

APPLICATION FOR BUILDING PERMIT

The Village of Irvington | 85 Main St | Irvington NY 10533

Application Number:	432	Date:	05/11/2022
Job Location:	23 MAIN ST	Parcel ID:	2.40-13-11
Property Owner:	GIBBONS, JAMES & GIBBONS, JEANETTE	Property Class:	1 FAMILY RES
Occupancy:	Mixed Use	Zoning:	
Common Name:			

Applicant	Contractor
Brandon Hall	Brandon Hall
Consolidated Hudson Electric	Consolidated Hudson Electric
64 MAIN ST Irvington NY 10533	64 MAIN ST Irvington NY 10533
914-960-4063	914-960-4063

Description of Work

Type of Work:	Solar Panels	Applicant is:	Contractor
Work Requested by:	The Owner	In association with:	
Cost of Work (Est.):	10000.00	Property Class:	1 FAMILY RES

Description of Work

Installation of solar panels on south-facing roof.

Please Note: Completing the application does not constitute a permit to commence construction. To obtain your permit follow the instructions on the instruction page provided on page 3.

Job Location: 23 MAIN ST

Parcel Id: 2.40-13-11

AFFIDAVIT OF APPLICANT

I Brandon Hall being duly sworn, depose and says: That s/he does business as: **Consolidated Hudson Electric** with offices at: **64 MAIN ST Irvington NY 10533** and that s/he is:

- ☒ The owner of the property described herein.
☐ The _____ of the New York Corporation _____ with offices at: _____
_____ duly authorized by resolution of the Board of Directors, and that said corporation is duly authorized by the owner to make this application.
- ☐ A general partner of _____ with offices _____ and that said Partnership is duly authorized by the Owner to make this application.
☐ The Lessee of the premises, duly authorized by the owner to make this application.
☐ The Architect of Engineer duly authorized by the owner to make this application.
☐ The contractor authorized by the owner to make this application.

That the information contained in this application and on the accompanying drawings is true to the best of his knowledge and belief. The undersigned hereby agrees to comply with all the requirements of the New York State Uniform Fire Prevention and Building Code, the Village of Irvington Building Code, Zoning Ordinance and all other laws pertaining to same, in the construction applied for, whether or not shown on plans or specify in this application.

Sworn to before me this 13th day of May of 2022

Stacy French

Notary Public / Commission of Deeds

Stacy French
Notary Public, State of New York
No. 01FR6187456
Qualified in Suffolk County
Commission Expires May 10, 2024

[Signature]
Applicant's Signature

OWNER'S AUTHORIZATION

I GIBBONS, JAMES & GIBBONS, JEANETTE as the owner of the subject premises and have authorized the contractor named above to perform the work under the subject application.

Owner phone number _____ Owner email address _____

- ☐ _____ I hereby acknowledge that it is my responsibility as the **property owner** to ensure that if the permit (if issued) receives a Final Certificate of Approval from the Building Department and further that if a Final Certificate of Approval is not obtained upon completion of the construction, a property violation may be placed on the property for which this permit is being requested.

Sworn to before me this _____ day of _____ of _____

Notary Public / Commission of Deeds

[Signature]
Applicant's Signature



(800) 257-5288

platt.com

Eaton DG222URB Safety Switch, 60A, 2P, 240V, Type DG, Non-Fusible, NEMA 3R



Item: 0010548 Cat: DG222URB
Mfr: Eaton UPC: 782113144238

Catalog Page Technical Bulletin - Eaton

Catalog Page - Eaton



\$217.85 EA

Usually ships in 2-4 days

Company Wide: 224

In other users' carts 9

Qty: 1 EA

Add to Cart

Details

Q&A

60 AMP, 2-Pole, General Duty Safety Switch, Non-Fusible, 240 VAC, NEMA 3R. Enclosure Dims: H: 14.38", W: 8.69", D: 4.21".

Platt Cat:	CUTDG222URB	Amps:	60
Platt Item:	0010548	Volts AC:	240
Cat:	DG222URB	Volts DC:	250
UPC:	782113144238	Poles:	2
Country of Origin:	UNITED STATES	IP/NEMA Rating:	3R
Category:	General Duty - Non-Fused - 240 Volt - 2 Pole		
Mounting:	Surface		

