MICHAEL HANLEY - 8.000kW DC, 5.800kW AC, 1.933kW DAYLIGHT BACKUP

SHEET CATALOG

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SCOPE OF WORK

GENERAL SYSTEM INFORMATION:
8000W DC, 5800W AC, 1933W DAYLIGHT BACKUP
MODULES:
(20) REC ALPHA SERIES REC400AA BLACK
INVERTER:
(20)ENPHASE IQ8 PLUS 72-2-US (240V),
BRANCH DETAILS:
2X10 ENPHASE BRANCHES

APPLICABLE CODES

- ELECTRIC CODE:NEC 2017
- FIRE CODE:IFC 2018
- BUILDING CODE:IBC 2018
- RESIDENTIAL CODE:IRC 2018

GENERAL NOTES

1.MODULES ARE LISTED UNDER UL 1703 AND CONFORM TO THE STANDARDS.
2.INVERTERS ARE LISTED UNDER UL 1741 AND CONFORM TO THE STANDARDS.
3.DRAWINGS ARE DIAGRAMMATIC, INDICATING GENERAL ARRANGEMENT OF THE PV SYSTEM AND THE ACTUAL SITE CONDITION MIGHT VARY.
4.WORKING CLEARANCES AROUND THE NEW PV ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.
5.ALL GROUND WIRING CONNECTED TO THE MAIN SERVICE GROUNDING IN MAIN SERVICE PANEL/ SERVICE EQUIPMENT.
6.ALL CONDUCTORS SHALL BE 600V, 75°C STANDARD COPPER UNLESS OTHERWISE NOTED.
7.WHEN REQUIRED, A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
8.THE SYSTEM WILL NOT BE INTERCONNECTED BY THE CONTRACTOR UNTIL APPROVAL FROM THE LOCAL JURISDICTION AND/OR THE UTILITY.
9.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 WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREES, WIRES OR SIGNS.
10.PV ARRAY COMBINER/JUNCTION BOX PROVIDES TRANSITION FROM ARRAY WIRING TO CONDUIT WIRING

SITE PLAN LAYOUT

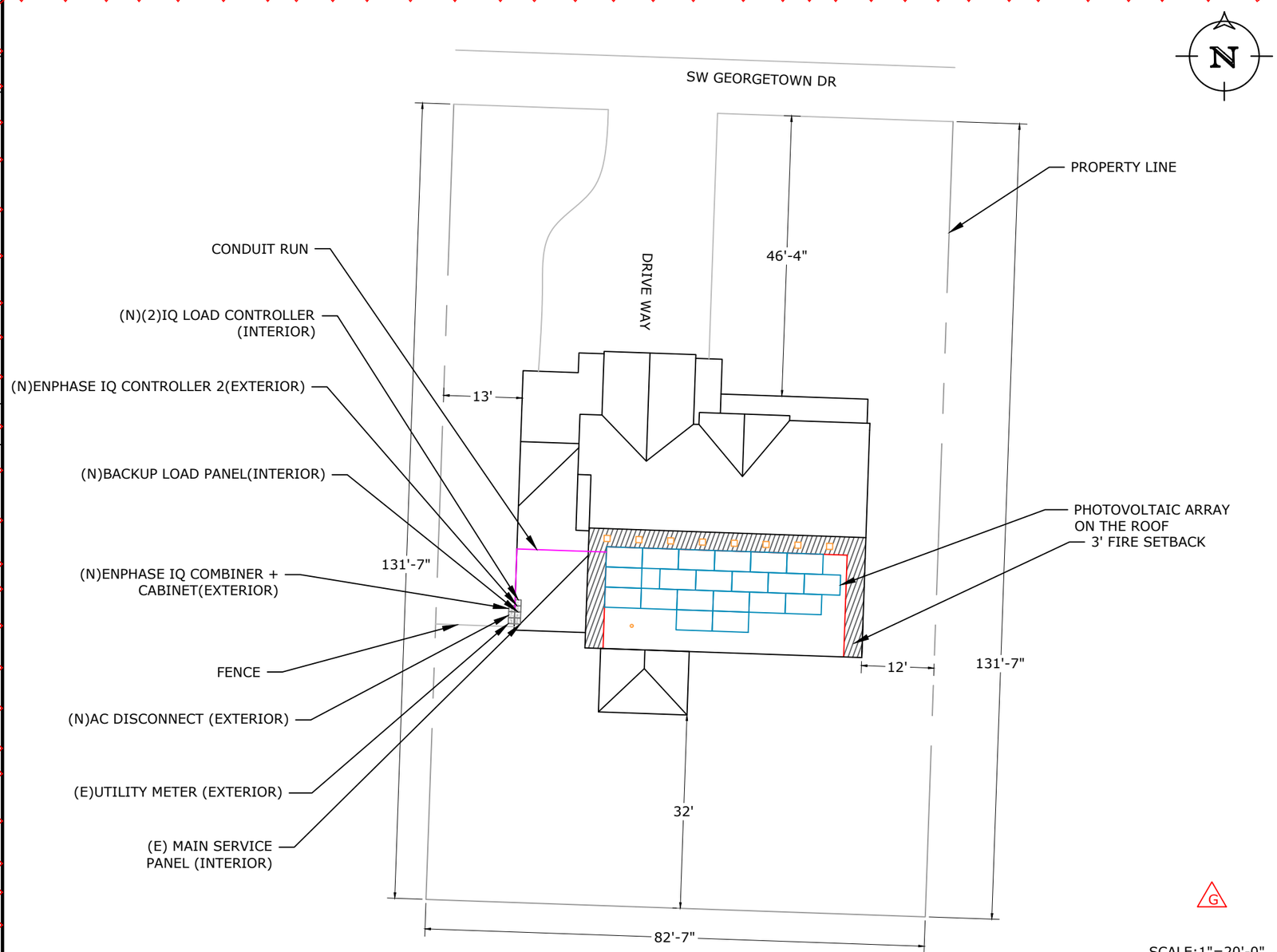
1. ILLUMINE INDUSTRIES INC. HAS ONLY PROVIDED DRAFTING SERVICES FOR THE PERMIT DRAWINGS. NO ACTUAL ENGINEERING WORK, ENGINEERING REVIEW OR ENGINEERING APPROVAL HAS BEEN CONDUCTED BY ILLUMINE INDUSTRIES INC UNLESS NOTED OTHERWISE.

2. WHEN A PROFESSIONAL ENGINEER APPROVES AND SEALS THE DESIGN FOR COMPONENTS OF THEIR RESPECTIVE DISCIPLINE (STRUCTURAL/ELECTRICAL) SHOWN ON THESE PERMIT DRAWINGS, HE/SHE:

a. TAKES FULL DIRECT CONTROL OF THE ENGINEERED DESIGN

b. IS GIVEN ACCESS TO PERSONALLY SUPERVISE AND RECTIFY ANY ASPECT OF THE ENGINEERED DESIGN

c. HAS FULLY ACCEPTED RESPONSIBILITY FOR THE ENGINEERED DESIGN



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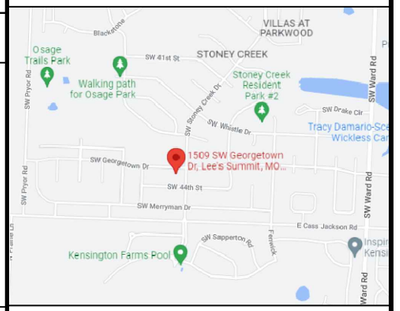
VICINITY MAP



RISINGSUN SOLAR

CUSTOMER INFORMATION

NAME: MICHAEL HANLEY

ADDRESS:1509 SOUTHWEST GEORGETOWN DRIVE, LEES SUMMIT, MO 64082

38.841118, -94.409673

AHJ:MO-CITY OF LEE'S SUMMIT

UTILITY:EVERGY-M

PRN NUMBER: RGS-47106

ILLUMINE i
Because quality matters

COVER PAGE

DRAFTED BY: N. KUMAR QC'ED BY:S. KISHORE	PAPER SIZE:17"X11"
SCALE:AS NOTED	REV:G
DATE:4/7/2022	T-01

INSTALLATION NOTES

1.STRUCTURAL ROOF MEMBER LOCATIONS ARE ESTIMATED AND SHOULD BE LOCATED AND VERIFIED BY THE CONTRACTOR WHEN LAG BOLT PENETRATION OR MECHANICAL ATTACHMENT TO THE STRUCTURE IS REQUIRED.
2.ROOFTOP PENETRATIONS FOR SOLAR RACKING WILL BE COMPLETED AND SEALED WITH APPROVED SEALANT PER CODE BY A LICENSED CONTRACTOR.
3.LAGS MUST HAVE A MINIMUM 2.5" THREAD EMBEDMENT INTO THE STRUCTURAL MEMBER.
4.ALL PV RACKING ATTACHMENTS SHALL BE STAGGERED BY ROW BETWEEN THE ROOF FRAMING MEMBERS AS NECESSARY.
5.ROOF MOUNTED STANDARD RAIL REQUIRES ONE THERMAL EXPANSION GAP FOR EVERY RUN OF RAIL GREATER THAN 40'.
6.ALL CONDUCTORS AND CONDUITS ON THE ROOF SHALL BE MINIMUM 7/8" ABOVE THE ROOF SURFACE (INCLUDING CABLES UNDERNEATH MODULES AND RACKING).
7.THE PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL OR BUILDING ROOF VENTS.

