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
- 3) ALL EXTERIOR ELECTRICAL DEVICES AND EQUIPMENT INCLUDING THE 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.

 6) IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL

GROUNDING ELECTRODE CONDUCTOR IF NECESSARY.

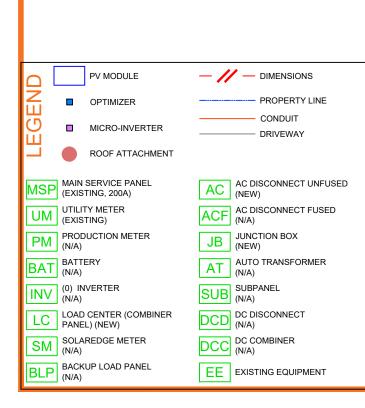
SAFETY PLAN NOTES

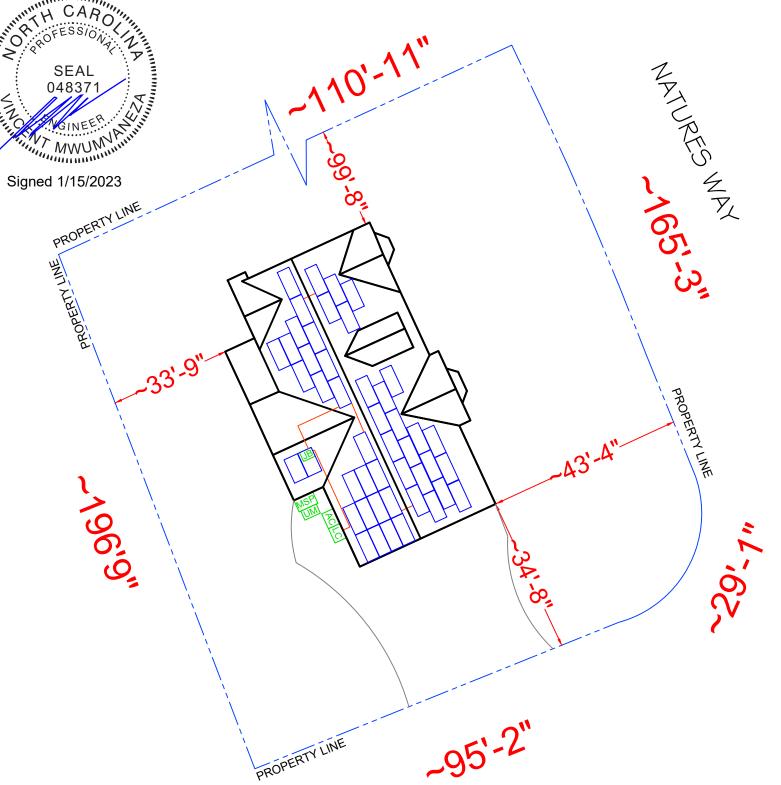
INSTALLERS SHALL DRAW IN DESIGNATED SAFETY AREA AROUND HOME.
 INSTALLERS SHALL UPDATE NAME, ADDRESS AND PHONE NUMBER OF NEAREST URGENT CARE FACILITY RELATIVE TO THE SITE BEFORE STARTING WORLD.

LOCATION OF NEAREST URGENT CARE FACILITY

(FOR INSTALLER USE ONLY)

- NAME:
- ADDRESS:
- PHONE NUMBER:





SITE PLAN & SAFETY PLAN

SCALE: 3/64" = 1'0"



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



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@tootiersolarsolutions.com

REVISIONS							
DESCRIPTION	DATE	REV					

SIGNATURE & SEAL

HOMEOWNER INFO

JENNIFER IVEY
NATURES WAY, DUNN, NC

APN: 7549817 EMAIL: -PHONE: -

SHEET NAME

65

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)

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	ENPAHSE IQ COMBINER 4 (X-IQ-AM1-240-4)
AC DISCONNECT	01	PV VISIBLE LOCKABLE LABELED DISCONNECT (100A UNFUSED 1PH 240VAC)
ATTACHMENTS	188	IRONRIDGE - SLOTTED L-FEET
RAIL	47	IRONRIDGE RESOURCES - XR10
RAIL SPLICES	24	RAIL SPLICES
MID CLAMPS	60	MID CLAMPS
END CLAMPS	68	END CLAMPS
GROUNDING LUG	17	GROUNDING LUG

