

# PHOTOVOLTAIC ROOF MOUNT SYSTEM

47 MODULES - SYSTEM SIZE STC (18.33 kW DC / 13.63 kW AC)  
 165 NATURES WAY, DUNN, NC 28334, USA (35.3737091, -78.5865554)



## SYSTEM SUMMARY STC (18.33 kW DC / 13.63 kW AC)

- STC DC: (47) 390W = 18.33 kW  
 STC AC: (47) 290W = 13.63 kW
- (47) JINKO SOLAR JKM390M-72HBL-V (390W) MODULES
  - (47) ENPHASE IQ8PLUS-72-2-US (240V) MICROINVERTERS
  - 3x BRANCHES OF 12 CONNECTED IN PARALLEL
  - 1x BRANCH OF 11 CONNECTED IN PARALLEL

## GOVERNING CODES

- 2018 NORTH CAROLINA STATE BUILDING CODE
- 2018 NORTH CAROLINA RESIDENTIAL CODE
- 2018 NORTH CAROLINA FIRE CODE
- 2017 NATIONAL ELECTRICAL CODE

## GENERAL NOTES

- ALL PANELS, SWITCHES, ETC. SHALL HAVE SUFFICIENT GUTTER SPACE AND LUGS IN COMPLIANCE WITH UL REQUIREMENTS TO ACCOMMODATE CONDUCTORS SHOWN.
- THIS SYSTEM WILL NOT BE INTERCONNECTED UNTIL APPROVAL FROM THE LOCAL JURISDICTION AND UTILITY IS OBTAINED.
- ALL EXTERIOR ELECTRICAL DEVICES AND EQUIPMENT INCLUDING THOSE THAT ARE EXPOSED TO OUTSIDE ENVIRONMENT SHALL BE WEATHERPROOF AND SHALL BE LISTED BY 'UL' FOR THE TYPE OF APPLICATION AND 'UL' LABEL SHALL APPEAR ON ALL ELECTRICAL EQUIPMENT.
- WIRING METHOD SHALL BE EMT ABOVE GROUND MOUNTED IN CONCEALED SPACES (UNLESS APPROVED OTHERWISE) AND SCHEDULE-40 PVC FOR BELOW GROUND INSTALLATIONS UNLESS NOTED OTHERWISE.
- AN OSHA APPROVED LADDER PROVIDING ACCESS TO ALL PORTIONS OF THE ARRAY SHALL BE SECURED IN PRIOR TO REQUESTING INSPECTION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE CONDUCTOR IF NECESSARY.

## SAFETY PLAN NOTES

- INSTALLERS SHALL DRAW IN DESIGNATED SAFETY AREA AROUND HOME.
- INSTALLERS SHALL UPDATE NAME, ADDRESS AND PHONE NUMBER OF NEAREST URGENT CARE FACILITY RELATIVE TO THE SITE BEFORE STARTING WORK.

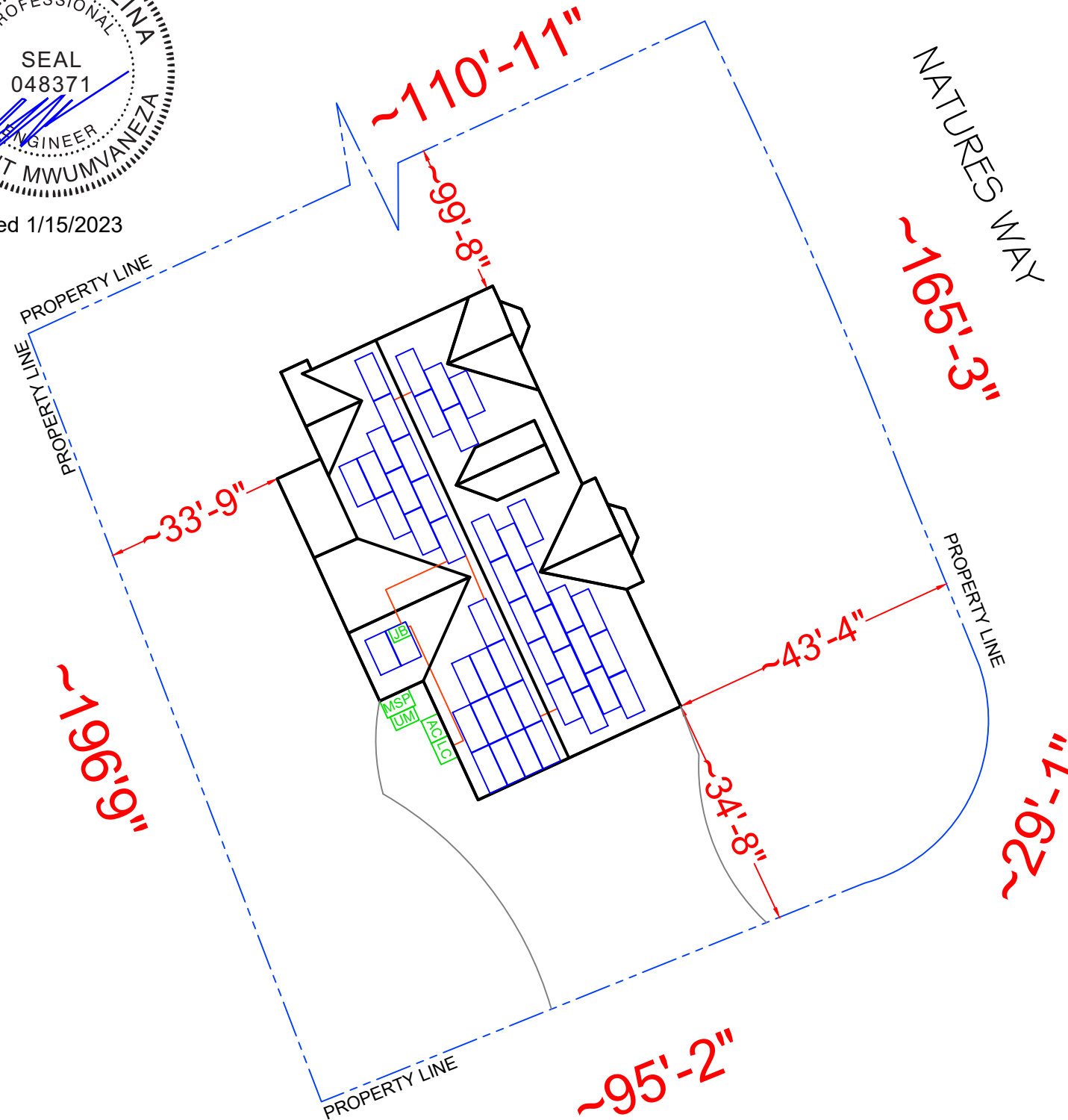
## LOCATION OF NEAREST URGENT CARE FACILITY

(FOR INSTALLER USE ONLY)

- NAME:
- ADDRESS:
- PHONE NUMBER:



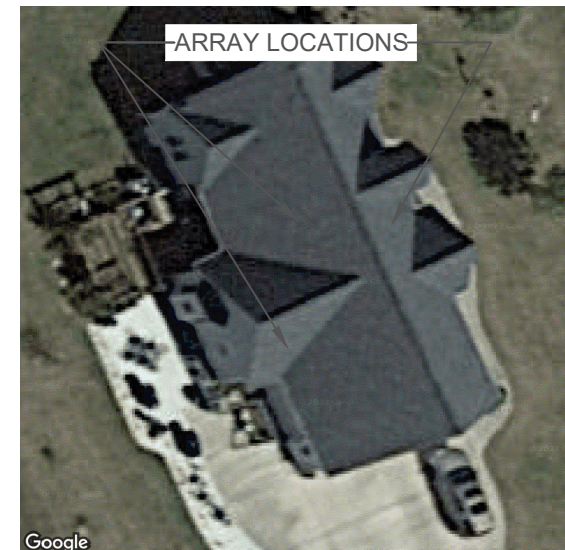
Signed 1/15/2023



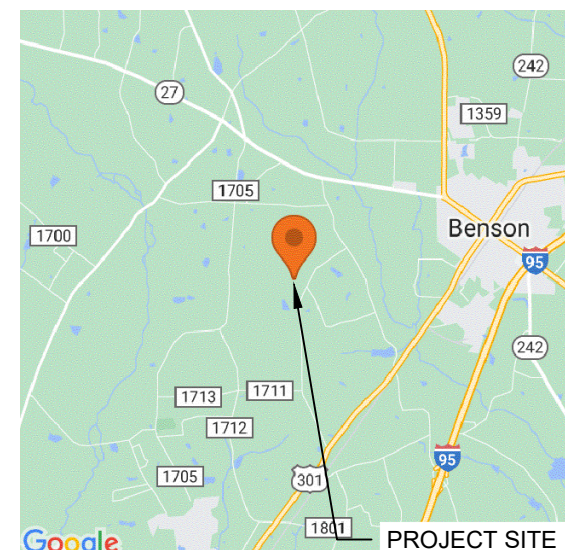
## SHEET INDEX

PV-1	COVER PAGE
PV-2	ROOF PLAN WITH MODULES
PV-3	ATTACHMENT DETAIL
PV-4	SINGLE LINE DIAGRAM
PV-5	WIRING CALCULATIONS
PV-5.1	LOAD CALCULATION
PV-6	PLACARDS
PV-7+	EQUIPMENT SPECIFICATION