ROOF ACCESS PATHWAYS AND SETBACKS:

1204.2.1 SOLAR PHOTOVOLTAIC SYSTEMS FOR GROUP R-3BUILDINGS.SOLAR PHOTOVOLTAIC SYSTEMS FOR GROUP R-3 BUILDINGS SHALL COMPLY WITH SECTIONS 1204.2.1.1 THROUGH 1204.2.1.3.

EXCEPTIONS:

1.THESE REQUIREMENTS SHALL NOT APPLY TO STRUCTURES DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE INTERNATIONAL RESIDENTIAL CODE.
2.THESE REQUIREMENTS SHALL NOT APPLY TO ROOFS WITH SLOPES OF 2 UNITS VERTICAL IN 12 UNITS HORIZONTAL OR LESS.

1204.2.1.1 PATHWAYS TO RIDGE. NOT FEWER THAN TWO 36-INCH-WIDE (914 MM) PATHWAYS ON SEPARATE ROOF PLANES,FROM LOWEST ROOF EDGE TO RIDGE, SHALL BE PROVIDED ON ALL BUILDINGS. NOT FEWER THAN ONE PATHWAY SHALL BE PROVIDED ON THE STREET OR DRIVEWAY SIDE OF THE ROOF. FOR EACH ROOF PLANE WITH A PHOTOVOLTAIC ARRAY, NOT FEWER THAN ONE 36-INCH-WIDE (914 MM) PATHWAY FROM LOWEST ROOF EDGE TO RIDGE SHALL BE PROVIDED ON THE SAME ROOF PLANE AS THE PHOTOVOLTAIC ARRAY, ON AN ADJACENT ROOF PLANE OR STRADDLING THE SAME AND ADJACENT ROOF PLANES

1204.2.1.2 SETBACKS AT RIDGE.FOR PHOTOVOLTAIC ARRAYS OCCUPYING 33 PERCENT OR LESS OF THE PLAN VIEW TOTAL ROOF AREA,
A SETBACK OF NOT LESS THAN 18 INCHES (457 MM)WIDE IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE. FOR PHOTOVOLTAIC ARRAYS OCCUPYING MORE THAN 33 PERCENT OF THE PLAN VIEW TOTAL ROOF AREA, A SETBACK OF NOT LESS THAN 36 INCHES (457 MM) WIDE IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.

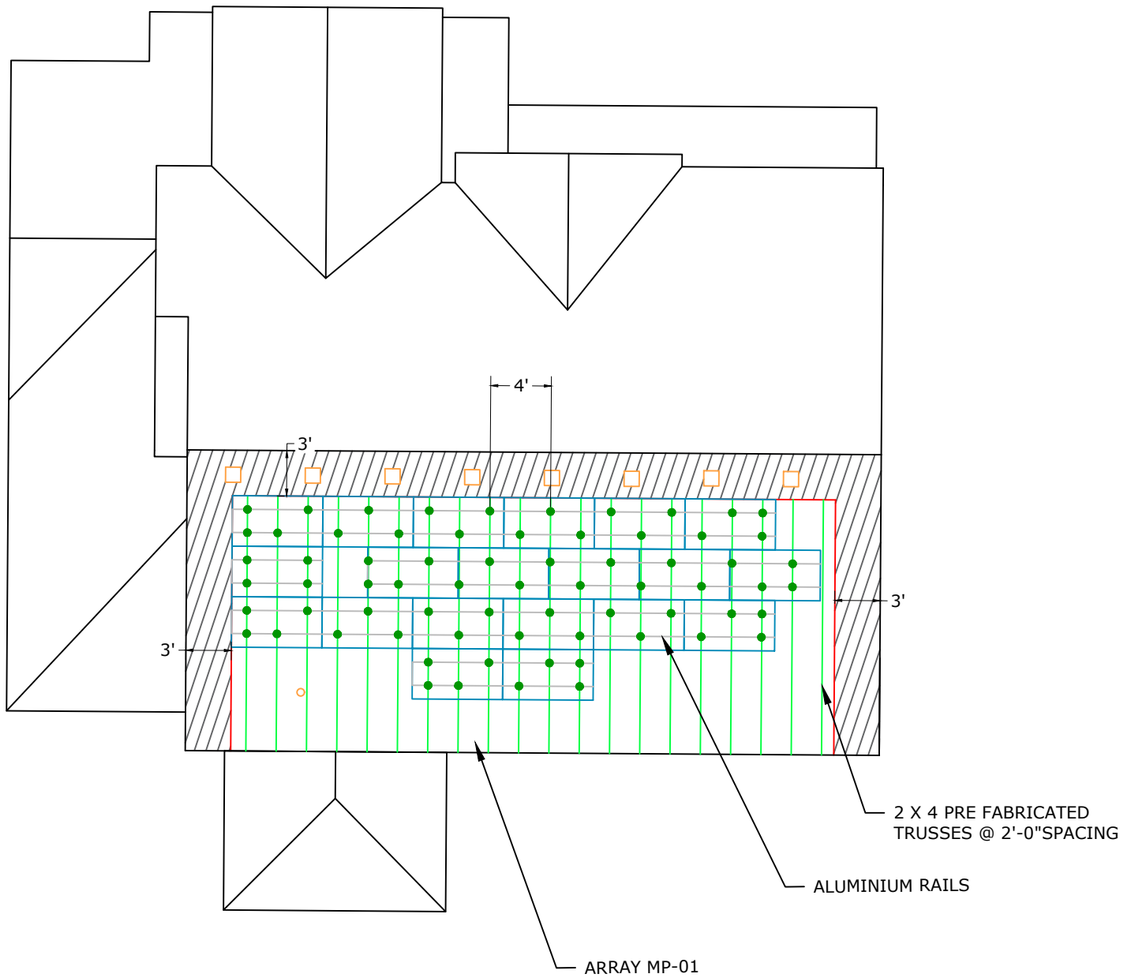
1204.2.2 EMERGENCY ESCAPE AND RESCUE OPENINGS. PANELS AND MODULES INSTALLED ON GROUP R-3 BUILDINGS SHALL NOT BE PLACED ON THE PORTION OF A ROOF THAT IS BELOW AN EMERGENCY ESCAPE AND RESCUE OPENING. A PATHWAY OF NOT LESS THAN 36 INCHES (914 MM) WIDE SHALL BE PROVIDED TO THE EMERGENCY ESCAPE AND RESCUE OPENING

1204.2.1.3 ALTERNATIVE SETBACKS AT RIDGE. WHERE AN AUTOMATIC SPRINKLER SYSTEM IS INSTALLED WITHIN THE DWELLING IN ACCORDANCE WITH SECTION 903.3.1.3, SETBACKS AT THE RIDGE SHALL CONFORM TO ONE OF THE FOLLOWING:
1.FOR PHOTOVOLTAIC ARRAYS OCCUPYING 66 PERCENT OR LESS OF THE PLAN VIEW TOTAL ROOF AREA, A SETBACK OF NOT LESS THAN 18 INCHES (457 MM) WIDE IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.
2.FOR PHOTOVOLTAIC ARRAYS OCCUPYING MORE THAN 66 PERCENT OF THE PLAN VIEW TOTAL ROOF AREA, A SETBACK OF NOT LESS THAN 36 INCHES (914 MM) WIDE IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE

SITE INFORMATION - WIND SPEED: 109 MPH AND SNOW LOAD: 20 PSF

SR. NO	AZIMUTH	PITCH	NO. OF MODULES	ARRAY AREA (SQ. FT.)	ROOF TYPE	ATTACHMENT	ROOF EXPOSURE	FRAME TYPE	FRAME SIZE	FRAME SPACING	MAX RAIL SPAN	OVER HANG
MP-01	182°	26°	20	398.3	COMPOSITION SHINGLE	FLASH FOOT 2	ATTIC	PRE FABRICATED TRUSSES	2 X 4	2'-0"	4'-0"	1'-6"

NOTE:PENETRATIONS ARE STAGGERED



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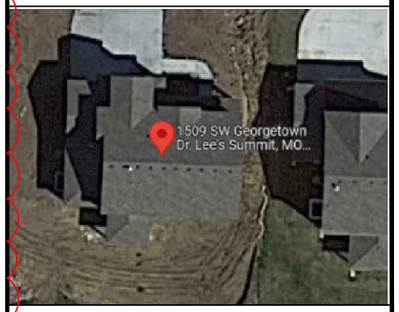
AERIAL VIEW