	ROOF DESCRIPTION TABLE									
ROOF	TRUSSES		ATTACHMENT	MODULE	ARRAY	AZIMUTH				
PLANE	SIZE	SPACING	SPACING SPACING		TILT					
#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

PV MODULE

OPTIMIZER

MSP MAIN SERVICE PANEL (EXISTING, 200A)

UTILITY METER UM (EXISTING)

PM PRODUCTION METER (N/A)

LOAD CENTER (COMBINER PANEL) (NEW)

SM SOLAREDGE METER (N/A)

BLP BACKUP LOAD PANEL (N/A)

BAT BATTERY (N/A)

INV (0) INVERTER (N/A)

MICRO-INVERTER

ROOF ATTACHMENT

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 WHERETHE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

— DIMENSIONS

TRUSS

CONDUIT

ACF AC DISCONNECT FUSED (N/A)

AUTO TRANSFORMER

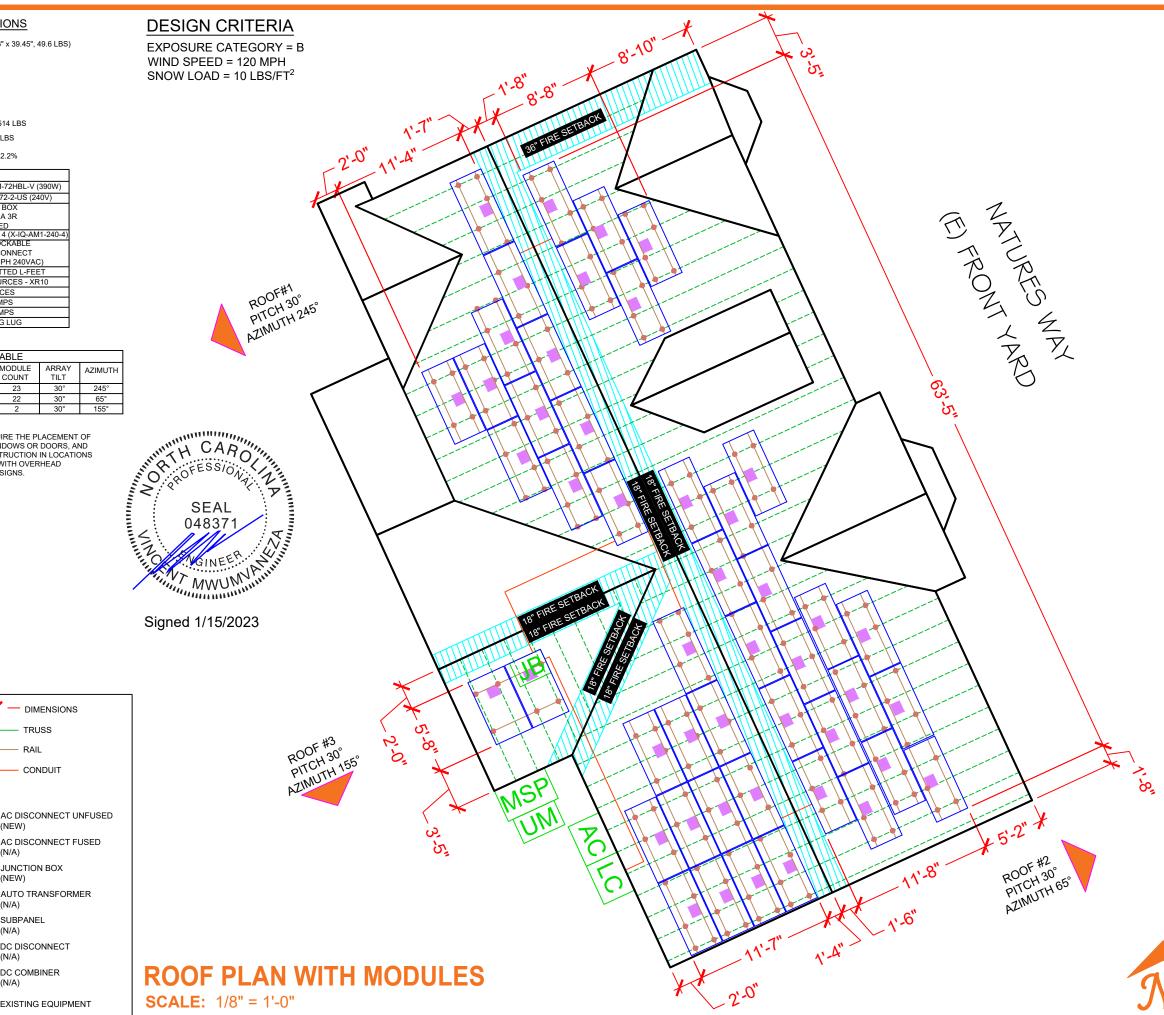
JB JUNCTION BOX (NEW)