- **Category:** Power Distribution Safety Switches & Disconnects General Duty - Non-Fused General Duty - Non-Fused - 240 Volt - 2 Pole
- **Products related to** DG222URB Safety Switch, 60A, 2P, 240V, Type DG, Non-Fusible, NEMA 3R or visit the Eaton site.
- **For help with** Safety Switch, 60A, 2P, 240V, Type DG, Non-Fusible, NEMA 3R from Eaton
- Click "Add to Cart" to buy Eaton DG222URB Safety Switch, 60A, 2P, 240V, Type DG, Non-Fusible, NEMA 3R.
- **Also known as:** 782113144238, Safety Switch;60 Amp Safety Switch;60A Safety Switch;60 Amp Non Fused Safety Switch;60 Amp 240V Safety Switch;60 Amp Disconnect;60 Amp Non Fused Disconnect;60A Disconnect;60A Non Fused Disconnect;60 Amp 240V Disconnect;60 Amp 240V Non Fused Disconnect;Non Fusible Disconnect;Non Fused Disconnect;60 Amp Nema 3r 240V Disconnect;1 Phase Disconnect;Single Phase Disconnect;2 Pole, CUTDG222URB, Eaton, DG222URB, General Duty - Non-Fused - 240 Volt - 2 Pole, General Duty - Non-Fused, Safety Switches & Disconnects, Power Distribution, Cutler-Hammer, Westinghouse

VILLAGE OF IRVINGTON
BUILDING DEPARTMENT
85 MAIN STREET
IRVINGTON, NEW YORK 10533
TEL: (914) 591-8335 • FAX: (914) 591-5870
Web Site: www.Irvingtonny.gov



LICENSED PROFESSIONAL AFFIDAVIT for RESIDENTIAL SOLAR SYSTEMS

TO BE SUBMITTED AS PART OF THE PERMIT APPLICATION

AFFIDAVIT OF ARCHITECT OR ENGINEER

State of New York }
County of Westchester } ss.:

I the undersigned, under penalty of perjury, do hereby affirm:

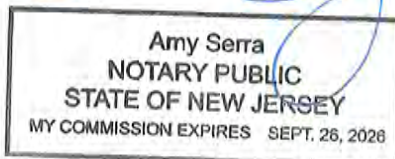
1. I am an the (architect)(engineer) duly licensed in the State of New York
2. I am the NYS licensed design professional named in the Application for which a Building Permit for a residential solar system located at 23 Main St., Irvington, New York 10533.
3. I have inspected the existing building and structure and find that the existing structure with the proposed solar panel installation and connections to the existing roof meet the minimum criteria set forth in;
Applicable Codes: 2015 Residential Code of New York State
Design Roof Load: 30 psf live load, 115 psf dead load, 45 psf total load
Design Wind Load: 120 mph, 35psf
OR have proposed additional measures to insure compliance with above.
4. I have reviewed the following submitted drawings and/or manufacture specifications as part of the submission
List applicable plans with revision dates: _____ (rev date) 3/17/2022
_____ (rev date) 3/17/2022
_____ (rev date) 3/17/2022
_____ (rev date) 3/17/2022
_____ (rev date) 3/17/2022
_____ (rev date) 3/17/2022
5. The plans, drawings and specifications which the Building Permit is requested and listed above, as submitted (a)-were prepared by me or under my supervision, and (b)-to the best of my knowledge comply with the requirements of the Residential Building Code of New York State as adopted by the Village of Irvington, applicable design loads and all other applicable laws, rules and regulations governing building construction.

Signature James A. Clancy
(Architect) (Engineer)

Sworn to before me this

26 day of April, 2022

Amy Serra
Notary Public





VILLAGE OF IRVINGTON

Building Department
85 Main Street
Irvington, NY 10533

Phone: (914) 591-8335
Fax: (914) 591-5870
Hours:
M - F 8:30 AM - 4:30 PM

PAYMENT RECEIPT

Receipt Number 2022-350

Payment Date 06/08/2022

Cost of Work (EST) 10000.0000

Amount Paid 285.00

Payment Type Permit

Permit Type Solar Panels

Check Number 5810

Account Code

Application No. 432

Applicant Brandon Hall

Property Owner GIBBONS, JAMES & GIBBONS,
JEANETTE

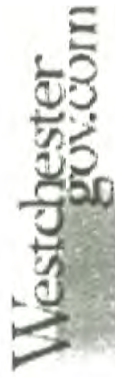
Job Location **23 MAIN ST**

Description of Work

Installation of solar panels on south-facing roof.

This receipt does not constitute a permit or permission to begin any work

George Latimer
Westchester County Executive



James Maisano
Director, Consumer Protection

Department of Consumer Protection Home Improvement License

RIVERTOWN SOLAR LLC

64 MAIN STREET

IRVINGTON, NY-10533

This license is issued in accordance with Article XVI of the Westchester County Consumer Protection Code and is valid only upon presence of the official department seal. Proof of citizenship or immigration status is not required for issuance of this license.
NOT FOR FEDERAL PURPOSES

License Number

WC-34809-H22

Date of Expiration

01/10/2024





RIVER-3

OP ID: LF

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
05/13/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Feehan Insurance Agency P.O. Box 870 Carmel, NY 10512 Terence Feehan		845-278-7070		CONTACT NAME: Terence Feehan PHONE (A/C, No, Ext): 845-278-7070 E-MAIL ADDRESS: carolb@fehaninsurance.com FAX (A/C, No): 845-278-6496
INSURER(S) AFFORDING COVERAGE				NAIC #
INSURER A: Evanston Insurance Co.				35378
INSURER B:				
INSURER C:				
INSURER D:				
INSURER E:				
INSURER F:				