RISINGSUN SOLAR

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UTILITY:EVERGY-M

PRN NUMBER: RGS-47106

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Because quality matters

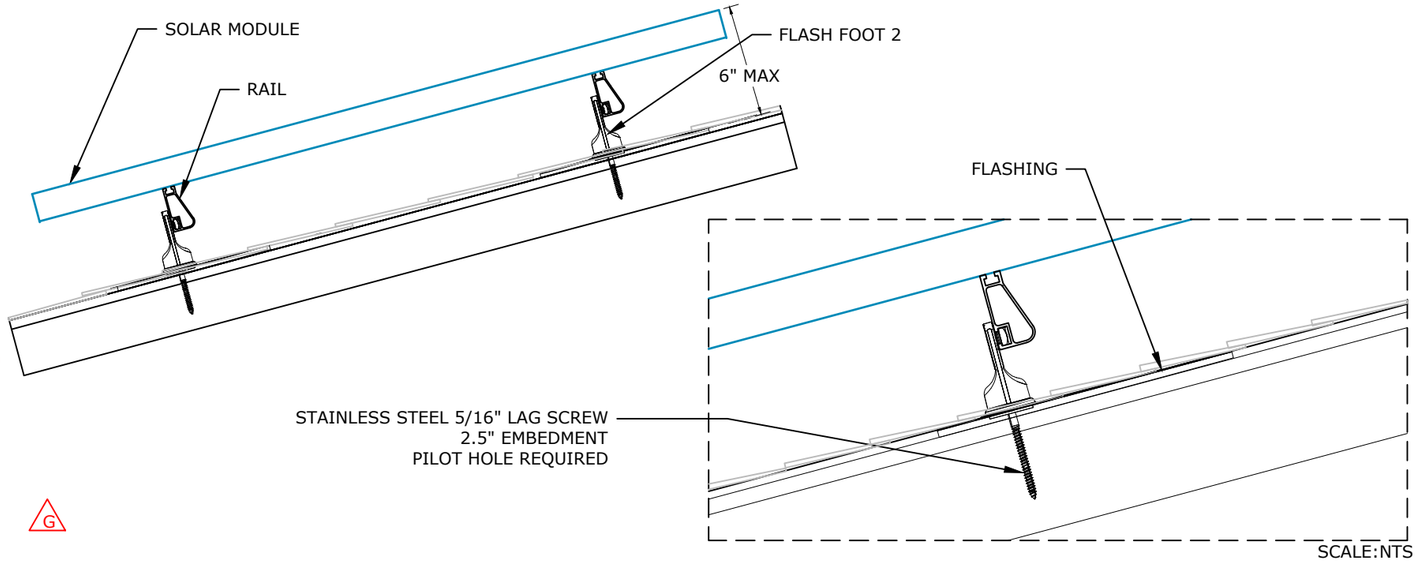
MOUNTING DETAIL

DRAFTED BY: N. KUMAR QC'ED BY:S. KISHORE	PAPER SIZE:17"X11"
SCALE:AS NOTED	REV:G
DATE:4/7/2022	S-01

DEAD LOAD CALCULATIONS

BOM	QUANTITY	LBS/UNIT	TOTAL WEIGHT (LBS)
MODULES	20	45	900.00
MID-CLAMP	30	0.050	1.50
END-CLAMP	20	0.050	1.00
RAIL LENGTH	222	0.680	150.96
SPLICE BAR	12	0.360	4.32
FLASH FOOT 2	69	1.88	129.72
MICRO-INVERTER	20	2.38	47.60
TOTAL WEIGHT OF THE SYSTEM (LBS)			1235.10
TOTAL ARRAY AREA ON THE ROOF (SQ. FT.)			398.33
WEIGHT PER SQ. FT.(LBS)			3.10
WEIGHT PER PENETRATION (LBS)			17.90

ATTACHMENT DETAIL-FLASH FOOT 2

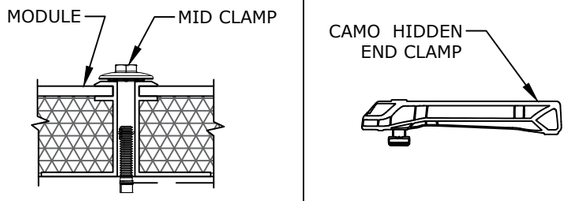


SCALE:NTS

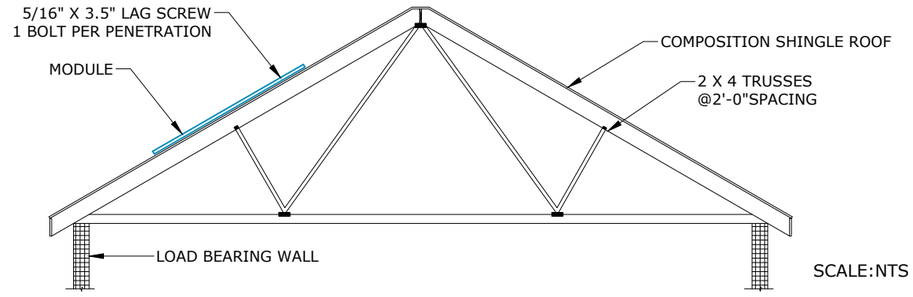
MODULES DATA

REC ALPHA SERIES REC400AA BLACK	
MODULE DIMS	71.7"x40"x1.2 "
LAG SCREWS	5/16"x3.5":2.5"MIN EMBEDMENT

MID-CLAMP AND END-CLAMP ANATOMY



ROOF FRAMING DETAILS



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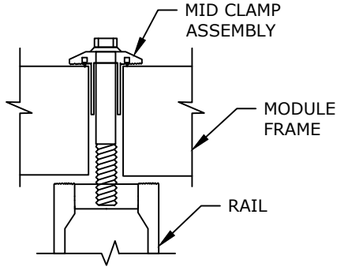
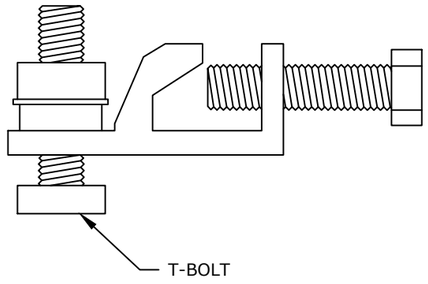
GROUNDING DETAILS

MODULE TO MODULE & MODULE TO RAIL

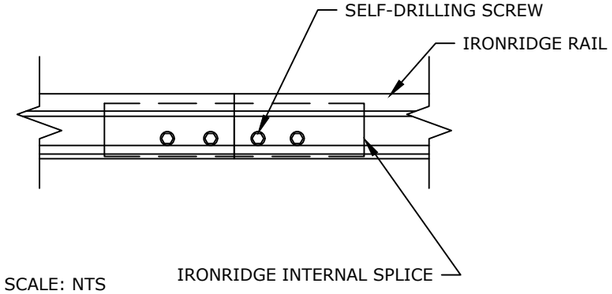


GROUNDING MID-CLAMP
SCALE: NTS

GROUNDING LUG



RAIL TO RAIL



SCALE: NTS

RISINGSUN SOLAR

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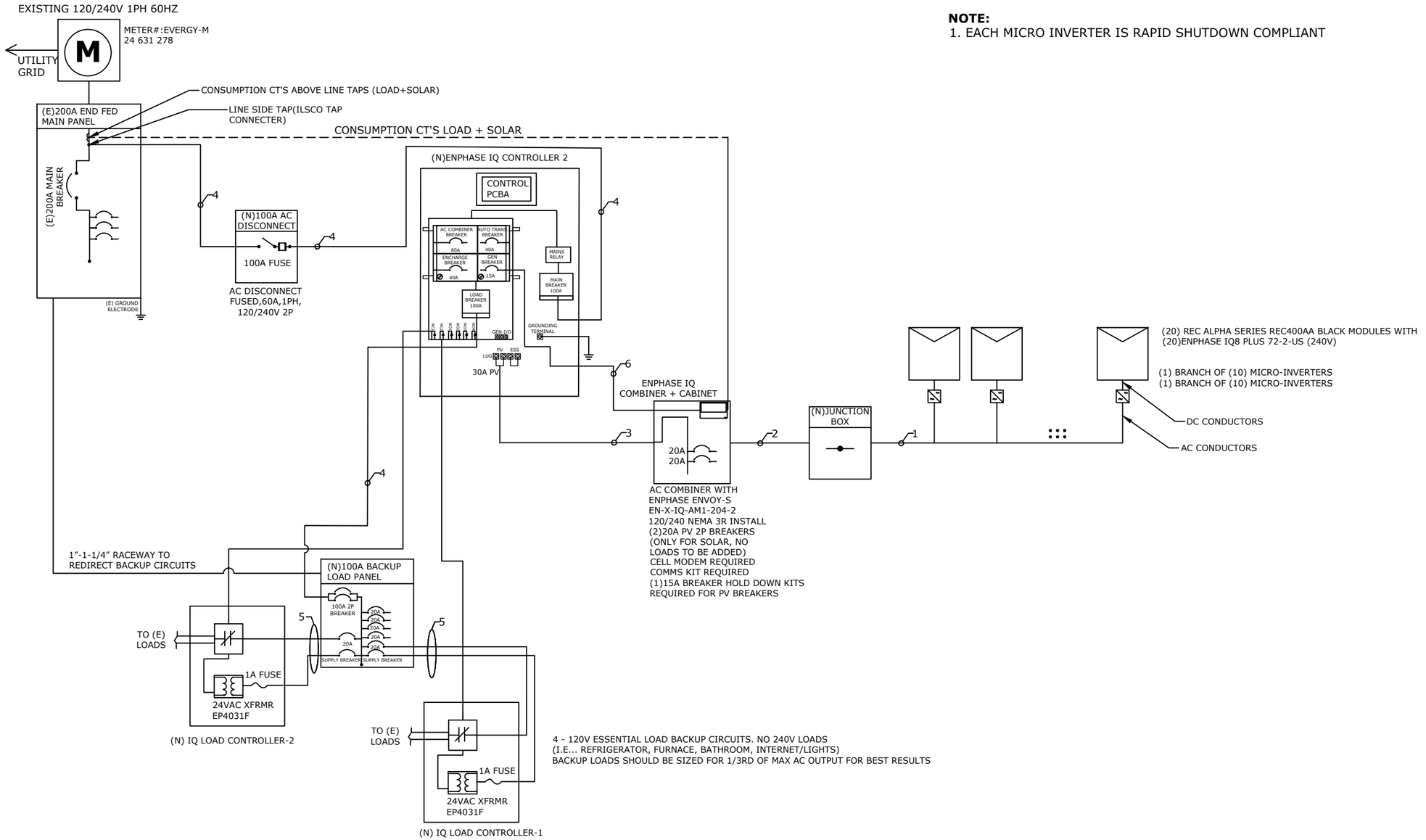
STRUCTURAL DETAIL