SUBPANEL (N/A)

DCC DC COMBINER (N/A)

EE EXISTING EQUIPMENT

AC (NEW)





CONTRACTOR

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

CONTRACTOR LICENSE# SC - CLG.123883 ELECTRICAL LICENSE#:NC - 87345 EMAIL #: bdunford@toptiersolarsolution

REVISIONS							
DESCRIPTION DATE REV							

SIGNATURE & SEAL

HOMEOWNER INFO

2 NATURES WAY, DUNN, JENNIFER IVEY

APN: 7549817 EMAIL: -PHONE: -

SHEET NAME

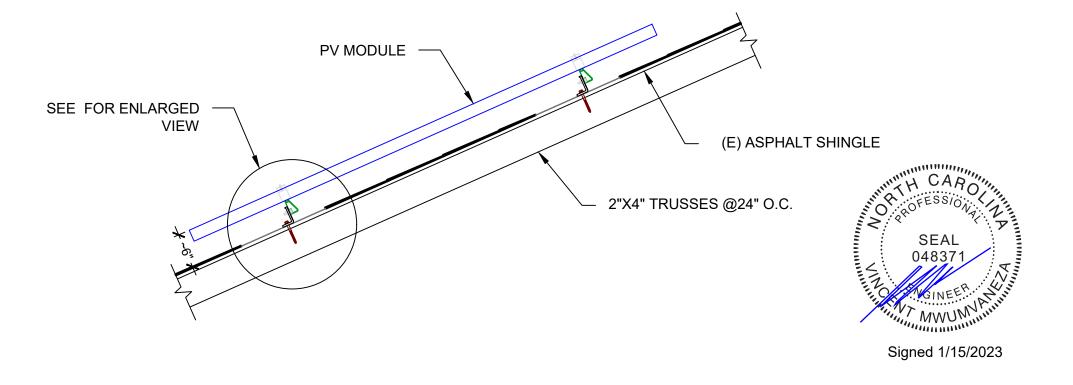
65

ROOF PLAN WITH **MODULES**

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

SHEET NUMBER

PV-2





CONTRACTOR

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

CONTRACTOR LICENSE# SC - CLG.123883 ELECTRICAL LICENSE#:NC - 87345 EMAIL #: bdunford@toptiersolarsolutions.com

REV

SIGNATURE & SEAL

HOMEOWNER INFO

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

APN: 7549817 EMAIL: -PHONE: -

SHEET NAME

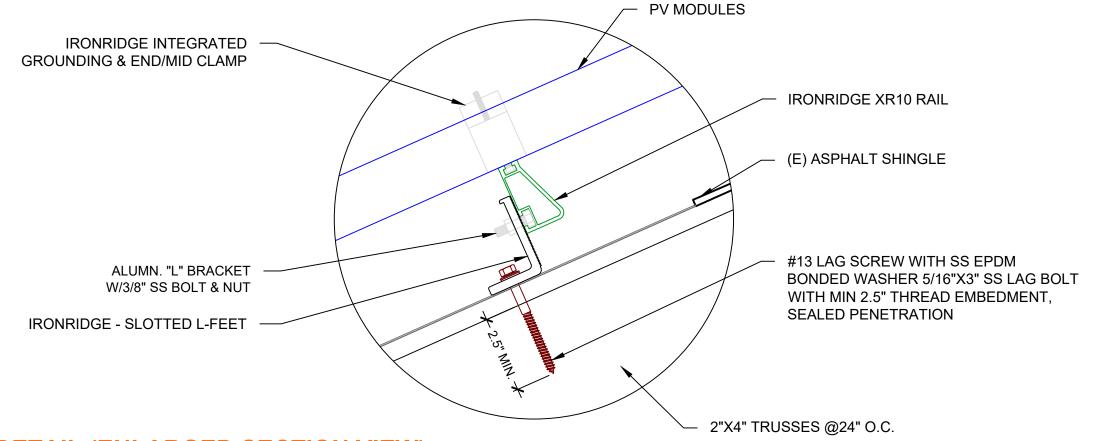
ATTACHMENT DETAIL

> ANSI B 11" X 17"