INSURED Rivertown Solar LLC 64 Main Street Irvington, NY 10533
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COVERAGES

CERTIFICATE NUMBER:

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS														
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER:	X		3FD4845	12/15/2021	12/15/2022	<table border="1"><tr><td>EACH OCCURRENCE</td><td>\$ 1,000,000</td></tr><tr><td>DAMAGE TO RENTED PREMISES (Ea occurrence)</td><td>\$ 100,000</td></tr><tr><td>MED EXP (Any one person)</td><td>\$ 5,000</td></tr><tr><td>PERSONAL & ADV INJURY</td><td>\$ 1,000,000</td></tr><tr><td>GENERAL AGGREGATE</td><td>\$ 2,000,000</td></tr><tr><td>PRODUCTS - COMP/OP AGG</td><td>\$ 2,000,000</td></tr><tr><td></td><td>\$</td></tr></table>	EACH OCCURRENCE	\$ 1,000,000	DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 100,000	MED EXP (Any one person)	\$ 5,000	PERSONAL & ADV INJURY	\$ 1,000,000	GENERAL AGGREGATE	\$ 2,000,000	PRODUCTS - COMP/OP AGG	\$ 2,000,000		\$
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GENERAL AGGREGATE	\$ 2,000,000																				
PRODUCTS - COMP/OP AGG	\$ 2,000,000																				
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PROPERTY DAMAGE (Per accident)	\$																				
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	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> Y/N If yes, describe under DESCRIPTION OF OPERATIONS below		N/A				<table border="1"><tr><td>PER STATUTE</td><td>OTH-ER</td></tr><tr><td>E.I. EACH ACCIDENT</td><td>\$</td></tr><tr><td>E.I. DISEASE - EA EMPLOYEE</td><td>\$</td></tr><tr><td>E.I. DISEASE - POLICY LIMIT</td><td>\$</td></tr></table>	PER STATUTE	OTH-ER	E.I. EACH ACCIDENT	\$	E.I. DISEASE - EA EMPLOYEE	\$	E.I. DISEASE - POLICY LIMIT	\$						
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E.I. EACH ACCIDENT	\$																				
E.I. DISEASE - EA EMPLOYEE	\$																				
E.I. DISEASE - POLICY LIMIT	\$																				

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Village of Irvington is included as an additional insured.

Location of work: 23 Main Street, Irvington, NY 10533

CERTIFICATE HOLDER

IRVIVI1

Village of Irvington
Building Department
85 Main Street
Irvington, NY 10533

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE



**Workers'
Compensation
Board**

**Certificate of Attestation of Exemption
from New York State Workers' Compensation and/or
Disability and Paid Family Leave Benefits Insurance Coverage**

****This form cannot be used to waive the workers' compensation rights or obligations of any party.****

The applicant may use this Certificate of Attestation of Exemption **ONLY** to show a government entity that New York State specific workers' compensation and/or disability and paid family leave benefits insurance is not required. The applicant may **NOT** use this form to show another business or that business's insurance carrier that such insurance is not required. Please provide this form to the government entity from which you are requesting a permit, license or contract. This Certificate will not be accepted by government officials one year after the date printed on the form.

<p align="center">In the Application of (Legal Entity Name and Address):</p> <p>Rivertown Solar LLC 64 Main St Irvington, NY 10533 PHONE: 914-591-0100 FEIN: XXXXX7611</p>	<p align="center">Business Applying For: Building Permit</p> <p>From: Village of Irvington</p> <p>The location of where work will be performed is 23 Main St., Irvington, NY 10533.</p> <p>Estimated dates necessary to complete work associated with the building permit are from June 1, 2022 to June 30, 2022. <i>June 1, 2023</i></p> <p>The estimated dollar amount of project is \$0 - \$10,000</p>
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Workers' Compensation Exemption Statement:

The above named business is certifying that it is **NOT REQUIRED TO OBTAIN NEW YORK STATE SPECIFIC WORKERS' COMPENSATION INSURANCE COVERAGE** for the following reason:
The applicant is acting as a general contractor with no employees, day laborers, leased employees, borrowed employees, part-time employees, unpaid volunteers and only has independent contractors that meet the standards of the New York Construction Industry Fair Play Act (Section 861 of the New York State Labor Law).

Disability and Paid Family Leave Benefits Exemption Statement:

The above named business is certifying that it is **NOT REQUIRED TO OBTAIN NEW YORK STATE STATUTORY DISABILITY AND PAID FAMILY LEAVE BENEFITS INSURANCE COVERAGE** for the following reason:
The business MUST be either: 1) owned by one individual; OR 2) is a partnership (including LLC, LLP, PLLP, RLLP, or LP) under the laws of New York State and is not a corporation; OR 3) is a one or two person owned corporation, with those individuals owning all of the stock and holding all offices of the corporation (in a two person owned corporation each individual must be an officer and own at least one share of stock); OR 4) is a business with no NYS location. In addition, the business does not require disability and paid family leave benefits coverage at this time since it has not employed one or more individuals on at least 30 days in any calendar year in New York State. (Independent contractors are not considered to be employees under the Disability and Paid Family Leave Benefits Law.)

