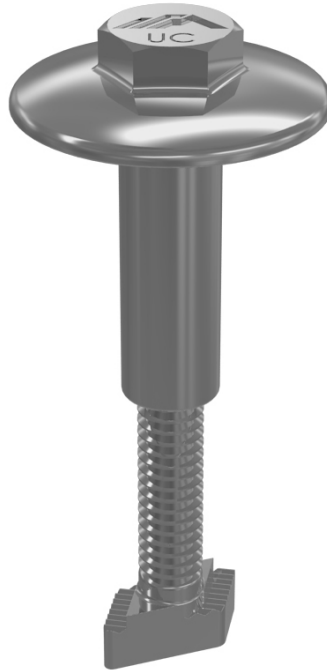
BOSS® Bonded Structural Splices



Item Number	Description
XR10-BOSS-01-M1	Bonded Structural Splice, XR10
XR100-BOSS-01-M1	Bonded Structural Splice, XR100
XR1000-BOSS-01-M1	Bonded Structural Splice, XR1000

The BOSS® (Bonded Structural Splice) provides a truly seamless, hidden connection for XR Rails®. Built-in, one-piece springs feature bonding teeth that bite inside the rail, creating a bonded rail connection and meeting all UL standards without any extra tools or hardware. In addition, BOSS® eliminates installation restrictions. Place it anywhere except the outside cantilever.

Universal Fastening Objects (UFO®)



Item Number	Description
UFO-CL-01-A1	Universal Module Clamp, Clear
UFO-CL-01-B1	Universal Module Clamp, Black

The IronRidge UFO® (Universal Fastening Object) is a single-size, single-piece fastener, built to quickly and securely bond any solar modules to XR Rails. It comes fully-lubricated and fully-assembled, and it looks just as good as it performs. When combined with a Stopper Sleeve, the UFO® functions as an end clamp. It comes in two finishes: Clear and Black.

Calculating Rail Length

Calculate the row lengths as follows:

1. Add module widths.
2. Add width of UFO® between modules.
3. Add allowances for UFO® and Stopper Sleeves on ends of rail.

Depending on the location of the UFO®, the clearance values will differ.

Location	UFO®
Mid Clamp	0.375"
End Clamp	1.0"

For example, to mount five modules that are each 40" wide (in portrait), the row length is calculated as follows:

Step	UFO®
1. Add module widths	$5 \times 40" = 200"$
2. Add width of mid clamps between modules	$4 \times 0.375" = 1.5"$
3. Add allowances for end clamps	$2 \times 1" = 2$
Total length of row	$203.5" = 16.96'$

Two 17' rails will be required to mount this row of five modules.

IronRidge stock rail lengths: 11', 14', 17'. Custom lengths available via special order. Contact IronRidge Customer Service for additional details at 800-227-9523, or support@ironridge.com.