SHEET NUMBER PV-3

ATTACHMENT DETAIL

SCALE: NTS



ATTACHMENT DETAIL (ENLARGED SECTION VIEW)

SCALE: NTS

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

MOD: JINKO SOLAR JKM390M-72HBL-V

DERATE MAIN BREAKER 200A
TO 150A FOR PV BACKFEED

INV: ENPHASE IQ8PLUS-72-2-US (240V)

INV: ENPHASE IQ8PLUS-72-2-US (240V)

06 AWG Cu BARE G (BOND RACKING)

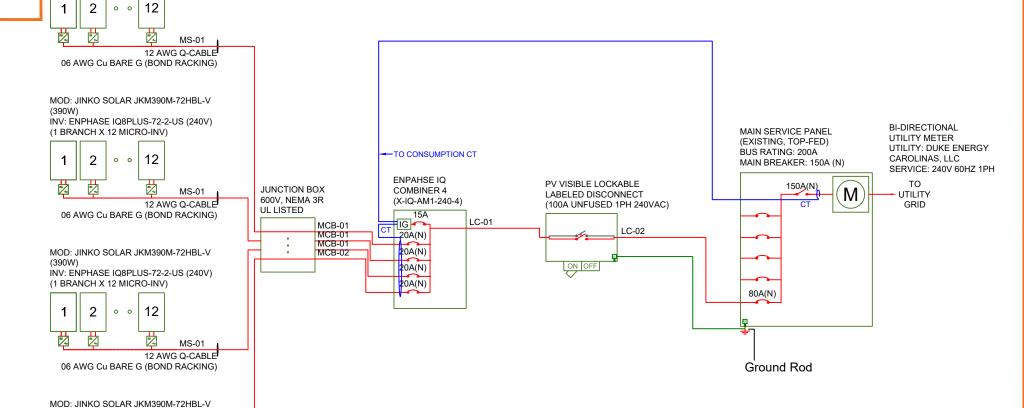
12 AWG O-CABLE

(1 BRANCH X 11 MICRO-INV)

2

(1 BRANCH X 12 MICRO-INV)

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.
- ROOFTOP CONDUIT SHALL BE LOCATED MIN. 7/8" ABOVE ROOF SURFACE.
- ALL TERMINALS SHALL BE MIN. 75°C RATED.
- 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

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

CONTRACTOR LICENSE# SC - CLG.123883 ELECTRICAL LICENSE#:NC - 87345 EMAIL #: bdunford@toptiersolarsolutions.com

REVISIONS									
DESCRIPTION DATE REV									

SIGNATURE & SEAL

HOMEOWNER INFO

JENNIFER IVEY
NATURES WAY, DUNN, NC

APN: 7549817 EMAIL: -PHONE: -

SHEET NAME

65

SINGLE LINE DIAGRAM

> SHEET SIZE ANSI B

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

- (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

	AC wire details																
WireID	#Modules	Nominal	Backfeed *1.25	Min	Total	Conductor	ccConductors	Expected	Adjusted ampacity (ampacity x temp	Conductor &	EGC size	Conductor	Max	V drop	Min EMT	Min PVC	Min RMC
VVIIGID	#IVIOUUIES	Voltage	/cond. set	OCPD	Power	sets	/conduit	max temp	derate x conduit fill derate)	neutral size	(Cu)	metal	length		size	size	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

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

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.
- s) 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.
-) 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.
- 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.