AHJ: NORTH CAROLINA | HARNETT UTILITY: DUKE ENERGY CAROLINAS, LLC



HOUSE PHOTO  
SCALE: NTS



VICINITY MAP  
SCALE: NTS

LEGEND			
	PV MODULE		DIMENSIONS
	OPTIMIZER		PROPERTY LINE
	MICRO-INVERTER		CONDUIT
	ROOF ATTACHMENT		DRIVEWAY
	MAIN SERVICE PANEL (EXISTING, 200A)		AC DISCONNECT UNFUSED (NEW)
	UTILITY METER (EXISTING)		AC DISCONNECT FUSED (N/A)
	PRODUCTION METER (N/A)		JUNCTION BOX (NEW)
	BATTERY (N/A)		AUTO TRANSFORMER (N/A)
	(0) INVERTER (N/A)		SUBPANEL (N/A)
	LOAD CENTER (COMBINER PANEL) (NEW)		DC DISCONNECT (N/A)
	SOLAREGE METER (N/A)		DC COMBINER (N/A)
	BACKUP LOAD PANEL (N/A)		EXISTING EQUIPMENT

SITE PLAN & SAFETY PLAN  
SCALE: 3/64" = 1'0"

**CONTRACTOR**  
 NAME: TOP TIER SOLAR SOLUTIONS  
 ADDRESS: 1530 CENTER PARK DR, CHARLOTTE, NC, 28217, USA  
 PHONE: 855-997-1213  
 CONTRACTOR LICENSE# SC - CLG.123883  
 ELECTRICAL LICENSE# NC - 87345  
 EMAIL #: bduford@top tiersolarsolutions.com

REVISIONS		
DESCRIPTION	DATE	REV

**SIGNATURE & SEAL**

**HOMEOWNER INFO**  
**JENNIFER IVEY**  
 165 NATURES WAY, DUNN, NC 28334, USA

APN: 7549817  
 EMAIL: -  
 PHONE: -

**SHEET NAME**  
 COVER PAGE

**SHEET SIZE**  
 ANSI B  
 11" X 17"

**SHEET NUMBER**  
 PV-1



**MODULE AREA & WEIGHT CALCULATIONS**

PANEL TYPES (COUNT, AREA, WEIGHT):  
 • (47x) JINKO SOLAR JKM390M-72HBL-V (390W) (79.06" x 39.45", 49.6 LBS)  
 MICRO-INVERTER TYPES (COUNT, WEIGHT):  
 • (47x) ENPHASE IQ8PLUS-72-2-US (240V) (2.38 LBS)  
 ATTACHMENT COUNT: 188  
 MOUNTING SYSTEM WEIGHT/MODULE: 1.5 LBS  
 TOTAL ROOF AREA: 3162 SF  
 TOTAL ARRAY AREA: (47) 79.1" x 39.5" = 1017.98 SF  
 TOTAL ARRAY WEIGHT: (47) 49.6 + (47) 2.4 + (47) 1.5 = 2514 LBS  
 WEIGHT AT EACH CONNECTION: 2514 LBS / 188 = 13.37 LBS  
 DISTRIBUTED LOAD: 2514 LBS / 1017.98 SF = 2.47 PSF  
 ROOF AREA COVERED BY ARRAY: 1018 SF / 3162 SF = 32.2%

BILL OF MATERIALS		
SOLAR PV MODULES	47	JINKO SOLAR JKM390M-72HBL-V (390W)
MICRO INVERTERS	47	ENPHASE IQ8PLUS-72-2-US (240V)
JUNCTION BOX (AC)	01	JUNCTION BOX 600V, NEMA 3R UL LISTED
LOAD CENTER (AC)	01	ENPHASE IQ COMBINER 4 (X-IQ-AM1-240-4) PV VISIBLE LOCKABLE LABELED DISCONNECT (100A UNFUSED 1PH 240VAC)
AC DISCONNECT	01	IRONRIDGE - SLOTTED L-FEET
ATTACHMENTS	188	IRONRIDGE RESOURCES - XR10
RAIL	47	RAIL SPLICES
RAIL SPLICES	24	MID CLAMPS
MID CLAMPS	60	END CLAMPS
END CLAMPS	68	GROUNDING LUG
GROUNDING LUG	17	

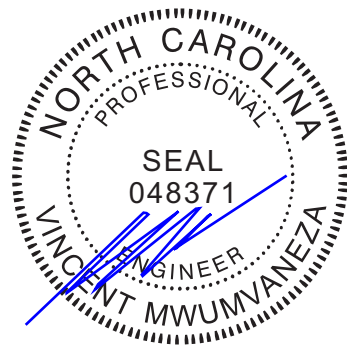
ROOF DESCRIPTION TABLE						
ROOF PLANE	TRUSSES SIZE	TRUSSES SPACING	ATTACHMENT SPACING	MODULE COUNT	ARRAY TILT	AZIMUTH
#1	2" x 4"	24" O.C.	48" O.C.	23	30°	245°
#2	2" x 4"	24" O.C.	48" O.C.	22	30°	65°
#3	2" x 4"	24" O.C.	48" O.C.	2	30°	155°