I, Brandon Hall, am the Member with the above-named legal entity. I affirm that due to my position with the above-named business I have the knowledge, information and authority to make this Certificate of Attestation of Exemption. I hereby affirm that the statements made herein are true, that I have not made any materially false statements and I make this Certificate of Attestation of Exemption under the penalties of perjury. I further affirm that I understand that any false statement, representation or concealment will subject me to felony criminal prosecution, including jail and civil liability in accordance with the Workers' Compensation Law and all other New York State laws. By submitting this Certificate of Attestation of Exemption to the government entity listed above I also hereby affirm that if circumstances change so that workers' compensation insurance and/or disability and paid family leave benefits coverage is required, the above-named legal entity will immediately acquire appropriate New York State specific workers' compensation insurance and/or disability and paid family leave benefits coverage and also immediately furnish proof of that coverage on forms approved by the Chair of the Workers' Compensation Board to the government entity listed above.

SIGN HERE	<p>Signature: </p>	<p>Date: <i>5/13/22</i></p>	<p>Received</p> <p>May 12, 2022</p> <p>NYS Workers' Compensation Board</p>
<p>Exemption Certificate Number</p> <p align="center">2022-032868</p>			

VILLAGE OF IRVINGTON

BUILDING DEPARTMENT

85 MAIN STREET

IRVINGTON, NEW YORK 10533

TEL: (914) 591-8335 • FAX: (914) 591-5870



PHOTOVOLTAIC (PV SOLAR) RESIDENTIAL SYSTEMS

PERMIT APPLICATION CHECK LIST

Revised June 7, 2017

It is suggested that all applicants applying for a permit read and understand the manufacture installation instructions prior to applying for a building permit and attached ARB guide lines and Village code for Solar Energy Equipment.

REQUIREMENTS TO APPLY FOR A PHOTOVOLTAIC (PV SOLAR) SYSTEM PERMIT

- ___ 1) Apply on line at www.irvingtonny.gov for a mechanical permit, under building permits and along with your application, submit to the building department the following;
- ___ 2) Owners phone number and email address entered in the online permit application
- ___ 3) Evidence of Workers Compensation Insurance (on a C-105 or equivalent)
- ___ 4) Evidence of Liability Insurance naming the Village of Irvington additional insured
- ___ 5) A copy of the contractors Westchester County Department of Consumer Protection License
- ___ 6) Pursuant to 9-12-A, provide evidence of notice to adjacent properties owners not less than 10 days prior to the meeting (see attached code section for more details)
- ___ 7) Submit permit fee: (all fees must be paid at time of submission)
 - ___ \$85 application fee
 - ___ \$200 for systems up to 5 kilowatts
 - ___ \$450 for systems above 5 kilowatts and less than 10 kilowatts
 - ___ \$700 for systems above 10 kilowatts and less than 20 kilowatts
 - ___ \$700 plus \$250 per additional 10 kilowatts above 20 for systems above 20 kilowatts
 - ___ \$75 Certificate of Completion inspection and fee
- ___ 8) An affidavit from a NYS licensed professional detailing and certifying that the existing structure meets or exceeds the minimum load requirement's as per TABLE R301.2(1) for wind and load before and after installation of the proposed equipment or the proposed upgrades to the existing structure to accomplish the aforesaid.
- ___ 9) Drawings (signed and sealed by a NYS licensed professional) of the roof plan showing the following criteria;
 - a. ___ Showing all proposed PV panels on all proposed roof surfaces.
 - b. ___ Showing all equipment on all elevations including
 - c. ___ Show / list all roof connectors and flashing details
 - d. ___ Show compliance with section R902.4 (fire classification in accordance with UL1703 and 3' from any lot line)
 - e. ___ Show compliance with sections R324.3.1 through R324.7.2.5 and NFPA 70 (installation)
 - f. ___ Show compliance with section R324.7 (access and pathways) (see attachment)
 - g. ___ Show compliance with section R324.7.2.1-6. (roof access points) (see attachment)
 - h. ___ Show compliance with section R324.7.3 (ground access areas) (see attachment)
 - i. ___ Show compliance with section R324.7.4 (single ridge roofs *when applicable*) (see attachment)
 - j. ___ Show compliance with section R324.7.5 (hip roofs *when applicable*) (see attachment)
 - k. ___ Show compliance with section R324.7.6 (roof with valleys *when applicable*) (see attachment)
 - l. ___ Show compliance with section R324.7.7 (allowance for smoke ventilation operations) (see attachment)
 - m. ___ Show a Fire Department AC disconnect, located outside by the Utility meter on all systems.
- ___ 10) Provide a drawing or manufactures cut sheets of array mounting hardware and interconnection diagram and specifications.
- ___ 11) Provide a drawing or manufactures cut sheets of the unit mount and roof penetration's flashing system.
- ___ 12) 3 wire diagram showing all proposed equipment as governed by the National Electrical Code (NEC)
- ___ 13) Provide a diagram showing all proposed labels and labeling locations including; Solar AC Disconnect, Inverter Output, Connection Warning, Dual Power Source Warning, Solar AC Combiner Panel, Solar PV Circuits Only, Solar Production meter. (see attachment)
- ___ 14) Provide snow guards on panels were snow has the potential of sliding of the panel into a neighbor's property
- ___ 15) Pictures of dwelling showing photo shopped arrays on the structure.
- ___ 16) Provide a drawing or photo shop picture of all proposed equipment on all effected elevations (including FD emergency disconnect switch)
- ___ 17) A Fire Department AC disconnect, located outside by the Utility meter on all systems.