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@toptiersolarsolutions.com

REVISIONS									
DESCRIPTION DATE REV									

SIGNATURE & SEAL

HOMEOWNER INFO

JENNIFER IVEY
65 NATURES WAY, DUNN, NC

APN: 7549817 EMAIL: -PHONE: -

SHEET NAME

WIRING CALCULATION

SHEET SIZE ANSI B 11" X 17"

SHEET NUMBER PV-5

Article 220 - Service/Feeder calculation for (address):	Job Code
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		
House	2382	7146	29.775		
		Total for Part #1:	Amps 29.78	Box A (VA) 7146	

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	
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	Tatala fau Baut #2	Amps	Box B (VA)
Pool Equipment	N/A	Totals for Part #2:	116.25	27900

Total VA from Parts #1 and #2 combined:

Total VA	35046			
First 8,000 VA @ 100%	8000	Remaining VA @ 40%		
Remaining VA =	27046	27046 x 40% =	10818.4	VA
		Adding First 8000 VA	8000	VA
Total VA for Go	18818.4	VA		
Total AMP for Go	78.41	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 togther						
100% of all the Heating or A/C loads in VA:	11,520	VA				
100% of all the Heating or A/C loads in Amps:	48.00	Α				

Totals from all Parts

	VA	Volts	Amps
Parts #1 & #2	18818.4	240	78.41
Part #3	11,520	240	48.00
Total VA for all Parts:	30,338		
Totals	Service/Fe	eder Load	126.41

Box A + Box B = 35046



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@toptiersolarsolutions.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"

PV-5.1



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)



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)



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

WARNING

NVERTER 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)

PV SOLAR BREAKER

CODE REF: NEC 2017 - 705.2(4)

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 PHOTOVOLTIC

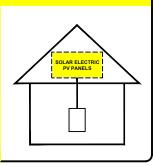
LABEL LOCATION: MSP, UTILITY METER (IF SEPARATE) CODE REF: UTILITY

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)

NOTES AND SPECIFICATIONS

- 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.
- 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.

TOP TIER

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@toptiersolarsolutions.com

REVISIONS								
DESCRIPTION DATE REV								

SIGNATURE & SEAL

HOMEOWNER INFO

JENNIFER IVEY
NATURES WAY, DUNN, NC

65

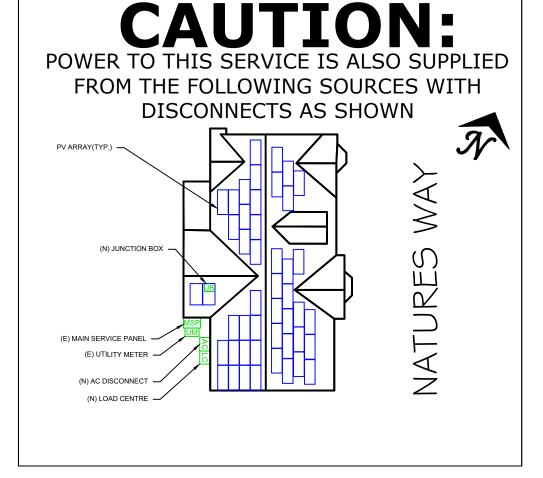
APN: 7549817 EMAIL: -PHONE: -

SHEET NAME

PLACARDS

ANSI B

SHEET NUMBER PV-6



LABEL LOCATION: MSP CODE REF: NEC 2017 - 705.10



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 3rd party labs
- Automated manufacturing utilizing artificial intelligence
- · Vertically integrated, tight controls on quality
- Premium solar module factory in Jacksonville, Florida

KEY FEATURES



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.



Twin array design allows continued performance even with shading by trees or debris.



Protected Against All Environments

TOUGH

FRAME GLASS

Certified to withstand humidity, heat, rain, marine environments, wind, hailstorms, and packed snow

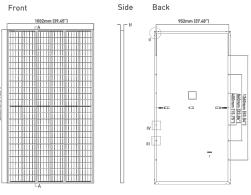


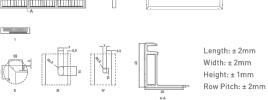
12-year product and 25-year linear power warranty.

- IS09001:2008 Quality Standards
- ISO14001:2004 Environmental Standards
 - Health & Safety Standards
- ISO 45001 2018 Occupational
- IEC61215, IEC61730 certification pending UL1703/61730 certification pending

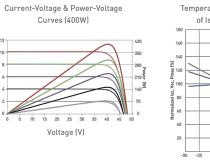
JinKO

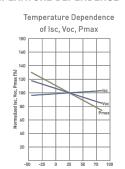
ENGINEERING DRAWINGS





ELECTRICAL PERFORMANCE & TEMPERATURE DEPENDENCE





Cell Temperature (°C)

MECHANICAL CHARACTERISTICS

Cells	Mono PERC Diamond Cell (158.75 x 158.75mm)
No. of Half Cells	144 (6 x 24)
Dimensions	2008 x1002 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

1st 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.