DRAFTED BY: N. KUMAR QC'ED BY:S. KISHORE	PAPER SIZE:17"X11"
SCALE:AS NOTED	REV:G
DATE:4/7/2022	S-02

SINGLE LINE DIAGRAM: DC SYSTEM SIZE - 8000W, AC SYSTEM SIZE - 5800W, 1933W DAYLIGHT BACKUP

MICRO INVERTER SPECIFICATIONS	
MODEL	ENPHASE IQ8 PLUS 72-2-US (240V)
MAX CONTINUOUS OUTPUT POWER	290VA
MAX OUTPUT CURRENT	1.21A
CEC WEIGHTED EFFICIENCY	97%
MAX NO OF MICRO INVERTERS/BRANCH	13
MAX DC VOLTAGE	60V

MODULE SPECIFICATION	
MODEL	REC ALPHA SERIES REC400AA BLACK
MODULE POWER @ STC	400W
OPEN CIRCUIT VOLTAGE:**Voc**	48.8V
MAX POWER VOLTAGE:**Vmp**	42.1V
SHORT CIRCUIT CURRENT:**Isc**	10.10A
MAX POWER CURRENT:**Imp**	9.51A



NOTE:
1. EACH MICRO INVERTER IS RAPID SHUTDOWN COMPLIANT

ELECTRICAL NOTES

1.CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC 310.10(D).
2.CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC 310.10(C).
3.MAXIMUM DC/AC VOLTAGE DROP SHALL BE NO MORE THAN 2%.
4.ALL CONDUCTORS SHALL BE IN CONDUIT UNLESS OTHERWISE NOTED.
5.BREAKER/FUSE SIZES PER NEC 240.
6.AC EQUIPMENT GROUNDING CONDUCTOR SIZED PER NEC 250.122.
7.AMBIENT TEMPERATURE CORRECTION FACTOR IS BASED ON NEC 690.31(A).
8.AMBIENT TEMPERATURE ADJUSTMENT FACTOR IS BASED ON NEC 310.15(B)(2).
9.MAX. SYSTEM VOLTAGE CORRECTION IS PER NEC 690.7.
10.CONDUCTORS ARE SIZED PER NEC TABLE 310.15(B)(16).

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SINGLE LINE DIAGRAM

DRAFTED BY: N. KUMAR QC'ED BY:S. KISHORE	PAPER SIZE:17"X11"
SCALE:AS NOTED	REV:G
DATE:4/7/2022	E-01

ELECTRICAL CALCULATION

CONDUIT SCHEDULE

TAG ID	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1	NONE	(2) 12AWG ENPHASE Q CABLE PER BRANCH CIRCUIT	NONE	(1) 10AWG BARE COPPER
2	3/4"EMT	(4) 10AWG THHN/THWN-2	NONE	(1) 10AWG THHN/THWN-2
3	3/4"EMT	(2) 10 AWG THHN/THWN-2	(1) 10 AWG THHN/THWN-2	(1) 10AWG THHN/THWN-2
4	1-1/4"EMT	(2)1 AWG THHN/THWN-2	(1)1 AWG THHN/THWN-2	(1) 6AWG THHN/THWN-2
5	3/4"EMT	(2)10 AWG THHN/THWN-2	(1)10 AWG THHN/THWN-2	(1) 10AWG THHN/THWN-2
6	3/4"EMT	(2)10 AWG THHN/THWN-2	(1)10 AWG THHN/THWN-2	NONE

NOTE:
MAIN PANEL RATING:200A, MAIN BREAKER RATING:200A
LINE SIDE TAP: 100% ALLOWABLE BACKFEED IS =200A

OCPD CALCULATIONS:
INVERTER OVERCURRENT PROTECTION= INVERTER O/P I X CONTINUOUS LOAD(1.25)
=1.21x1.25x20=30.25A=>PV BREAKER = 100A
TOTAL REQUIRED PV BREAKER SIZE / FUSE SIZE=>100A PV BREAKER

ELECTRICAL CALCULATIONS

AC WIRE SIZING CALCULATIONS BASED OF FOLLOWING EQUATIONS >>

- REQUIRED CONDUCTOR AMPACITY: INVERTER OUTPUT CURRENT X #OF INVERTERS = MAX CURRENT PER 690.8(A)(3) X 125% = MAX CURRENT PER 690.8(B)(1)
- CORRECTED AMPACITY CALCULATIONS: AMPACITY X TEMPERATURE DERATE FACTOR X CONDUIT FILL DERATE = DERATED CONDUCTOR AMPACITY PER 690.8(B)(2)
- DERATED CONDUCTOR AMPACITY CHECK: MAX CURRENT PER 690.8(A)(3) < DERATED CONDUCTOR AMPACITY

AC WIRE CALCULATIONS:- MATERIAL:COPPER & TEMPERATURE RATING:90°C

TAG ID	REQUIRED CONDUCTOR AMPACITY									CORRECTED AMPACITY CALCULATION							DERATED CONDUCTOR AMPACITY CHECK		
1	1.21	X	10	=	12.10	X	1.25	=	15.13A	30	X	0.87	X	1	=	26.10A	15.13A	<	26.10A
2	1.21	X	10	=	12.10	X	1.25	=	15.13A	40	X	0.87	X	0.8	=	27.84A	15.13A	<	27.84A
3	1.21	X	20	=	24.20	X	1.25	=	30.25A	40	X	0.87	X	1	=	34.80A	30.25A	<	34.80A
4	1.21	X	20	=	24.20	X	1.25	=	30.25A	145	X	0.87	X	1	=	126.15A	30.25A	<	126.15A

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ELECTRICAL CALCULATION

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DATE:4/7/2022	E-02

WARNING PLACARD

⚠ WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

LABEL LOCATION
AC DISCONNECT,POINT OF INTERCONNECTION
PER CODE: NEC 690.13

WARNING:PHOTOVOLTAIC POWER SOURCE

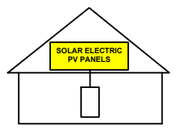
LABEL LOCATION
CONDUIT, COMBINER BOX
PER CODE: NEC690.31(G)(3)

PHOTOVOLTAIC
AC DISCONNECT

LABEL LOCATION
DISCONNECT, POINT OF INTERCONNECTION
PER CODE: NEC690.13(B)

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
AC DISCONNECT
POINT OF INTERCONNECTION
PER CODE: NEC690.56(C)(1)(A)

PHOTOVOLTAIC SYSTEM AC DISCONNECT SWITCH

RATED AC OPERATING CURRENT 24.20 AMPS AC
AC NOMINAL OPERATING VOLTAGE 240 VAC

LABEL LOCATION
AC DISCONNECT , POINT OF INTERCONNECTION
PER CODE: NEC 690.54

WARNING

DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

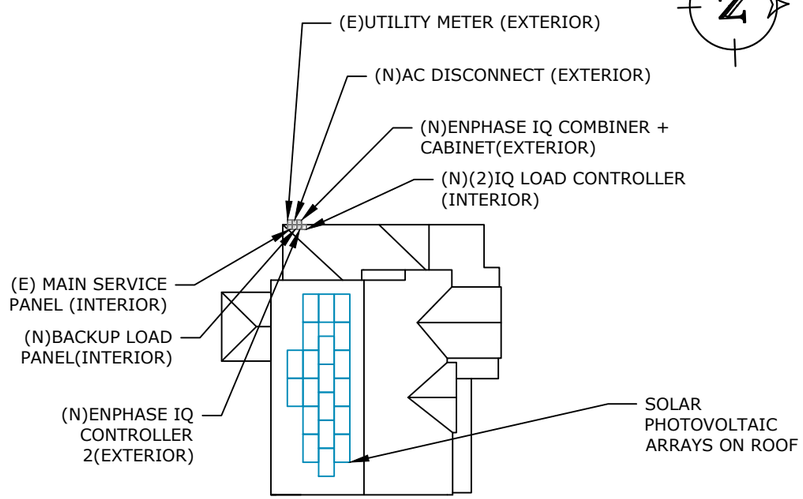
LABEL LOCATION
POINT OF INTERCONNECTION
PER CODE: NEC705.12(B)(3)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION
AC DISCONNECT
PER CODE: NEC 690.56(C)(3)