VILLAGE OF IRVINGTON

BUILDING DEPARTMENT

85 MAIN STREET

IRVINGTON, NEW YORK 10533

TEL: (914) 591-8335 • FAX: (914) 591-5870



- ____ 18) Separate Electrical Permit application by a Westchester County Department of Licensing, licensed Electrician with required insurances and the appropriate fee (must be filed by the licensed contractor, see village application for further details).
- ____ 19) Submit signed check list with submission and appropriate building permit fee.
- ____ 20) Applicant has provided seven copies of the entire submittal for Architectural Review Board approval.

Applicant Affidavit:

Applicants Name: Brandon Hall
Applicants Address: 32 S. Eckard St.
Irvington, NY 10533
Applicants Phone #: (914) 966-4063
Applicants Email: brandon@centhudelectric.com

Applicant Name: Brandon Hall Signature: [Signature] Date: 5/13/22 By signing this affidavit I attest to have read the attached Solar Energy Equipment Code and the Solar Equipment Guidelines manufactures installation instructions and that all information asked for above has been submitted and that the submitted information is correct.

General Contractor Affidavit:

Contractors Name: Rivertown Solar LLC
Contractors Address: 64 Main St
Irvington, NY 10533
Contractors Phone #: (914) 231-6866
Contractors Email: eric@rivertown-solar.com

General Contractor Name: Rivertown Solar LLC Signature: [Signature] Date: 5/13/22 By signing this affidavit I attest to being the general contractor of record for this application and will be responsible for oversight and direct supervision of same, and will maintain a valid Westchester County Department of Consumer Protection License, a valid for Workers Compensation Policy and a General Liability Policy listing the Village of Irvington as Certificate Holder and additional insured with no conditions until such time I apply for and receive a Certificate of Completion.

Electrical Contractor Affidavit:

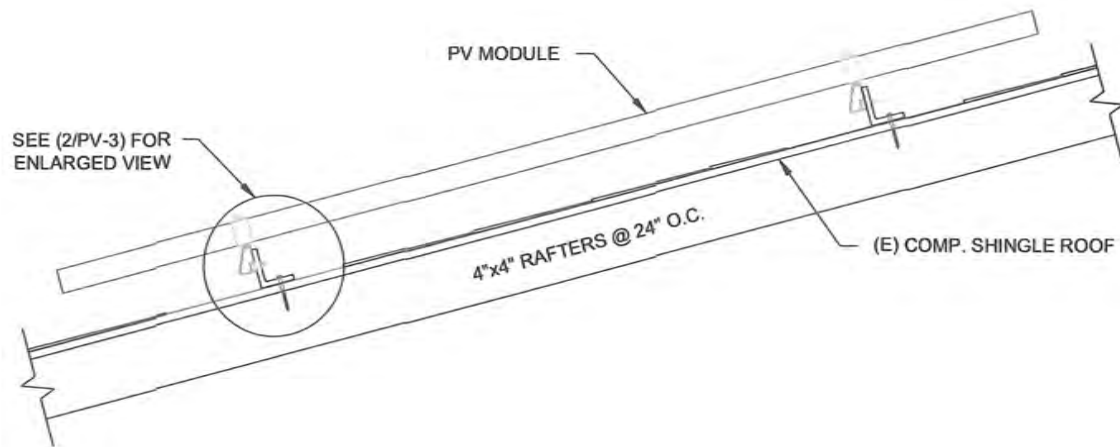
Electrical Contractors Name: BRANDON HALL
Electrical Contractors Address: 104 MAIN ST 10533
Electrical Contractors Phone #: 591-0100
Electrical Contractors Email: info@centhudelectric.com

Electrical Contractor Name: Consolidated Hudson Signature: [Signature] Date: 5/13/22 By signing this affidavit I attest to being the electrical contractor of record for this application and will be responsible for oversight and direct supervision of same, and will maintain a valid Westchester County Electrical License, a valid for Workers Compensation Policy and a General Liability Policy listing the Village of Irvington as Certificate Holder and additional insured with no conditions until such time I apply for and receive a Certificate of Completion.