ELECTRICAL CHARACTERISTICS

Module Type	JKM380M-72HBL-V JKM385M-72HBL-V		JKM390M-72HBL-V		JKM395M-72HBL-V		JKM400M-72HBL-V			
	STC	NOCT	STC	NOCT	SCT	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 (lsc)	10.30A	8.32A	10.38A	8.38A	10.46A	8.45A	10.54A	8.51A	10.61A	8.57A
Module Efficiency STC (%)	18.8	39%	19.	14%	19.3	88%	19.	63%	19.	88%

*STC: * Irradiance 1000W/m2 NOCT: -- Irradiance 800W/m² *Power measurement tolerance: ±3%

Cell Temperature 25°C Ambient Temperature 20°C

△ AM = 1.5 AM = 1.5

Wind Speed 1m/s

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

BUILDING YOUR TRUST IN SOLAR. WWW.JINKOSOLAR.US





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@toptiersolarsolutions.com

REVISIONS								
DESCRIPTION DATE REV								

SIGNATURE & SEAL

HOMEOWNER INFO

2 WAY, DUNN, JENNIFER IVEY NATURES 65

APN: 7549817 EMAIL: -PHONE: -

SHEET NAME

EQUIPMENT SPECIFICATION

> SHEET SIZE **ANSIB** 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.



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 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.



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

© 2022 Enphase Energy. All rights reserved. Enphase, the Enphase logo, IQ8 Microinverters, and other names are trademarks of Enphase Energy, Inc. Data subject to change.

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 highpowered 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)		108-60-2-US	108PLUS-72-2-US	108M-72-2-US	108A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-U		
Commonly used module pairings ²	W	235 - 350	235 - 440	260 - 460	295 - 500	320 - 540+	295 - 500+		
Module compatibility		60-cell/120 half-cell	half-cell 60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell						
MPPT voltage range	٧	27 - 37	29 - 45	33 - 45	36 - 45	38 - 45	38 - 45		
Operating range	V	25 - 48			25 - 58				
Min/max start voltage	٧	30 / 48	30 / 58						
Max input DC voltage	٧	50			60				
Max DC current ³ [module lsc]	Α			1	5				
Overvoltage class DC port				1	II				
DC port backfeed current	mA			(0				
PV array configuration		1x1 Ungrounded	array; No additional D	C side protection requ	ired; AC side protecti	on requires max 20A p	er branch circuit		
OUTPUT DATA (AC)		108-60-2-US	IQ8PLUS-72-2-US	108M-72-2-US	IQ8A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-		
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/range4	٧			240 / 211 - 264			208 / 183 - 25		
Max continuous output current	Α	1.0	1.21	1.35	1.45	1.58	1.73		
Nominal frequency	Hz			6	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	5	16	13	11	11	10	9		
Total harmonic distortion				<5	5%				
Overvoltage class AC port				I	II				
AC port backfeed current	mA			3	60				
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			6	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				M	C4				
Dimensions (HxWxD)			:	212 mm (8.3") x 175 mm	n (6.9") x 30.2 mm (1.2	")			
Weight				1.08 kg (2.38 lbs)				
Cooling				Natural conve	ction – no fans				
Approved for wet locations				Y	es				
Pollution degree				PI	D3				
Enclosure			Class II do	uble-insulated, corros	ion resistant polymeri	c enclosure			
Environ. category / UV exposure rating	1			NEMA Type	6 / outdoor				
COMPLIANCE									
Certifications		This product is UL Li	sted as PV Rapid Shu D18 Rule 64-218 Rapid	41/IEEE1547, FCC Part t Down Equipment and Shutdown of PV Syste	conforms with NEC 2	1014, NEC 2017, and NE	C 2020 section		

(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 varv. 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

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@toptiersolarsolutions.com

REVISIONS								
DESCRIPTION	DATE	REV						

SIGNATURE & SEAL

HOMEOWNER INFO

JENNIFER IVEY
65 NATURES WAY, DUNN, NC

EMAIL: -PHONE: -

APN: 7549817

SHEET NAME

EQUIPMENT SPECIFICATION

ANSI B

SHEET NUMBER

PV-8

Data Sheet **Enphase Networking**

Enphase IQ Combiner 4/4C

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



To learn more about Enphase offerings, visit 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
- · 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
- · 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