**ROOF ACCESS POINT**

• SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

**DESIGN CRITERIA**

EXPOSURE CATEGORY = B  
 WIND SPEED = 120 MPH  
 SNOW LOAD = 10 LBS/FT<sup>2</sup>



Signed 1/15/2023

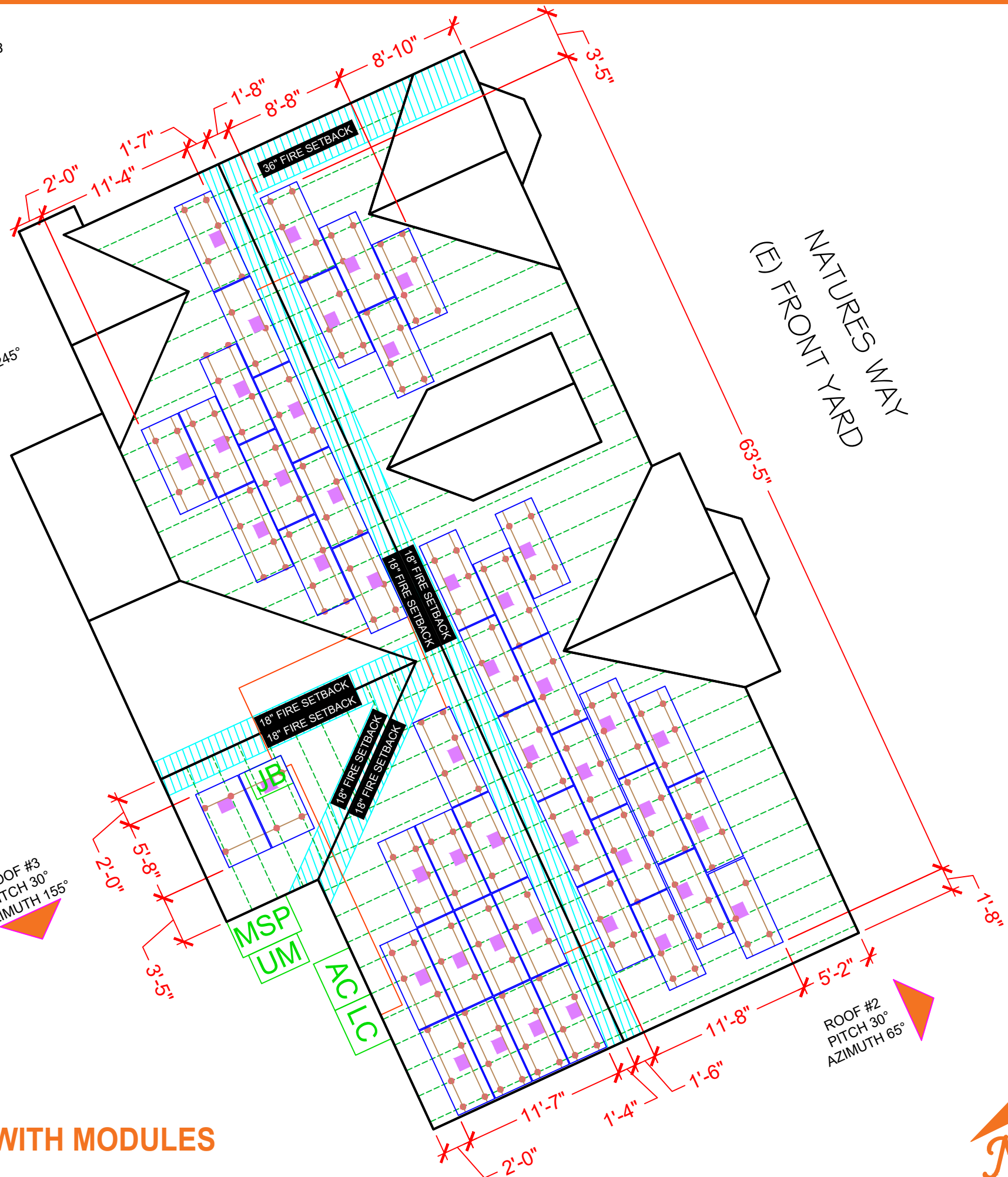
**LEGEND**

PV MODULE	DIMENSIONS
OPTIMIZER	TRUSS
MICRO-INVERTER	RAIL
ROOF ATTACHMENT	CONDUIT

<b>MSP</b> MAIN SERVICE PANEL (EXISTING, 200A)	<b>AC</b> AC DISCONNECT UNFUSED (NEW)
<b>UM</b> UTILITY METER (EXISTING)	<b>ACF</b> AC DISCONNECT FUSED (N/A)
<b>PM</b> PRODUCTION METER (N/A)	<b>JB</b> JUNCTION BOX (NEW)
<b>BAT</b> BATTERY (N/A)	<b>AT</b> AUTO TRANSFORMER (N/A)
<b>INV</b> (0) INVERTER (N/A)	<b>SUB</b> SUBPANEL (N/A)
<b>LC</b> LOAD CENTER (COMBINER PANEL) (NEW)	<b>DCD</b> DC DISCONNECT (N/A)
<b>SM</b> SOLAREGE METER (N/A)	<b>DCC</b> DC COMBINER (N/A)
<b>BLP</b> BACKUP LOAD PANEL (N/A)	<b>EE</b> EXISTING EQUIPMENT

**ROOF PLAN WITH MODULES**

SCALE: 1/8" = 1'-0"



**CONTRACTOR**

NAME: TOP TIER SOLAR SOLUTIONS  
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 PHONE: 855-997-1213  
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 ELECTRICAL LICENSE# NC - 87345  
 EMAIL #: bduford@top tiersolarsolutions.com

**REVISIONS**

DESCRIPTION	DATE	REV

**SIGNATURE & SEAL**

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 28334, USA

APN: 7549817  
 EMAIL: -  
 PHONE: -

**SHEET NAME**

ROOF PLAN WITH MODULES

**SHEET SIZE**

ANSI B  
 11" X 17"

**SHEET NUMBER**

PV-2







**CONTRACTOR**

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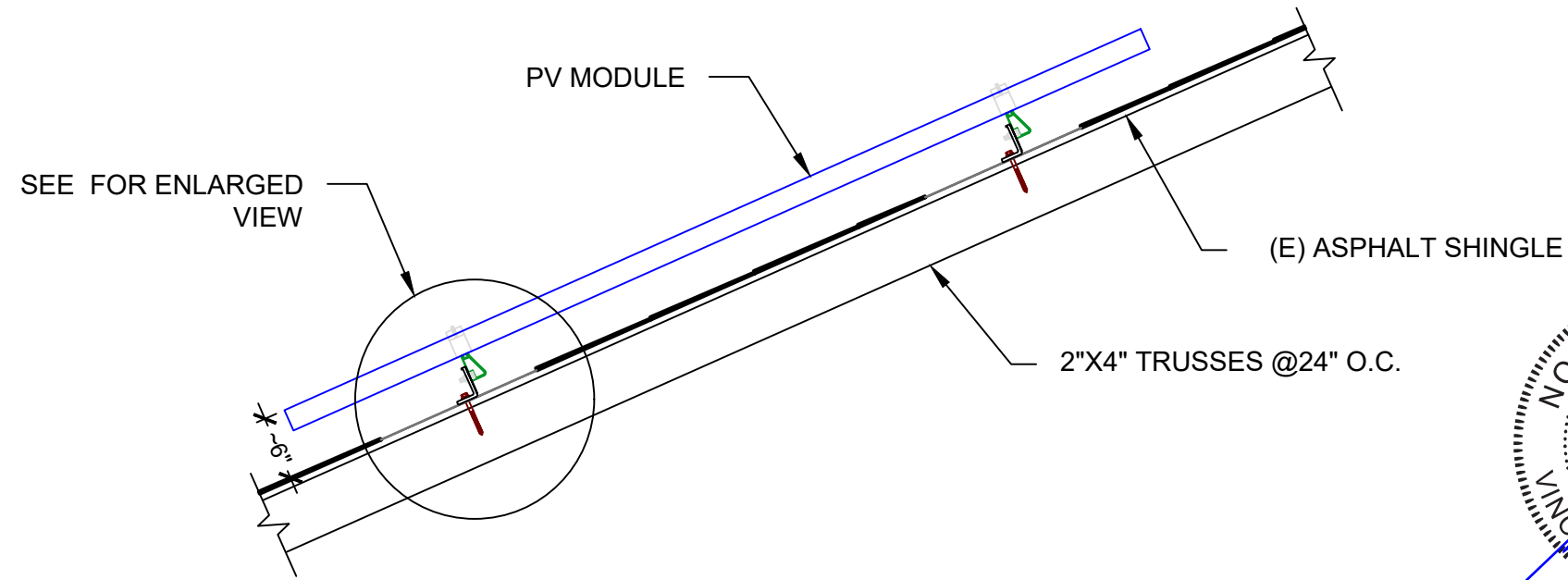
**REVISIONS**