Note: Applications for all exterior elevation changes including photovoltaic solar systems are required to apply for, make a presentation in front of, and receive approval from the Village of Irvington Architectural Review Board (ARB) prior to issuance of a building permit. The ARB meetings are the second and fourth Mondays of the month, with a deadline for submissions one week prior to the meetings (see village web site for confirmation of meetings). Seven sets of copies of the entire application are required to be submitted at the deadline with appropriate fee at the time of submission.

Note: The following list above is given to assist in the application process. It is not intended to be a replacement for the Building or Zoning Code, County or State Regulations, or Consolidate Edison Requirements. Unique and Special projects may require additional information.

***Hours of Construction: Monday-Friday 7AM-7PM; Saturday 9AM-5PM; Sunday and holiday's construction is prohibited**
***Only completed applications will be accepted with attached insurance certificates and County license**

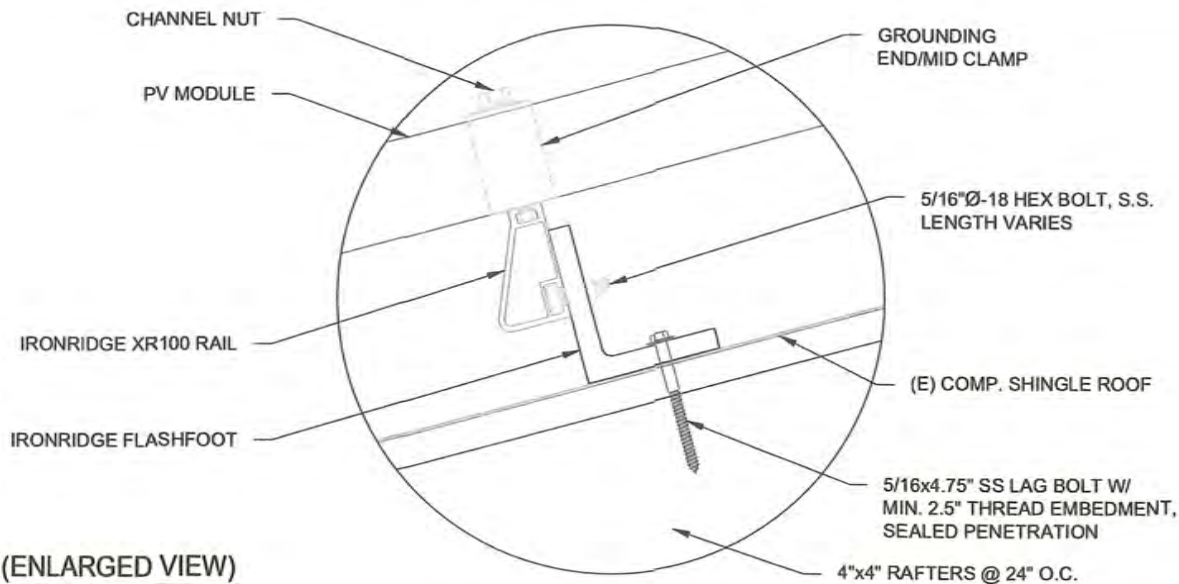


1

ATTACHMENT DETAIL

PV-3

SCALE: NTS



2

ATTACHMENT DETAIL (ENLARGED VIEW)