- · 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** - Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for COMMS-CELLMODEM-M1-06 Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan CELLMODEM-M1-06-SP-05 - 4G based LTE-M1 cellular modem with 5-year AT&T data plan CELLMODEM-M1-06-AT-05 Circuit Breakers Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers BRK-10A-2-240V Circuit breaker, 2 pole, 10A, Eaton BR210 BRK-15A-2-240V Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 BRK-20A-2P-240V Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support BRK-15A-2P-240V-B Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support BRK-20A-2P-240V-B 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-FNV-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 64 A Max. continuous current rating (input from PV/storage) 90 A Max. fuse/circuit rating (output) 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 IO 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. 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 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors Wire sizes • 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 To 2000 meters (6,560 feet) INTERNET CONNECTION OPTIONS Integrated Wi-Fi Cellular CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modern is required for all Ensemble installations Ethernet Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)

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 UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit enphase.com

COMPLIANCE

Compliance, IQ Combiner

Compliance, IQ Gateway

© 2022 Enphase Energy. All rights reserved. Enphase, the Enphase logo, IQ Combiner 4/4C, and other names are trademarks of Enphase Energy, Inc. Data subject to change. 02-14-2022



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@toptiersolarsolutions.org

REVIS	REVISIONS		
DESCRIPTION	DATE	RE\	

SIGNATURE & SEAL

HOMEOWNER INFO

2 DUNN, JENNIFER IVEY WAY, NATURES 65

APN: 7549817 EMAIL: -PHONE: -

ENPHASE.

SHEET NAME

EQUIPMENT SPECIFICATION

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

SHEET NUMBER PV-9

TOP TIER

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@toptiersolarsolutions **REVISIONS**

SIGNATURE & SEAL

HOMEOWNER INFO

2

NATURES WAY, DUNN,

65

JENNIFER IVEY

APN: 7549817

EMAIL: -

PHONE:

DATE REV

DESCRIPTION



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.



PE Certified

Pre-stamped engineering letters available in most states.



Class A Fire Rating

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



Design Assistant

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



UL 2703 Listed System

Entire system and components meet newest effective UL 2703 standard.



20-Year Warranty

Twice the protection offered by competitors.

— 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

Grounding Lugs

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
- 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

Resources

· Mill and black finish

Drop-in design for rapid rai attachment.

Secure rail connections

Slotted L-Feet

- 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

EQUIPMENT SPECIFICATION

SHEET NAME

SHEET SIZE **ANSIB** 11" X 17"

SHEET NUMBER **PV-10**

Design Assistant Go from rough layout to fully

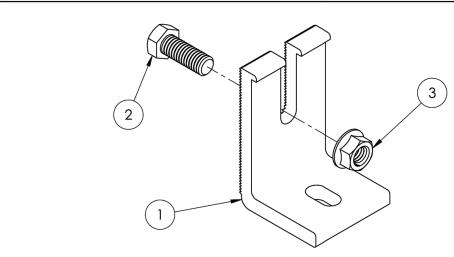
engineered system. For free. Go to IronRidge.com/design

NABCEP Certified Training

Earn free continuing education credits, while learning more about our systems. Go to IronRidge.com/training

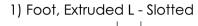


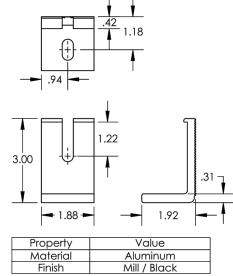
Slotted L-Foot



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

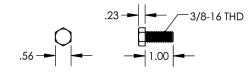
Part Number	Description
RS-LFT-001	Kit of 4, Slotted L-Foot (Mill Finish)
RS-LFT-001B	Kit of 4, Slotted L-Foot (Black Finish)





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

TOP TIER

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@toptiersolarsolutions.com

REVIS	SIONS	
DESCRIPTION	DATE	REV

SIGNATURE & SEAL

HOMEOWNER INFO

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

APN: 7549817 EMAIL: -PHONE: -

SHEET NAME

EQUIPMENT SPECIFICATION

> SHEET SIZE ANSI B 11" X 17"

SHEET NUMBER PV-11