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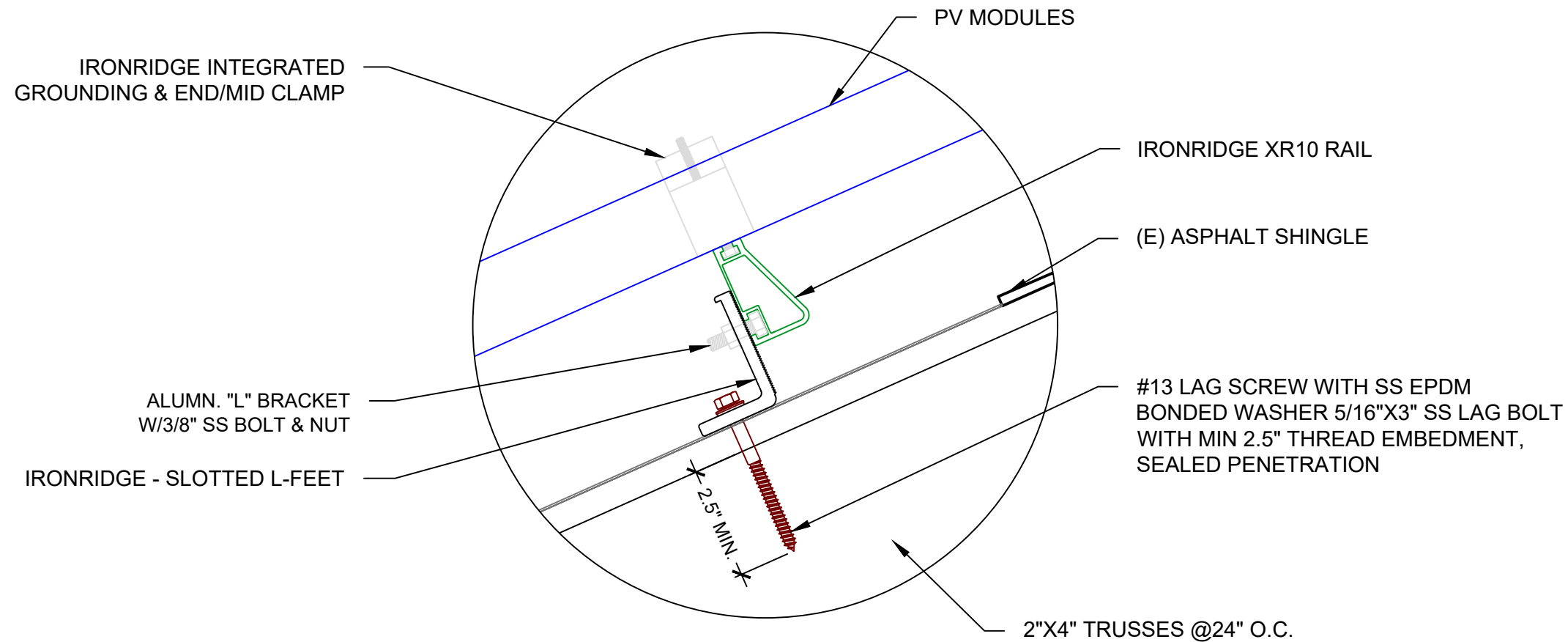


Signed 1/15/2023



**ATTACHMENT DETAIL**

SCALE: NTS



**ATTACHMENT DETAIL (ENLARGED SECTION VIEW)**

SCALE: NTS

**HOMEOWNER INFO**

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28334, USA

APN: 7549817  
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**SHEET NAME**

ATTACHMENT  
DETAIL

**SHEET SIZE**

ANSI B  
11" X 17"

**SHEET NUMBER**

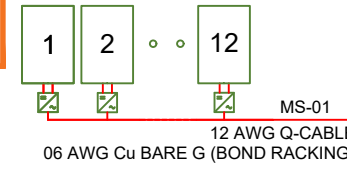
PV-3

# SYSTEM SUMMARY STC (18.33 kW DC / 13.63 kW AC)

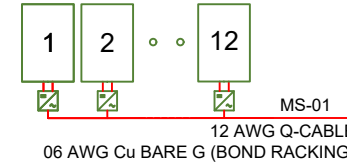
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- 3x BRANCHES OF 12 CONNECTED IN PARALLEL
- 1x BRANCH OF 11 CONNECTED IN PARALLEL

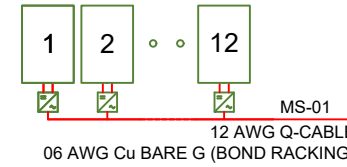
MOD: JINKO SOLAR JKM390M-72HBL-V (390W)  
 INV: ENPHASE IQ8PLUS-72-2-US (240V)  
 (1 BRANCH X 12 MICRO-INV)



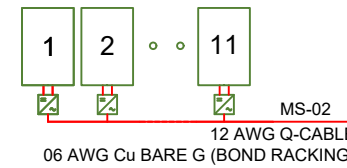
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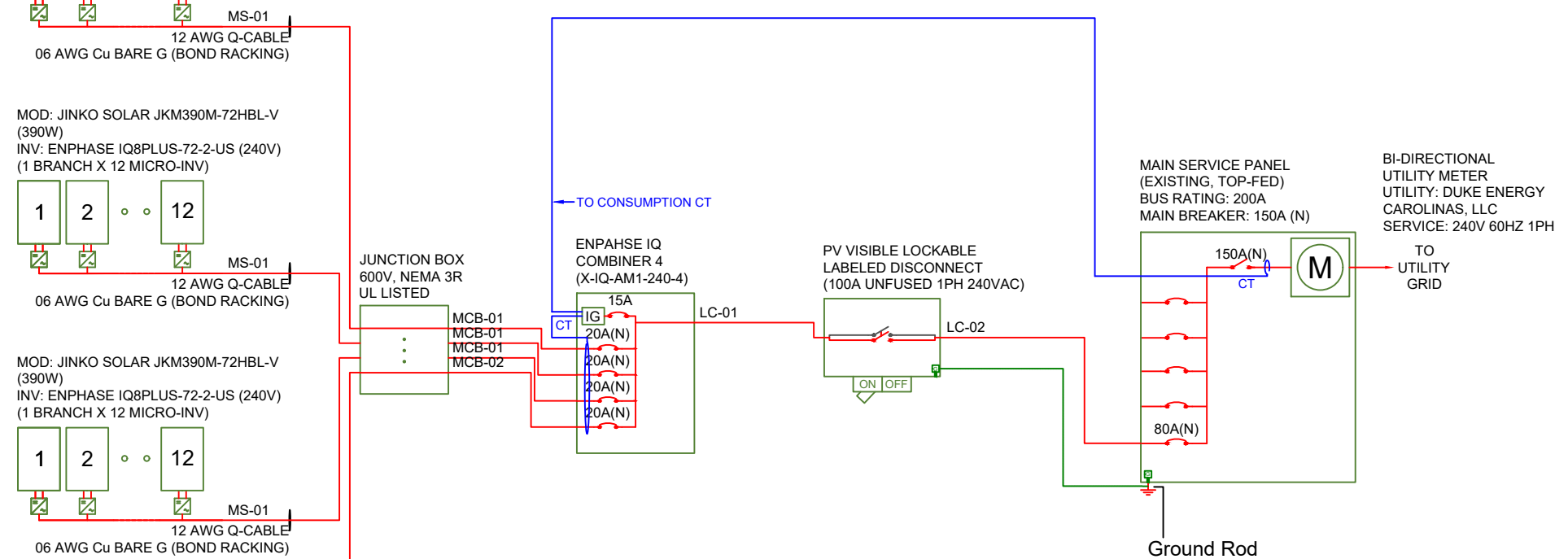


MOD: JINKO SOLAR JKM390M-72HBL-V (390W)  
 INV: ENPHASE IQ8PLUS-72-2-US (240V)  
 (1 BRANCH X 11 MICRO-INV)



DERATE MAIN BREAKER 200A TO 150A FOR PV BACKFEED

TANDEM BREAKER TO BE USED TO MAKE ROOM FOR PV CIRCUIT BREAKER



AC wire details							
Wire	Min Ampacity	Live	Neutral	Ground	Min EMT	Min PVC	Min RMC
MS-01	18.15A	12 AWG (Q-Cable)	-	06 AWG BARE (NOT IN CONDUIT)	-	-	-
MS-02	16.64A	12 AWG (Q-Cable)	-	06 AWG BARE (NOT IN CONDUIT)	-	-	-
MCB-01	18.15A	(2) 10 AWG THWN-2	-	10 AWG THWN-2	1/2 in	1/2 in	1/2 in
MCB-02	16.64A	(2) 10 AWG THWN-2	-	10 AWG THWN-2	1/2 in	1/2 in	1/2 in
LC-01	71.09A	(2) 03 AWG THWN-2	03 AWG THWN-2	08 AWG THWN-2	1 in	1 in	1 in
LC-02	71.09A	(2) 03 AWG THWN-2	03 AWG THWN-2	06 AWG BARE (NOT IN CONDUIT)	1 in	1 in	1 in

## ELECTRICAL NOTES

- 1) ALL GROUNDING TO COMPLY WITH NEC 690.47.
- 2) ROOFTOP CONDUIT SHALL BE LOCATED MIN. 7/8" ABOVE ROOF SURFACE.
- 3) ALL TERMINALS SHALL BE MIN. 75°C RATED.
- 4) IF ENVOY PRESENT, ENVOY BREAKER DETERMINED AT FACTORY BY MANUFACTURER.
- 5) IF ENVOY PRESENT, FOR IQ COMBINER USE SINGLE CT ON L1. AT SYSTEM CONTROLLER MAIN USE DOUBLE CT ON L1 AND L2.