PV-3

SCALE: NTS



CONSOLIDATED HUDSON
ELECTRIC

CONSOLIDATED
HUDSON ELECTRIC

64 MAIN STREET
IRVINGTON, NY 10533

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	03/12/2022	A



IRVINGTON ROASTERS
RESIDENCE

23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
RACKING
DETAIL

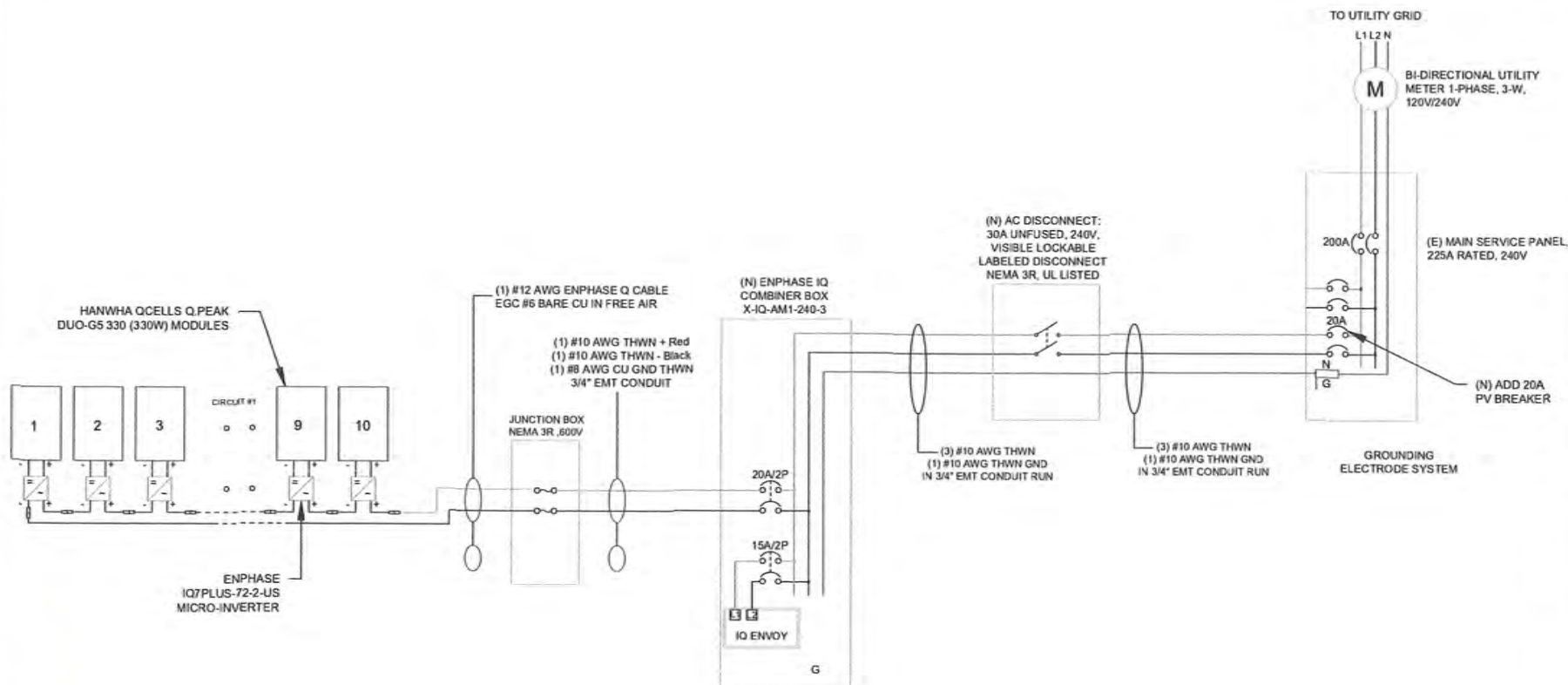
SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

DC SYSTEM SIZE- 3.300 KW
AC SYSTEM SIZE- 2.900 KW

(10) HANWHA QCELLS Q.PEAK DUO-G5 330 (330W) MODULES
(10) ENPHASE IQ7PLUS-72-2-US MICRO-INVERTERS

(01) CIRCUIT OF 10 MODULES



INTERCONNECTION
120% RULE - NEC 705.12(D)(2)
UTILITY FEED + SOLAR BACKFEED
200A + 20A = 220A
BUSS RATING x 120%
225A x 120% = 270A

1 | ELECTRICAL LINE DIAGRAM
PV-4 | SCALE: NTS

CONSOLIDATED HUDSON
ELECTRIC
CONSOLIDATED HUDSON ELECTRIC
84 MAIN STREET
IRVINGTON, NY 10533

REVISIONS		
DESCRIPTION	DATE	REV
INITIAL	03/17/2022	A

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PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
RESIDENCE
23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
ELECTRICAL
LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-4

AC CONDUCTOR AMPACITY CALCULATIONS: FROM ROOF TOP JUNCTION BOX TO COMBINER BOX

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
PER NEC 310.15(B)(2)(c): + 22°
EXPECTED WIRE TEMP ("C): 32° + 22° = 54°
TEMP CORRECTION PER TABLE 310.16: 0.76
OF CURRENT CARRYING CONDUCTORS: 2
CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a): 1
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40 A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X MAX AC OUTPUT CURRENT X # OF INVERTERS PER STRING
CIRCUIT 1 = 1.25 X 1.21 X 10 = 15.13A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.16
TEMP CORR. PER NEC TABLE 310.16 X CONDUIT FILL CORR. PER NEC 310.15(B)(2)(a) X
CIRCUIT CONDUCTOR AMPACITY = 0.76 X 1 X 40 = 30.4A

AC CONDUCTOR AMPACITY CALCULATIONS: FROM COMBINER BOX TO AC DISCONNECT

EXPECTED WIRE TEMP ("C): 32°
TEMP CORRECTION PER NEC TABLE 310.16: 0.96
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40 A
OF CURRENT CARRYING CONDUCTORS: 3
CONDUIT FILL PER NEC 310.15(B)(2)(a): 1
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B):
1.25 X MAX AC OUTPUT CURRENT X # OF INVERTERS
1.25 X 1.21 X 10 = 15.13A

DERATED AMPACITY OF CIRCUIT CONDUCTORS PER NEC TABLE 310.16:
TEMP CORR. PER NEC 310.16 X CONDUIT FILL CORR. PER NEC 310.15(B)(2)(a) X
CIRCUIT CONDUCTOR AMPACITY = 0.96 X 1 X 40 = 38.4A