WARNING: ⚠

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



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SYSTEM UTILIZES MICRO-INVERTERS LOCATED UNDER EACH SOLAR MODULE

LABEL LOCATION
SERVICE PANEL
PER CODE: NEC 705.10

NOTES:
ALL PLACARDS SHALL BE OF WEATHER PROOF CONSTRUCTION, BACKGROUND ON ALL PLACARDS SHALL BE RED WITH WHITE LETTERING U.O.N.
PLACARD SHALL BE MOUNTED DIRECTLY ON THE EXISTING UTILITY ELECTRICAL SERVICE.
FASTENERS APPROVED BY THE LOCAL JURISDICTION

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WARNING PLACARDS

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SCALE:AS NOTED	REV:G
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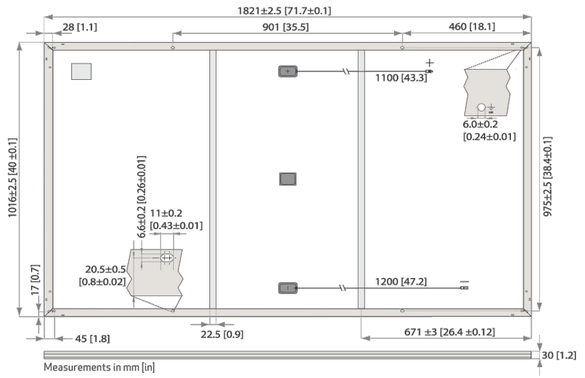
SPEC SHEET

REC
SOLAR'S MOST TRUSTED

REC ALPHA PURE BLACK SERIES > PRODUCT SPECIFICATIONS

PRODUCT SPECIFICATIONS



Measurements in mm [in]

GENERAL DATA

Cell type:	132 half-cut REC heterojunction cells with lead-free, gapless technology 6 strings of 22 cells in series	Connectors:	Stäubli MC4 PV-KBT4/KST4, 12 AWG (4 mm²) in accordance with IEC 62852 IP68 only when connected
Glass:	0.13 in (3.2 mm) solar glass with anti-reflection surface treatment	Cable:	12 AWG (4 mm²) PV wire, 43+47 in (1.1+1.2 m) accordance with EN 50618
Backsheet:	Highly resistant polymer (black)	Dimensions:	71.7 x 40 x 1.2 in (1821 x 1016 x 30 mm)
Frame:	Anodized aluminum (black)	Weight:	45 lbs (20.5 kg)
Junction box:	3-part, 3 bypass diodes, IP67 rated in accordance with IEC 62790	Origin:	Made in Singapore

ELECTRICAL DATA — Product Code*: RECxxxAA Pure Black

STC	Power Output - P_{MAX} (Wp)	385	390	395	400	405
	Watt Class Sorting - (W)	0/+5	0/+5	0/+5	0/+5	0/+5
	Nominal Power Voltage - V_{MPP} (V)	41.2	41.5	41.8	42.1	42.4
	Nominal Power Current - I_{MPP} (A)	9.35	9.40	9.45	9.51	9.56
	Open Circuit Voltage - V_{OC} (V)	48.5	48.6	48.7	48.8	48.9
	Short Circuit Current - I_{SC} (A)	9.99	10.03	10.07	10.10	10.14
	Power Density (W/sq ft)	19.3	19.6	19.8	20.1	20.3
	Panel Efficiency (%)	20.8	21.1	21.3	21.6	21.9
NMOT	Power Output - P_{MAX} (Wp)	293	297	301	305	309
	Nominal Power Voltage - V_{MPP} (V)	38.8	39.1	39.4	39.7	40.0
	Nominal Power Current - I_{MPP} (A)	7.55	7.59	7.63	7.68	7.72
	Open Circuit Voltage - V_{OC} (V)	45.7	45.8	45.9	46.0	46.1
	Short Circuit Current - I_{SC} (A)	8.07	8.10	8.13	8.16	8.19

Values at standard test conditions (STC: air mass AM 1.5, 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 AM 1.5, 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.

CERTIFICATIONS

IEC 61215:2016, IEC 61730:2016, UL 61730 (Pending)

ISO 14001:2004, ISO 9001:2015, OHSAS 18001:2007, IEC 62941

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

MAXIMUM RATINGS

Operational temperature:	-40 ... +185°F (-40 ... +85°C)
Maximum system voltage:	1000 V
Maximum test load (front):	+7000 Pa (146 lbs/sq ft)*
Maximum test load (rear):	-4000 Pa (83.5 lbs/sq ft)*
Max series fuse rating:	25 A
Max reverse current:	25 A

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

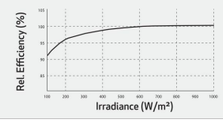
TEMPERATURE RATINGS*

Nominal Module Operating Temperature:	44°C (±2°C)
Temperature coefficient of P_{MAX}:	-0.26 %/°C
Temperature coefficient of V_{OC}:	-0.24 %/°C
Temperature coefficient of I_{SC}:	0.04 %/°C

*The temperature coefficients stated are linear values

LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC:



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

REC
www.recgroup.com

Specifications subject to change without notice.

Ref: PM-05-12-01-Rev- A 03.21

RISINGSUN SOLAR

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UTILITY:EVERGY-M

PRN NUMBER: RGS-47106

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MODULE SPEC SHEET

DRAFTED BY: N. KUMAR QC'ED BY:S. KISHORE	PAPER SIZE:17"X11"
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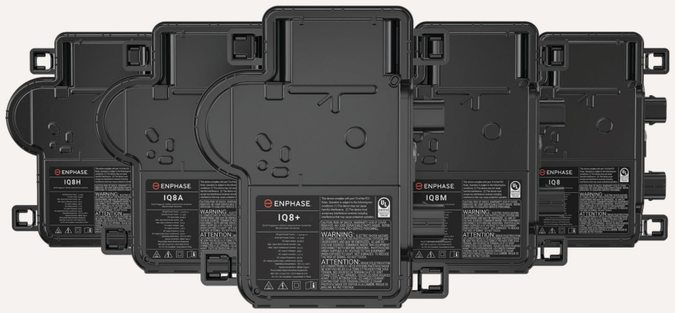
DATE:4/7/2022	SS-01

ENPHASE.

DATA SHEET



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.

Enphase 25 year limited warranty

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.

UL CERTIFIED SAFETY

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-2021-10-19

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

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[1]
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	60-cell/120 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[3] [module Isc]	A	15					
Overvoltage 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**
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[4]	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					
Max units per 20 A (L-L) branch circuit[5]		16	13	11	11	10	9
Total harmonic distortion		<5%					
Overvoltage 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					
Acoustic noise at 1 m		<60 dBA					
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/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, 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-2021-10-19

RISINGSUN SOLAR

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PRN NUMBER: RGS-47106

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INVERTER SPEC SHEET

DRAFTED BY: N. KUMAR QC'ED BY:S. KISHORE	PAPER SIZE:17"X11"
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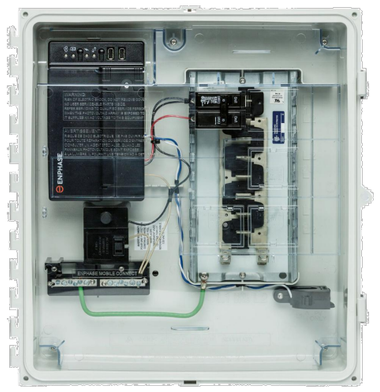
Data Sheet
Enphase Networking

Enphase IQ Combiner+

(X-IQ-AM1-240-2)

The **Enphase IQ Combiner+**™ with Enphase IQ Envoy™ consolidates interconnection equipment into a single enclosure and streamlines PV 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 Envoy for communication and control
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Provides production metering and optional consumption monitoring
- Supports installation of the Enphase Q Aggregator™

Simple

- Eaton BR series panelboard interior
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80 A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year warranty
- UL listed

LISTED

To learn more about Enphase offerings, visit **enphase.com**

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Enphase IQ Combiner+

MODEL NUMBER	
IQ Combiner+ X-IQ-AM1-240-2	IQ Combiner+ with Enphase IQ Envoy™ for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional* consumption monitoring (+/- 2.5%).
ACCESSORIES (order separately)	
Enphase Mobile Connect™ CELLMODEM-03 (4G / 12-year data plan) CELLMODEM-01 (3G / 5-year data plan) CELLMODEM-M1 (4G LTE CAT-M1 / 5-year data plan)	Plug and play industrial grade cellular modem with data plan 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.)
Consumption Monitoring CT CT-200-SPLIT	Split core current transformers enable whole home consumption metering* (+/- 2.5%).
Circuit Breakers BRK-15A-2-240 BRK-20A-2-240	 Breaker, 2 pole, 15A, Eaton BR215 Breaker, 2 pole, 20A, Eaton BR220
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	240 VAC, 60 HZ
Eaton BR series busbar rating	125 A
Max. continuous current rating (output to grid)	65 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. continuous current rating (input from PV)	64 A
Max. total branch circuit breaker rating (input)	80 A (any combination)
Production Metering CT	200 A solid core pre-installed and wired to IQ Envoy
MECHANICAL DATA	
Dimensions (WxHxD)	49.3 x 46.5 x 16.0 cm (19.4” x 18.3” x 6.3”)
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: 3 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
Ethernet	802.3, Cat5E (or Cat 6) UTP Ethernet cable - not included
Cellular	Optional, CELLMODEM-01 (3G) or CELLMODEM-03 (4G) (not included)
COMPLIANCE	
Compliance, 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)
Compliance, IQ Envoy	UL 916 CAN/CSA C22.2 No. 61010-1

* Consumption monitoring is required for Enphase Storage Systems.