# ELECTRICAL SINGLE LINE DIAGRAM

SCALE: NTS

INTERCONNECTION 120% RULE (MAIN PANEL)

UTILITY FEED + TOTAL BACKFEED  
 150A + 80A = 230A  
 LESS OR EQUAL TO  
 BUS RATING x 120%  
 200A x 120% = 240A

CALCULATION ENSURES BUS IS SAFE REGARDLESS OF LOADS

EXTREME CASE MODULE OUTPUT (JINKO SOLAR JKM390M-72HBL-V (390W))

Isc(25°C) = 10.46A, Tisc = 0.048A/°C  
 Isc(T) = Isc(25°C) + [Tisc x (T-25°C)]  
 Isc(-9°C) = 8.83A, Isc(35°C) = 10.94A  
 Voc(25°C) = 48.60V, Tvoc = -0.290V/°C  
 Voc(T) = Voc(25°C) + [Tvoc x (T-25°C)]  
 Voc(-9°C) = 58.46V, Voc(35°C) = 45.70V



**CONTRACTOR**  
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REVISIONS		
DESCRIPTION	DATE	REV

**SIGNATURE & SEAL**

## HOMEOWNER INFO

**JENNIFER IVEY**  
 165 NATURES WAY, DUNN, NC  
 28334, USA

APN: 7549817  
 EMAIL: -  
 PHONE: -

**SHEET NAME**  
 SINGLE LINE DIAGRAM

**SHEET SIZE**  
 ANSI B  
 11" X 17"

**SHEET NUMBER**  
 PV-4



## SYSTEM SUMMARY STC (18.33 kW DC / 13.63 kW AC)

STC DC: (47) 390W = 18.33 kW

STC AC: (47) 290W = 13.63 kW

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- (47) ENPHASE IQ8PLUS-72-2-US (240V) MICROINVERTERS
- 3x BRANCHES OF 12 CONNECTED IN PARALLEL
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### CONTRACTOR

NAME: TOP TIER SOLAR SOLUTIONS  
 ADDRESS: 1530 CENTER PARK DR,  
 CHARLOTTE, NC, 28217, USA  
 PHONE: 855-997-1213  
 CONTRACTOR LICENSE# SC - CLG.123883  
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 EMAIL #: bdunford@top tiersolarsolutions.com

### REVISIONS

DESCRIPTION	DATE	REV

### SIGNATURE & SEAL

### HOMEOWNER INFO

**JENNIFER IVEY**  
 165 NATURES WAY, DUNN, NC  
 28334, USA

APN: 7549817  
 EMAIL: -  
 PHONE: -

### SHEET NAME

**WIRING  
 CALCULATION**

### SHEET SIZE

**ANSI B  
 11" X 17"**

### SHEET NUMBER

**PV-5**

### AC wire details

WireID	#Modules	Nominal Voltage	Backfeed *1.25 /cond. set	Min OCPD	Total Power	Conductor sets	ccConductors /conduit	Expected max temp	Adjusted ampacity (ampacity x temp derate x conduit fill derate)	Conductor & neutral size	EGC size (Cu)	Conductor metal	Max length	V drop	Min EMT size	Min PVC size	Min RMC size
MS-01	12	240 V	18.15 A	20 A	3.5 kW	1	2	35	25 x 0.94 x 1.00 = 23.50 A	12 AWG (Q-Cable)	06 AWG BARE (NOT IN CONDUIT)	Cu	50 ft	1.05 %	-	-	-
MS-02	11	240 V	16.64 A	20 A	3.2 kW	1	2	35	25 x 0.94 x 1.00 = 23.50 A	12 AWG (Q-Cable)	06 AWG BARE (NOT IN CONDUIT)	Cu	50 ft	0.97 %	-	-	-
MCB-01	12	240 V	18.15 A	20 A	3.5 kW	1	2	35	35 x 0.94 x 1.00 = 32.90 A	10 AWG THWN-2	10 AWG THWN-2	Cu	50 ft	0.63 %	1/2 in	1/2 in	1/2 in
MCB-02	11	240 V	16.64 A	20 A	3.2 kW	1	2	35	35 x 0.94 x 1.00 = 32.90 A	10 AWG THWN-2	10 AWG THWN-2	Cu	50 ft	0.58 %	1/2 in	1/2 in	1/2 in
LC-01	47	240 V	71.09 A	80 A	13.6 kW	1	2	35	100 x 0.94 x 1.00 = 94.00 A	03 AWG THWN-2	08 AWG THWN-2	Cu	10 ft	0.10 %	1 in	1 in	1 in
LC-02	47	240 V	71.09 A	80 A	13.6 kW	1	2	35	100 x 0.94 x 1.00 = 94.00 A	03 AWG THWN-2	06 AWG BARE (NOT IN CONDUIT)	Cu	10 ft	0.10 %	1 in	1 in	1 in

### INTERCONNECTION 120% RULE (MAIN PANEL)

UTILITY FEED + TOTAL BACKFEED  
 150A + 80A = 230A  
 LESS OR EQUAL TO  
 BUS RATING x 120%  
 200A x 120% = 240A

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 Isc(T) = Isc(25°C) + [Tisc x (T-25°C)]  
 Isc(-9°C) = 8.83A, Isc(35°C) = 10.94A

Voc(25°C) = 48.60V, Tvoc = -0.290V/°C  
 Voc(T) = Voc(25°C) + [Tvoc x (T-25°C)]  
 Voc(-9°C) = 58.46V, Voc(35°C) = 45.70V

### ELECTRICAL NOTES

- 1) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- 2) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600V AND 90°C WET ENVIRONMENT.
- 3) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- 4) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- 5) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- 6) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- 7) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- 8) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- 9) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C.VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- 10) PV EQUIPMENT SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH NEC 690.
- 11) EXACT LOCATION OF AUXILIARY GROUNDING TO BE DETERMINED AT TIME OF INSTALL.
- 12) EXISTING WIRES MUST BE REPLACED IF SMALLER THAN LISTED MINIMUM SIZES PER NEC 310.15(B)(16).
- 13) IF ENVOY PRESENT, ENVOY BREAKER DETERMINED AT FACTORY BY MANUFACTURER.
- 14) IF ENVOY PRESENT, FOR IQ COMBINER USE SINGLE CT ON L1. AT SYSTEM CONTROLLER MAIN USE DOUBLE CT ON L1 AND L2.

<b>Article 220 - Service/Feeder calculation for (address):</b>	<b>Job Code</b>
165 Natures Way, Dunn, NC 28334	Jennifer Ivey

**Section 220.83 Existing Dwelling Unit**

**Part #1 - Section 220.83 (B)(1) General Lighting/Receptacles @ 3 VA per sq ft:**

Building	Square Footage	VA (watts)	Amps	Amps	Box A (VA)
House	2382	7146	29.775		
<b>Total for Part #1:</b>			<b>Amps</b>		<b>Box A (VA)</b>
			29.78		<b>7146</b>

**Part #2 - Section 220.83 (B)(2),(3)a, b, c, d - Appliances and Dedicated Circuits:**

Dedicated circuit	Size in VA	Dedicated circuit	Size in VA	Amps	Box B (VA)
Laundry	1500	EV Charging System	N/A		
Appliance Circuit(s)	3000	Water Heater	5760		
Dishwasher(s)	1000		N/A		
Disposal(s)	600		N/A		
Refrigerator(s)	1000		N/A		
Microwave(s)	1600		N/A		
Dryer	5760		N/A		
Range	7680		N/A		
Oven	N/A		N/A		
Cooktop	N/A		N/A		
Pool Equipment	N/A		N/A		
<b>Totals for Part #2:</b>			<b>Amps</b>		<b>Box B (VA)</b>
			116.25		<b>27900</b>