To learn more about Enphase offerings, visit **enphase.com**

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2018-05-02

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COMBINER SPEC SHEET

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SPEC SHEET

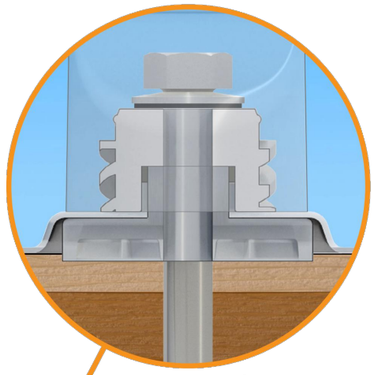
Tech Brief

IRONRIDGE

FlashFoot2

The Strongest Attachment in Solar

IronRidge FlashFoot2 raises the bar in solar roof protection. The unique water seal design is both elevated and encapsulated, delivering redundant layers of protection against water intrusion. In addition, the twist-on Cap perfectly aligns the rail attachment with the lag bolt to maximize mechanical strength.

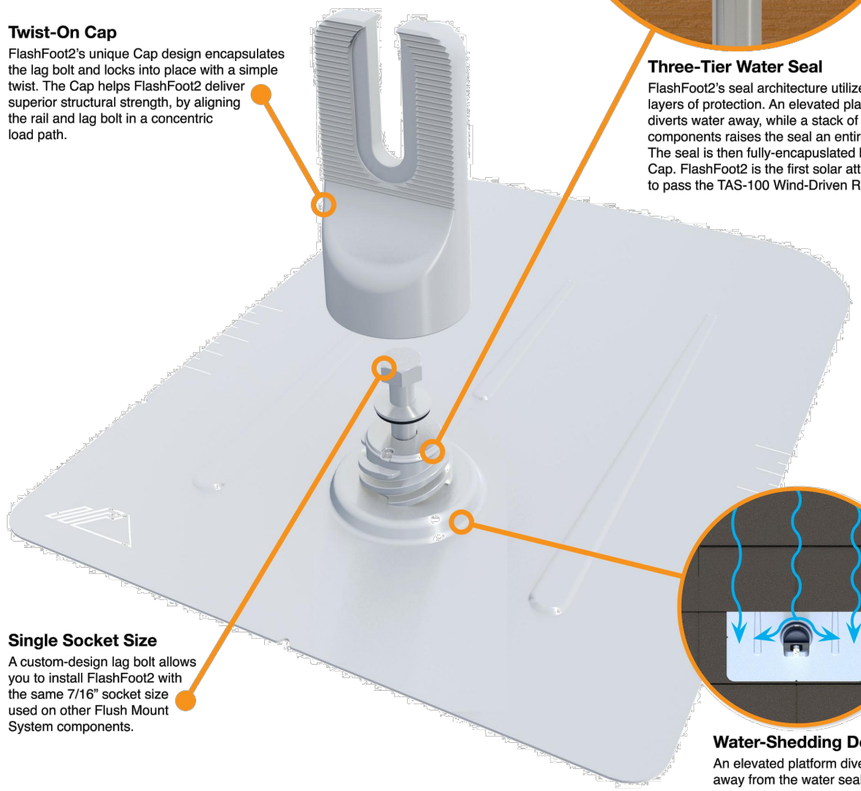


Three-Tier Water Seal

FlashFoot2's seal architecture utilizes three layers of protection. An elevated platform diverts water away, while a stack of rugged components raises the seal an entire inch. The seal is then fully-encapuslated by the Cap. FlashFoot2 is the first solar attachment to pass the TAS-100 Wind-Driven Rain Test.

Twist-On Cap

FlashFoot2's unique Cap design encapsulates the lag bolt and locks into place with a simple twist. The Cap helps FlashFoot2 deliver superior structural strength, by aligning the rail and lag bolt in a concentric load path.



Single Socket Size

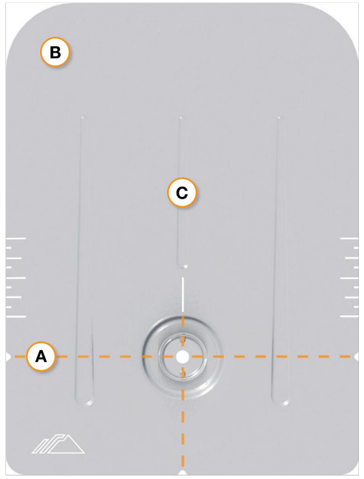
A custom-design lag bolt allows you to install FlashFoot2 with the same 7/16" socket size used on other Flush Mount System components.

Water-Shedding Design

An elevated platform diverts water away from the water seal.

Tech Brief

Installation Features



A Alignment Markers

Quickly align the flashing with chalk lines to find pilot holes.

B Rounded Corners

Makes it easier to handle and insert under the roof shingles.

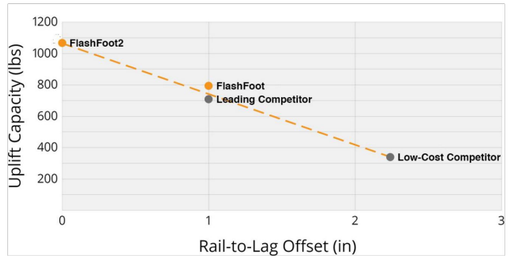
C Reinforcement Ribs

Help to stiffen the flashing and prevent any bending or crinkling during installation.

Benefits of Concentric Loading

Traditional solar attachments have a horizontal offset between the rail and lag bolt, which introduces leverage on the lag bolt and decreases uplift capacity.

FlashFoot2 is the only product to align the rail and lag bolt. This concentric loading design results in a stronger attachment for the system.



Testing & Certification

Structural Certification

Designed and Certified for Compliance with the International Building Code & ASCE/SEI-7.

Water Seal Ratings

Water Sealing Tested to UL 441 Section 27 "Rain Test" and TAS 100-95 "Wind Driven Rain Test" by Intertek. Ratings applicable for composition shingle roofs having slopes between 2:12 and 12:12.

UL 2703

Conforms to UL 2703 Mechanical and Bonding Requirements. See Flush Mount Install Manual for full ratings.

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MOUNT SPEC SHEET

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SPEC SHEET

Tech Brief

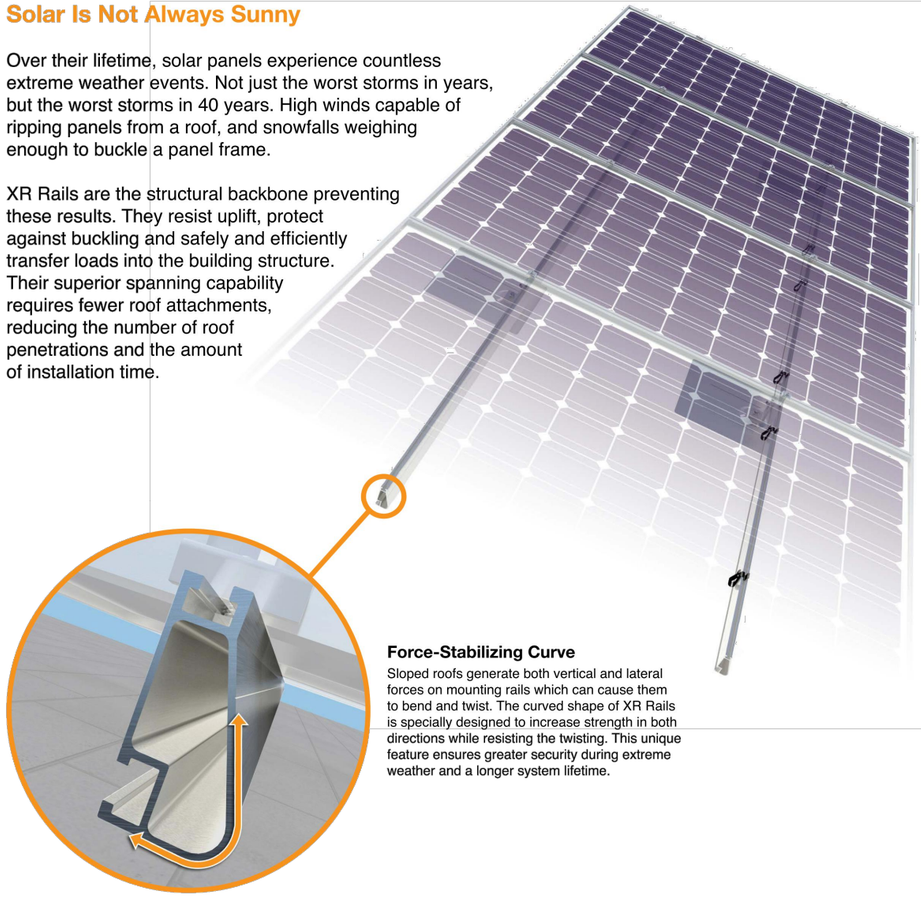
IRONRIDGE

XR Rail Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.



Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs

XR Rails are compatible with FlashFoot and other pitched roof attachments.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of marine-grade aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.

Tech Brief

XR Rail Family

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.

XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves 6 foot spans, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear anodized finish
- Internal splices available

XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 8 feet.

- 8' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available

XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans 12 feet or more for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	100	XR10		XR100		XR1000	
	120						
	140						
	160						
10-20	100						
	120						
	140						
	160						
30	100						
	160						
40	100						
	160						
50-70	160						
80-90	160						

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RAIL SPEC SHEET

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SPEC SHEET

INFORMATION SHEET

KUP-L-Tap, Insul-Eater Single Use Insulation Piercing Connectors

1) Specifications:
   Conductors - Class B or C Aluminum and or Copper wires
   Temperature rating - 90°C

Item ID	Run	Tap	Torque (in-lbs)	Tools (Socket & Box wrenches)	Voltage
IPC-1/0-2	1/0 - 8 AWG	#2 - #8 AWG	192	1/2"	300 (480 grounded Y system)
IPC-4/0-6	4/0 - #4 AWG	#6 - #14 AWG	156	1/2"	600
IPC-4/0-2/0 * +	4/0 - #2 AWG	2/0 - #6 AWG	300	1/2"	600
IPC-250-4/0 * #	250 kcmil-#1 AWG	4/0 - #6 AWG	360	5/8"	600
IPC-350-4/0	350 kcmil-4/0	4/0 - #10 AWG	300	5/8"	300 (480 grounded Y system)
IPC-350-350	350 kcmil-4/0	350 kcmil-4/0	300	5/8"	300 (480 grounded Y system)
IPC-500-12	500-250 kcmil	#10-#12 AWG	300	5/8"	300 (480 grounded Y system)
IPC-500-250	500-250 kcmil	250 - #4 AWG	720	5/8" & 11/16"	600
IPC-500-500 *	500-300 kcmil	500-250 kcmil	900	7/8"	600
IPC-750-500 *	750-500kcmil	500-350kcmil	900	7/8"	600

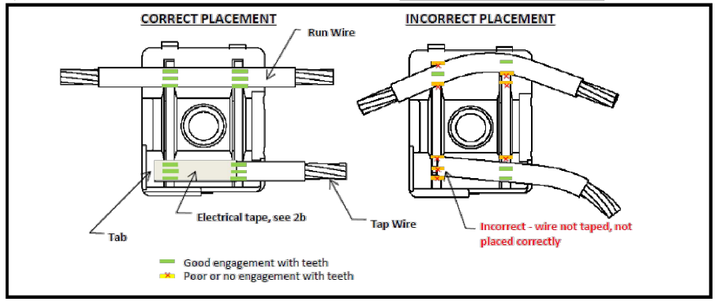
* Can be used on bare wire or bare & insulated wire combinations
  * - When used on bare conductor, break out the tabs and extend wire 1.5 - 2" beyond the connector body.
+ Tap side is limited to .528" OD including the insulation.
# Max OD on the main is .730" inculding insulation

-IPC-250-4/0 & IPC-4/0-2/0- To insure the top and bottom are aligned -There are lines on the side of the connector to help.

2) Installation Instructions For Use as a Run and Tap:
   a) Remove the tab blocking the **Main** conductor groove with screwdriver or **pliers.**
      - Tap must be broken cleanly to the bottom of the channel.
   b) Cut insulated cable end **squarely** and apply a crisscrossed layer of UL listed electrical **tape over the exposed end of the wire.** Tape the exposed wire end with Two pieces of **tape** measuring approximately three inches long.
   c) **Separate** the connector halves by loosening the bolt.
   d) Slide the connector over the run conductor.
   e) Insert the **tap** conductor until it **butts** up against the **tab.**
      BE SURE THE TAP CONDUCTOR IS ALL THE WAY THROUGH THE CONNECTOR.
   f) Center both conductors over the piercing teeth, and finger tighten the bolt.
      - (Refer to the diagram below for correct placement of conductors)
   g) Holding the connector firmly in your hand, tighten the bolt to the **torque** in the above table.

Click For YouTube Video

3) Additional Information
   a) Connector can be used on **BUILDING CODE (Stranded CLASS B or C)** wire either copper and/or aluminum conductors
   b) The Insul-Eater is **fully** insulated without an external cover or tape
   c) The Insul-Eater connector should not be installed when **tap conductor is under load**



Form 73
Revised 6-15-2016

RISINGSUN SOLAR

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UTILITY:EVERGY-M

PRN NUMBER: RGS-47106

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Because quality matters

TAP CONNECTOR SPEC SHEET

DRAFTED BY: N. KUMAR QC'ED BY:S. KISHORE	PAPER SIZE:17"X11"
SCALE:AS NOTED	REV:G
DATE:4/7/2022	SS-06

SPEC SHEET

Tech Brief

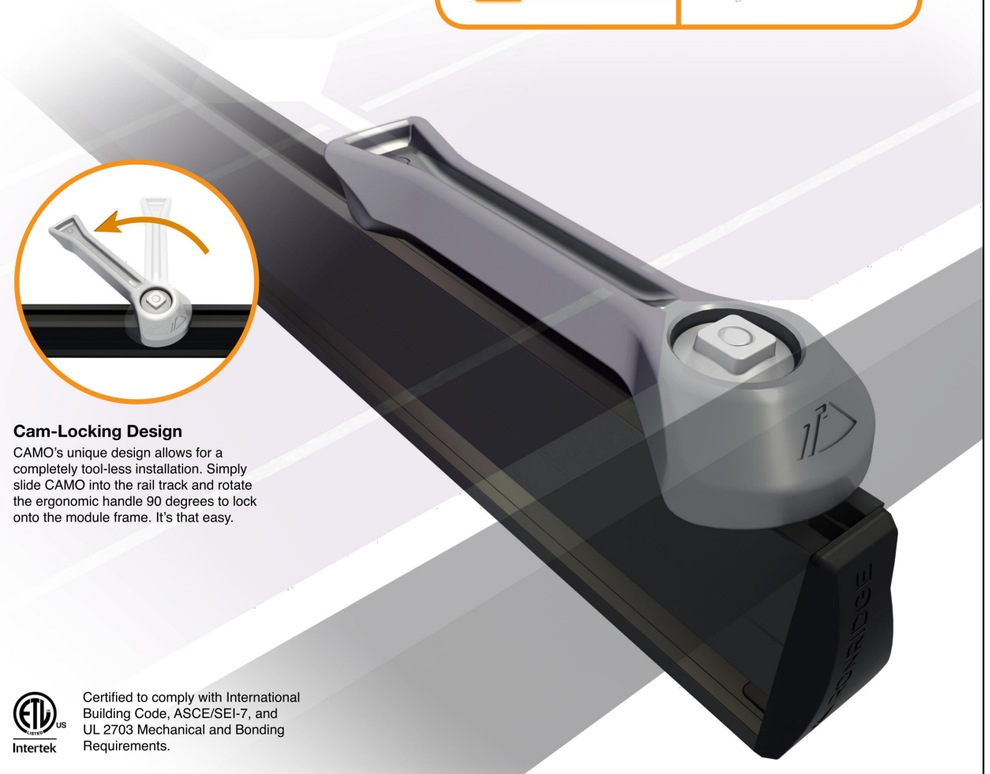
IRONRIDGE

Hidden End Cam

Solar, Sleeker Than Ever

Most solar installations use mounting rails and fasteners to secure modules to the building structure, but these critical components often protrude from the sides of the modules, giving arrays a coarse look.

CAMO is an invisible fastener that secures solar modules flush to rail ends, creating a clean, sleek appearance. CAMO works with nearly all solar modules and installs without tools or torque specifications. It simply rotates into place to structurally secure and electrically bond with the module.



Cam-Locking Design

CAMO's unique design allows for a completely tool-less installation. Simply slide CAMO into the rail track and rotate the ergonomic handle 90 degrees to lock onto the module frame. It's that easy.

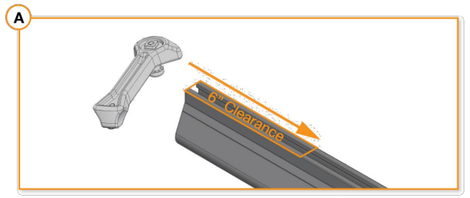
Certified to comply with International Building Code, ASCE/SEI-7, and UL 2703 Mechanical and Bonding Requirements.

Tech Brief

Easy, Tool-Less Installation

A. PLACE CAMO

Slide CAMO into rail track far enough to clear the module frame. CAMO requires 6" of clearance from end of rail.

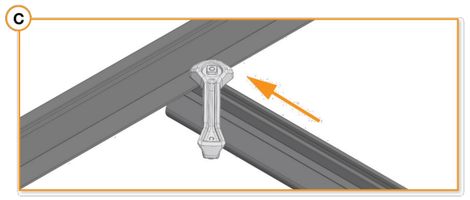


B. PLACE MODULE

Place module on rails and align flush with rail ends (module cells not shown in image to provide clarity). The module can overhang the rail no more than 1/4".

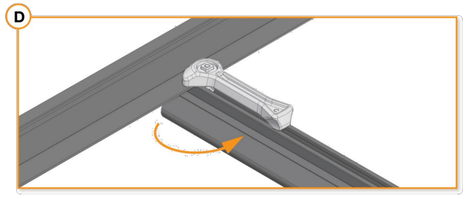
C. SLIDE CAMO

Pull CAMO towards rail end, at a 45 degree angle, so linear bonding pin contacts the module flange edge.

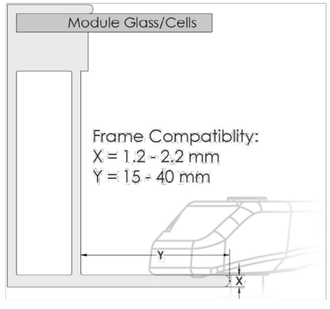


D. SECURE CAMO

Rotate handle with an upwards motion until CAMO snaps into rail track. Ensure CAMO bonding pins are fully seated on top of module frame.



Tested & Certified



UL 2703

CAMO conforms to STD UL 2703 (2015) requirements and fits modules with bottom flanges that meet specifications shown in the frame compatibility diagram on the left.

See IronRidge Installation Manuals for full ratings and a list of certified compatible modules.

Intertek

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RISINGSUN SOLAR

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CAMO SPEC SHEET

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Data Sheet
Enphase Energy System

Enphase IQ System Controller 2

The **Enphase IQ System Controller 2** connects the home to grid power, the IQ Battery system, and solar PV. It provides microgrid interconnection device (MID) functionality by automatically detecting and seamlessly transitioning the home energy system from grid power to backup power in the event of a grid failure. It consolidates interconnection equipment into a single enclosure and streamlines grid independent capabilities of PV and storage installations by providing a consistent, pre-wired solution for residential applications.

Reliable

- Durable NEMA type 3R enclosure
- Ten-year limited warranty

Smart

- Controls safe connectivity to the grid
- Automatically detects grid outages
- Provides seamless transition to backup

Simple

- Connects to the load or service equipment[1] side of the main load panel
- Centered mounting brackets support single stud mounting
- Supports conduit entry from the bottom, bottom left side, and bottom right side
- Supports whole home and partial home backup and subpanel backup
- Up to 200A main breaker support
- Includes neutral-forming transformer for split phase 120/240V backup operation
- IQ System Controller supports backward compatibility with older generation of PV microinverters (M215, M250 and S series), making it simple for home owners to upgrade their systems
- Easy integration with generator from major manufacturers

1. IQ System Controller 2 is not suitable for use as service equipment in Canada.

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE

Enphase IQ System Controller 2

MODEL NUMBER	
EP200G101-M240US01	Enphase IQ System Controller 2 with neutral-forming transformer (NFT), Microgrid Interconnect Device (MID), breakers, and screws. Streamlines grid-independent capabilities of PV and battery installations.
ACCESSORIES and REPLACEMENT PARTS	
EP200G-NA-XA-E3	Replacement IQ System Controller 2 printed circuit board
EP200G-NA-HD-200A	**Eaton type BR circuit breaker hold-down screw kit, BRHDK125**
CT-200-SPLIT	200 A split core current transformers for Generator metering (+/- 2.5%)
Circuit breakers (as needed)[2,3] • BRK-100A-2P-240V : Main breaker, 2 pole, 100A, 25kAIC, CSR2100 • BRK-125A-2P-240V: Main breaker, 2 pole, 125A, 25kAIC, CSR2125N • BRK-150A-2P-240V: Main breaker, 2 pole, 150A, 25kAIC, CSR2150N • BRK-175A-2P-240V: Main breaker, 2 pole, 175A, 25kAIC, CSR2175N • BRK-200A-2P-240V: Main breaker, 2 pole, 200A, 25kAIC, CSR2200N	**Not included, must order separately:** • BRK-20A-2P-240V-B: Circuit breaker, 2 pole, 20A, 10kAIC, BR220B • BRK-30A-2P-240V: Circuit breaker, 2 pole, 30A, 10kAIC, BR230B • BRK-40A-2P-240V: Circuit breaker, 2 pole, 40A, 10kAIC, BR240B • BRK-60A-2P-240V: Circuit breaker, 2 pole, 60A, 10kAIC, BR260 • BRK-80A-2P-240V: Circuit breaker, 2 pole, 80A, 10kAIC, BR280
EP200G-HNDL-R1	IQ System Controller 2 installation handle kit (order separately)
EP200G-LITKIT	**IQ System Controller 2 literature kit, including labels, feed-through headers, screws, filler plates, and QIG**
BRK-20A40A-2P-240V	2 pole, 20A/40A, 10kAIC, BQC220240
ELECTRICAL SPECIFICATIONS	
Assembly rating	Continuous operation at 100% of its rating
Nominal voltage / range (L-L)	**240 VAC / 100 - 310 VAC**
Voltage measurement accuracy	±1% V nominal (±1.2V L-N and ±2.4V L-L)
Auxiliary contact for load control, excess PV control, and generator two-wire control	**24V, 1A**
Nominal frequency / range	60 Hz / 56 - 63 Hz
Frequency measurement accuracy	**±0.1 Hz**
Maximum continuous current rating	160A
Maximum input overcurrent protection device	**200A**
Maximum output overcurrent protection device	200A
Maximum overcurrent protection device rating for Generator circuit[4]	**80A**
Maximum overcurrent protection device rating for storage branch circuit[4] (the storage branch circuit can be replaced with PV)	80A
Maximum overcurrent protection device rating for IQ8 PV combiner branch circuit[4]	**80A**
Neutral Forming Transformer (NFT)	• Breaker rating (pre-installed): 40A between L1 and Neutral; 40A between L2 and Neutral • Continuous rated power: 3600VA • Maximum continuous unbalance current: 30A @ 120V • Peak rated power: 8800VA for 30 seconds • Peak unbalanced current: 80A @ 120V for 30 seconds
MECHANICAL DATA	
Dimensions (WxHxD)	50cm x 91.6cm x 24.6cm (19.7 in x 36 in x 9.7 in)
Weight	**39.4 kg (87 lbs)**
Ambient temperature range	-40° C to +50° C (-40° F to 122° F)
Cooling	**Natural convection, plus heat shield**
Enclosure environmental rating	Outdoor, NEMA type 3R, polycarbonate construction
Altitude	**To 2500 meters (8200 feet)**
WIRE SIZES	
Connections (All lugs are rated to 90C)	• Main lugs and backup load lugs — Cu/Al: 1 AWG – 300 KCMIL • CSR breaker bottom wiring lugs — Cu/Al: 2 AWG – 300 KCMIL • BR breakers (wire provided) — 6 AWG • AC combiner lugs, Encharge lugs, and generator lugs — 14 AWG – 2 AWG • Neutral (large lugs) — Cu/Al: 6 AWG - 300 KCMIL
Neutral and ground bars	**Large holes (5/16-24 UNF) — 14 AWG – 1/0 AWG** **Small holes (10-32 UNF) — 14 AWG – 6 AWG**
COMPLIANCE	
Compliance	UL 1741, UL 1741 SA, UL 1741 PCS, UL1998, UL869A[5], UL67[5], UL508[5], UL50E[5] CSA 22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003, AC156. IQ System Controller 2 is approved for Use as Service Equipment in the United States[5].

2. Compatible with BRHDK125 Hold-Down Kit to comply with 2017 NEC 710.15E for back-fed circuit breakers.
3. The IQ System Controller 2 is rated 22 kAIC
4. Not included. Installer must provide properly rated breaker per circuit breaker list above.
5. Sections from these standards were used during the safety evaluation and included in the UL 1741 listing.

To learn more about Enphase offerings, visit **enphase.com**

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ENPHASE

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CONTROLLER SPEC SHEET

DRAFTED BY: N. KUMAR QC'ED BY:S. KISHORE	PAPER SIZE:17"X11"
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