**Total VA from Parts #1 and #2 combined:** **Box A + Box B = 35046**

<b>Total VA</b>	35046	<b>Remaining VA @ 40%</b>	
<b>First 8,000 VA @ 100%</b>	8000	27046 x 40% =	10818.4 VA
<b>Remaining VA =</b>	<b>27046</b>	<b>Adding First 8000 VA</b>	8000 VA
<b>Total VA for Gen. Lights/Recep, Appliances &amp; Dedicated circuits:</b>	<b>18818.4</b>		VA
<b>Total AMP for Gen. Lights/Recep, Appliances &amp; Dedicated circuits:</b>	<b>78.41</b>		Amps

**Part #3 - Section 220.83 (B) Heating and A/C loads:**

*Combine the larger loads of either the Heating or the A/C loads together			
<b>100% of all the Heating or A/C loads in VA:</b>	<b>11,520</b>		VA
<b>100% of all the Heating or A/C loads in Amps:</b>	<b>48.00</b>		A

**Totals from all Parts**

	VA	Volts	Amps
<b>Parts #1 &amp; #2</b>	18818.4	240	78.41
<b>Part #3</b>	11,520	240	48.00
<b>Total VA for all Parts:</b>	<b>30,338</b>		
<b>Totals Service/Feeder Load</b>			<b>126.41</b>



**CONTRACTOR**  
 NAME: TOP TIER SOLAR SOLUTIONS  
 ADDRESS: 1530 CENTER PARK DR,  
 CHARLOTTE, NC, 28217,USA  
 PHONE: 855-997-1213  
 CONTRACTOR LICENSE# SC - CLG.123883  
 ELECTRICAL LICENSE# NC - 87345  
 EMAIL #: bdunford@top tiersolarsolutions.com

**REVISIONS**

DESCRIPTION	DATE	REV

**SIGNATURE & SEAL**

**HOMEOWNER INFO**

**JENNIFER IVEY**  
 165 NATURES WAY, DUNN, NC  
 28334, USA

APN: 7549817  
 EMAIL: -  
 PHONE: -

**SHEET NAME**

**LOAD  
 CALCULATION**

**SHEET SIZE**

**ANSI B  
 11" X 17"**

**SHEET NUMBER**

**PV-5.1**



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

LABEL LOCATION: INVERTERS, AC DISCONNECTS, AC COMBINER BOXES, AC JUNCTION BOXES  
CODE REF: NEC 2017 - 690.13(B)

**WARNING**  
ELECTRICAL SHOCK HAZARD  
IF GROUND FAULT IS INDICATED ALL NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED

LABEL LOCATION: AC DISCONNECTS, AC COMBINER BOXES, SERVICE PANELS  
CODE REF: NEC 2017 - 690.5(C)

**PV SYSTEM DISCONNECT**  
MAXIMUM AC OPERATING CURRENT: 56.87 AMPS  
NOMINAL OPERATING AC VOLTAGE: 240.0 VAC

LABEL LOCATION: INTERCONNECTION Placard (MSP BACKFEED BREAKER OR TAP BOX IF LINE SIDE TAP), AC DISCONNECTS  
CODE REF: NEC 2017 - 690.54

**PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH**

LABEL LOCATION: AC DISCONNECTS FOR UTILITY ACCESS  
CODE REF: UTILITY

**PHOTOVOLTAIC SYSTEM METER**

LABEL LOCATION: PV PRODUCTION METER  
CODE REF: NEC 2017 - 690.4(B)

**WARNING**  
PHOTOVOLTAIC SYSTEM COMBINER PANEL  
DO NOT ADD LOADS

LABEL LOCATION: AC COMBINER BOX  
CODE REF: NEC 2017 - 690.12(B)

**WARNING**  
INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION: FIRST BACKFEED BREAKER (MSP/SUBPANEL) IF NO LINE SIDE TAP  
CODE REF: NEC 2017 - 705.12(B)(2)(3)(b), NEC 2017 - 705.12(B)(3), CEC 2019 - 705.12(B)(2)(3)(b), CEC 2019 - 705.12(B)(3)

**CAUTION**  
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION: INTERCONNECTION Placard (MSP BACKFEED BREAKER OR TAP BOX IF LINE SIDE TAP)  
CODE REF: NEC 2017 - 705.2(4)

**PV SOLAR BREAKER**  
DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION: FIRST BACKFEED BREAKER (MSP/SUBPANEL) IF NO LINE SIDE TAP  
CODE REF: NEC 2017 - 705.12(B)(2)(3)(b)

**RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM**

LABEL LOCATION: MSP  
CODE REF: NEC 2017 - 690.56(C)(3)

**CAUTION**  
DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC

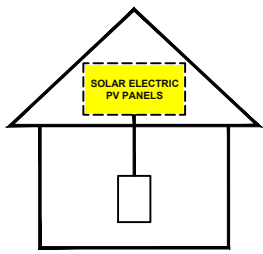
LABEL LOCATION: MSP, UTILITY METER (IF SEPARATE)  
CODE REF: UTILITY

**MAIN BREAKER HAS BEEN DOWNSIZED TO 150A DONOT UPSIZE MAIN BREAKER**

SIGNAGE LOCATIONS:  
NEXT TO MAIN BREAKER

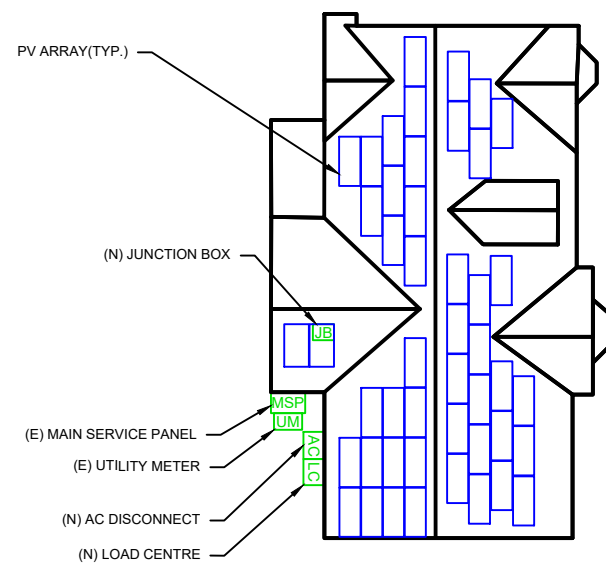
**SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN**

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



LABEL LOCATION: INTERCONNECTION POINT (MSP OR AC DISCONNECT IF LINE SIDE TAP)  
CODE REF: NEC 2017 - 690.12, NEC 2017 - 690.56(C)

**CAUTION:**  
POWER TO THIS SERVICE IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS AS SHOWN



NATURES WAY

LABEL LOCATION: MSP  
CODE REF: NEC 2017 - 705.10

**NOTES AND SPECIFICATIONS**

- 1) SIGNS AND LABELS SHALL MEET THE REQUIREMENTS OF NEC 110.21(B), UNLESS SPECIFIC INSTRUCTIONS ARE REQUIRED BY SECTION 690, OR IF REQUESTED BY THE LOCAL AHJ.
- 2) SIGNS AND LABELS SHALL ADEQUATELY WARN OF HAZARDS USING EFFECTIVE WORDS, COLORS AND SYMBOLS.
- 3) LABELS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HAND WRITTEN.
- 4) LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
- 5) SIGNS AND LABELS SHALL COMPLY WITH ANSI Z535.4 - 2011, PRODUCT SAFETY SIGNS AND LABELS, UNLESS OTHERWISE SPECIFIED.
- 6) DO NOT COVER EXISTING MANUFACTURER LABELS.



**CONTRACTOR**  
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CONTRACTOR LICENSE# SC - CLG-123883  
ELECTRICAL LICENSE# NC - 87345  
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REVISIONS		
DESCRIPTION	DATE	REV

**SIGNATURE & SEAL**

**HOMEOWNER INFO**

**JENNIFER IVEY**  
165 NATURES WAY, DUNN, NC  
28334, USA

APN: 7549817  
EMAIL: -  
PHONE: -

**SHEET NAME**  
PLACARDS

**SHEET SIZE**  
ANSI B  
11" X 17"

**SHEET NUMBER**  
PV-6

EAGLE  
MODULES

THE MOST  
DEPENDABLE  
SOLAR PRODUCT

## EAGLE G2 BLACK

380-400 WATT • MONO PERC HALF-CELL MODULE

Positive power tolerance of 0~+3%

\*PRELIMINARY VERSION

- NYSE-listed since 2010, Bloomberg Tier 1 manufacturer
- Top performance in the strictest 3<sup>rd</sup> party labs
- Automated manufacturing utilizing artificial intelligence
- Vertically integrated, tight controls on quality
- Premium solar module factory in Jacksonville, Florida

### KEY FEATURES

- Superior Aesthetics**  
Black backsheet and black frame create ideal look for residential applications.
- Diamond Half-Cell Technology**  
World-record breaking efficient mono PERC half-cells deliver high power in a small footprint.
- Thick and Tough**  
Fire Type 1 rated module engineered with a thick frame, 3.2mm front side glass, and thick backsheet for added durability.

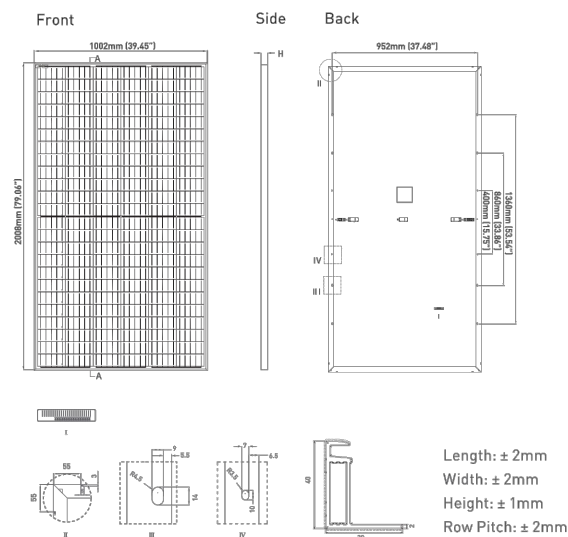
- Shade Tolerant**  
Twin array design allows continued performance even with shading by trees or debris.
- Protected Against All Environments**  
Certified to withstand humidity, heat, rain, marine environments, wind, hailstorms, and packed snow.
- Warranty**  
12-year product and 25-year linear power warranty.

- ISO9001:2008 Quality Standards
- ISO 45001 2018 Occupational Health & Safety Standards
- ISO14001:2004 Environmental Standards
- IEC61215, IEC61730 certification pending
- UL1703/61730 certification pending

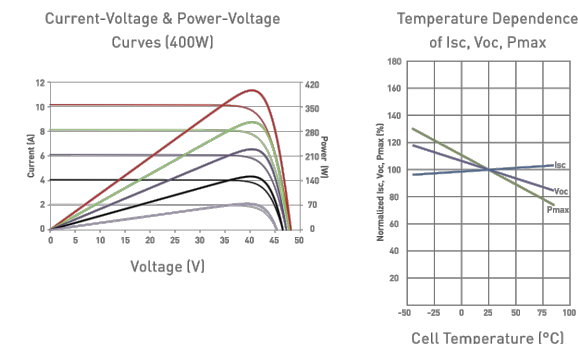
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### ENGINEERING DRAWINGS



### ELECTRICAL PERFORMANCE & TEMPERATURE DEPENDENCE



### ELECTRICAL CHARACTERISTICS

Module Type	JKM380M-72HBL-V		JKM385M-72HBL-V		JKM390M-72HBL-V		JKM395M-72HBL-V		JKM400M-72HBL-V	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	380Wp	279Wp	385Wp	283Wp	390Wp	287Wp	395Wp	291Wp	400Wp	294Wp
Maximum Power Voltage (Vmp)	39.10V	36.5V	39.37V	36.8V	39.64V	37.0V	39.90V	37.4V	40.16V	37.6V
Maximum Power Current (Imp)	9.72A	7.67A	9.78A	7.71A	9.84A	7.75A	9.90A	7.77A	9.96A	7.82A
Open-circuit Voltage (Voc)	48.2V	45.4V	48.4V	45.6V	48.6V	45.8V	48.8V	46.0V	49.1V	46.2V
Short-circuit Current (Isc)	10.30A	8.32A	10.38A	8.38A	10.46A	8.45A	10.54A	8.51A	10.61A	8.57A
Module Efficiency STC (%)	18.89%		19.14%		19.38%		19.63%		19.88%	

\*STC: ☀ Irradiance 1000W/m<sup>2</sup> ☁ Cell Temperature 25°C AM = 1.5  
 NOCT: ☀ Irradiance 800W/m<sup>2</sup> ☁ Ambient Temperature 20°C AM = 1.5 🌬 Wind Speed 1m/s

\*Power measurement tolerance: ±3%

\*PRELIMINARY VERSION

The company reserves the final right for explanation on any of the information presented hereby. JKM380-400M-72HBL-V-D1-US

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### MECHANICAL CHARACTERISTICS

Cells	Mono PERC Diamond Cell (158.75 x 158.75mm)
No. of Half Cells	144 (6 x 24)
Dimensions	2008 x 1002 x 40mm (79.06 x 39.45 x 1.57in)
Weight	22.5kg (49.6lbs)
Front Glass	3.2mm, Anti-Reflection Coating High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminum Alloy
Junction Box	IP68 Rated
Output Cables	12 AWG, 1400mm (55.12in)
Connector	Staubli MC4 Series
Fire Type	Type 1
Pressure Rating	5400Pa (Snow) & 2400Pa (Wind)
Hailstone Test	50mm Hailstones at 35m/s

### TEMPERATURE CHARACTERISTICS

Temperature Coefficients of Pmax	-0.35%/°C
Temperature Coefficients of Voc	-0.29%/°C
Temperature Coefficients of Isc	0.048%/°C
Nominal Operating Cell Temperature (NOCT)	45±2°C

### MAXIMUM RATINGS

Operating Temperature (°C)	-40°C~+85°C
Maximum System Voltage	1500VDC (UL and IEC)
Maximum Series Fuse Rating	20A

### PACKAGING CONFIGURATION

[Two pallets = One stack]  
 27pcs/pallet, 54pcs/stack, 594pcs/40' HQ Container

### WARRANTY

12-year product and 25-year linear power warranty  
 1<sup>st</sup> year degradation not to exceed 2.5%, each subsequent year not to exceed 0.6%, minimum power at year 25 is 83.1% or greater.

TOP TIER  
SOLAR SOLUTIONS

### CONTRACTOR

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 EMAIL #: [bdunford@top tiersolarsolutions.com](mailto:bdunford@top tiersolarsolutions.com)

### REVISIONS

DESCRIPTION	DATE	REV

### SIGNATURE & SEAL

### HOMEOWNER INFO

JENNIFER IVEY  
 165 NATURES WAY, DUNN, NC  
 28334, USA

APN: 7549817  
 EMAIL: -  
 PHONE: -

### SHEET NAME

EQUIPMENT  
 SPECIFICATION

### SHEET SIZE

ANSI B  
 11" X 17"

### SHEET NUMBER

PV-7





## IQ8 Series Microinverters

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



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



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



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



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

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IQ8SE-DS-0001-01-EN-US-2022-03-17

### Easy to install

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

### High productivity and reliability

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

### Microgrid-forming

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

\* Only when installed with IQ System Controller 2, meets UL 1741. IQ8H-208V operates only in grid-tied mode.  
 \*\* IQ8 Series Microinverters supports split phase, 240V. IQ8H-208 supports split phase, 208V only.

## IQ8 Series Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US	IQ8M-72-2-US	IQ8A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-US <sup>1</sup>	
Commonly used module pairings <sup>2</sup>	W	235 – 350	235 – 440	260 – 460	295 – 500	320 – 540+	295 – 500+	
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell					
MPPT voltage range	V	27 – 37	29 – 45	33 – 45	36 – 45	38 – 45	38 – 45	
Operating range	V	25 – 48	25 – 58					
Min/max start voltage	V	30 / 48	30 / 58					
Max input DC voltage	V	50	60					
Max DC current <sup>3</sup> [module Isc]	A	15						
Overtoltage class DC port		II						
DC port backfeed current	mA	0						
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit						
OUTPUT DATA (AC)		IQ8-60-2-US	IQ8PLUS-72-2-US	IQ8M-72-2-US	IQ8A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-US <sup>1</sup>	
Peak output power	VA	245	300	330	366	384	366	
Max continuous output power	VA	240	290	325	349	380	360	
Nominal (L-L) voltage/range <sup>4</sup>	V	240 / 211 – 264						208 / 183 – 250
Max continuous output current	A	1.0	1.21	1.35	1.45	1.58	1.73	
Nominal frequency	Hz	60						
Extended frequency range	Hz	50 – 68						
AC short circuit fault current over 3 cycles	Arms	2						4.4
Max units per 20 A (L-L) branch circuit <sup>5</sup>		16	13	11	11	10	9	
Total harmonic distortion		<5%						
Overtoltage class AC port		III						
AC port backfeed current	mA	30						
Power factor setting		1.0						
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging						
Peak efficiency	%	97.5	97.6	97.6	97.6	97.6	97.4	
CEC weighted efficiency	%	97	97	97	97.5	97	97	
Night-time power consumption	mW	60						
MECHANICAL DATA								
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)						
Relative humidity range		4% to 100% (condensing)						
DC Connector type		MC4						
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")						
Weight		1.08 kg (2.38 lbs)						
Cooling		Natural convection – no fans						
Approved for wet locations		Yes						
Pollution degree		PD3						
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure						
Environ. category / UV exposure rating		NEMA Type 6 / outdoor						
COMPLIANCE								
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 1071-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.						

(1) The IQ8H-208 variant will be operating in grid-tied mode only at 208V AC. (2) No enforced DC/AC ratio. See the compatibility calculator at <https://link.enphase.com/module-compatibility> (3) Maximum continuous input DC current is 10.6A (4) Nominal 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.

IQ8SE-DS-0001-01-EN-US-2022-03-17

### CONTRACTOR

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### REVISIONS

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APN: 7549817  
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### SHEET NAME

EQUIPMENT SPECIFICATION

### SHEET SIZE

ANSI B 11" X 17"

### SHEET NUMBER

PV-8

# Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4  
X-IQ-AM1-240-4C



X-IQ-AM1-240-4C

X-IQ-AM1-240-4



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

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

### Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

### Simple

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

### Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed



## Enphase IQ Combiner 4/4C

### MODEL NUMBER

**IQ Combiner 4 (X-IQ-AM1-240-4)**

IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.

IQ Combiner 4C (X-IQ-AM1-240-4C)

IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.

### ACCESSORIES AND REPLACEMENT PARTS (not included, order separately)

Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.

### ELECTRICAL SPECIFICATIONS

Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Envoy breaker	10A or 15A rating GE/Siemens/Eaton included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers

### MECHANICAL DATA

Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)

### INTERNET CONNECTION OPTIONS

Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)

### COMPLIANCE

Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

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

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### CONTRACTOR

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ADDRESS: 1530 CENTER PARK DR,  
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PHONE: 855-997-1213  
CONTRACTOR LICENSE# SC - CLG.123883  
ELECTRICAL LICENSE# NC - 87345  
EMAIL #: [bdunford@top tiersolarsolutions.com](mailto:bdunford@top tiersolarsolutions.com)

### REVISIONS

DESCRIPTION	DATE	REV

### SIGNATURE & SEAL

### HOMEOWNER INFO

**JENNIFER IVEY**  
165 NATURES WAY, DUNN, NC  
28334, USA

APN: 7549817  
EMAIL: -  
PHONE: -

### SHEET NAME

EQUIPMENT  
SPECIFICATION

### SHEET SIZE

ANSI B  
11" X 17"

### SHEET NUMBER

PV-9





Datasheet

## Flush Mount System



### Built for solar's toughest roofs.

IronRidge builds the strongest mounting system for pitched roofs in solar. Every component has been tested to the limit and proven in extreme environments.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 20-year warranty.



#### Strength Tested

All components evaluated for superior structural performance.



#### Class A Fire Rating

Certified to maintain the fire resistance rating of the existing roof.



#### UL 2703 Listed System

Entire system and components meet newest effective UL 2703 standard.



#### PE Certified

Pre-stamped engineering letters available in most states.



#### Design Assistant

Online software makes it simple to create, share, and price projects.



#### 20-Year Warranty

Twice the protection offered by competitors.

Datasheet



#### CONTRACTOR

NAME: TOP TIER SOLAR SOLUTIONS  
ADDRESS: 1530 CENTER PARK DR,  
CHARLOTTE, NC, 28217, USA  
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### XR Rails ☺

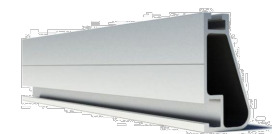
#### XR10 Rail



A low-profile mounting rail for regions with light snow.

- 6' spanning capability
- Moderate load capability
- Clear and black finish

#### XR100 Rail



The ultimate residential solar mounting rail.

- 8' spanning capability
- Heavy load capability
- Clear and black finish

#### XR1000 Rail



A heavyweight mounting rail for commercial projects.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish

#### Bonded Splices

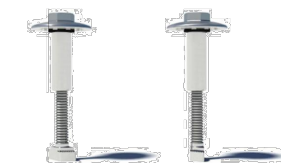


All rails use internal splices for seamless connections.

- Self-drilling screws
- Varying versions for rails
- Forms secure bonding

### Clamps & Grounding ☺

#### UFOs



Universal Fastening Objects bond modules to rails.

- Fully assembled & lubed
- Single, universal size
- Clear and black finish

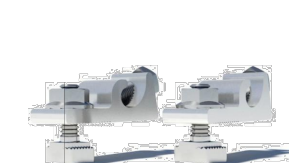
#### Stopper Sleeves



Snap onto the UFO to turn into a bonded end clamp.

- Bonds modules to rails
- Sized to match modules
- Clear and black finish

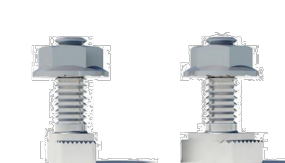
#### Grounding Lugs



Connect arrays to equipment ground.

- Low profile
- Single tool installation
- Mounts in any direction

#### Microinverter Kits



Mount MIs or POs to XR Rails.

- Bonds devices to rails
- Kit comes assembled
- Listed to UL 2703

### Attachments ☺

#### FlashFoot2



Flash and mount XR Rails with superior waterproofing.

- Twist-on Cap eases install
- Wind-driven rain tested
- Mill and black finish

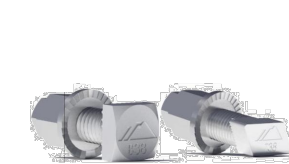
#### Slotted L-Feet



Drop-in design for rapid rail attachment.

- Secure rail connections
- Slot for vertical adjusting
- Clear and black finish

#### Bonding Hardware



Bond and attach XR Rails to roof attachments.

- T & Square Bolt options
- Nut uses 7/16" socket
- Assembled and lubricated

#### Flush Standoffs



Raise Flush Mount System to various heights.

- Works with vent flashing
- 4" and 7" lengths
- Ships assembled

### Resources



#### Design Assistant

Go from rough layout to fully engineered system. For free.

Go to [IronRidge.com/design](http://IronRidge.com/design)



#### NABCEP Certified Training

Earn free continuing education credits, while learning more about our systems.

Go to [IronRidge.com/training](http://IronRidge.com/training)



# Slotted L-Foot

Item Number	Component	Qty in Kit
1	FOOT, EXTRUDED L - SLOTTED	4
2	BOLT, 3/8-16 X 1" HEX CS SS	4
3	NUT, FLANGE HEX 3/8-16 SS	4

Part Number	Description
RS-LFT-001	Kit of 4, Slotted L-Foot (Mill Finish)
RS-LFT-001B	Kit of 4, Slotted L-Foot (Black Finish)

1) Foot, Extruded L - Slotted

Property	Value
Material	Aluminum
Finish	Mill / Black

2) Bolt, 3/8-16 x 1" Hex CS SS

Property	Value
Material	Stainless Steel
Finish	Clear

3) Nut, Flange Hex 3/8-16 SS

Property	Value
Material	Stainless Steel
Finish	Clear

v1.0



**CONTRACTOR**

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**EQUIPMENT SPECIFICATION**

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**PV-11**