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 600 V AND 90 DEGREE 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.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

MICRO-INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASE IQ7PLUS-72-2-US
AC MAX CONTINUOUS OUTPUT	1.21A
AC MAX. CONT. OUTPUT POWER	290W
CEC WEIGHTED EFFICIENCY	97.0%

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
.80	4-6
.70	7-9
.50	10-20

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-17°
AMBIENT TEMP (HIGH TEMP 2%)	32°
CONDUIT HEIGHT	0.5"
ROOF TOP TEMP	54°
CONDUCTOR TEMPERATURE RATE	90°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.28%/°C



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RESIDENCE

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IRVINGTON, NY 10533

SHEET NAME

WIRING
CALCULATIONS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-5

⚠ WARNING

ELECTRIC SHOCK HAZARD

IF A GROUND FAULT IS INDICATED
NORMALLY GROUNDED CONDUCTORS
MAY BE UNGROUNDED AND ENERGIZED

LABEL LOCATION:
DC DISCONNECT, INVERTER
(PER CODE: CEC 690.35(F))
[To be used when inverter is ungrounded]

⚠ WARNING

ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS
PHOTOVOLTAIC SYSTEM ARE UNGROUNDED
AND MAY BE ENERGIZED

LABEL LOCATION:
DC DISCONNECT, INVERTER
(PER CODE: CEC 690.35(F))
[To be used when inverter is ungrounded]

⚠ WARNING

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS
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: CEC 690.17(E))

⚠ WARNING

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS
TERMINALS ON BOTH LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
PER CODE: CEC 690.17(E), CB

WARNING - Electric Shock Hazard
No user-serviceable parts inside
Contact authorized service provider for assistance

LABEL LOCATION:
INVERTER, JUNCTION BOXES (ROOF), AC DISCONNECT
(PER CODE: CEC 690.13 G 3 & CEC 690.13 G 4)

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
CONDUIT, COMBINER BOX
(PER CODE: CEC 690.31(G)(3)(4) & CEC 690.13(G)(4))

- ADHESIVE FASTENED SIGNS:**
- THE LABEL SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE IT IS INSTALLED.
 - WHERE REQUIRED ELSEWHERE IN THIS CODE, ALL FIELD APPLIED LABELS, WARNINGS, AND MARKINGS SHOULD COMPLY WITH ANSI Z535.4 (NEC 110.21(B) FIELD MARKING)
 - ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT [FC 605.11.1.3]

PHOTOVOLTAIC SYSTEM AC DISCONNECT RATED AC OPERATING CURRENT 12.1 AMPS AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: CEC 690.54)

WARNING INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: CEC 705.12(D)(7))
[Not required if panelboard is rated not less than sum of ampere ratings
of all overcurrent devices supplying it]

CAUTION: SOLAR CIRCUIT

LABEL LOCATION:
MARKINGS PLACED ON ALL INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES,
AND CABLE ASSEMBLIES AT LEAST EVERY 10 FT, AT TURNS AND ABOVE/BELOW PENETRATIONS
AND ALL COMBINER/JUNCTION BOXES. (PER CODE: IFC 605.11.1.4)

SOLAR DISCONNECT

LABEL LOCATION:
DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: CEC 690.13(B))

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: CEC 705.12(D)(4))

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

LABEL LOCATION:
WEATHER RESISTANT MATERIAL, DURABLE ADHESIVE,
UL969 AS STANDARD TO WEATHER RATING (UL LISTING
OF MARKINGS NOT REQUIRED), MIN 3/4" LETTER HEIGHT
ARIAL OR SIMILAR FONT NON-BOLD, PLACED WITHIN
THE MAIN SERVICE DISCONNECT, PLACED ON THE
OUTSIDE OF THE COVER WHEN DISCONNECT IS
OPERABLE WITH SERVICE PANEL CLOSED.
(PER CODE: CEC 690.15, 690.13(B))

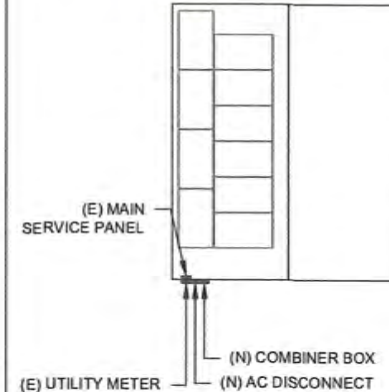
NOTICE PV SYSTEM COMBINER PANEL DO NOT ADD LOADS TO THIS PANEL

LABEL LOCATION:
LOAD CENTER
[Only use when applicable for PV load center]

CAUTION

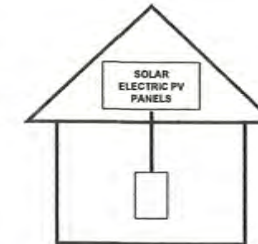
POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE
FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN

AT: MAIN SERVICE
AC DISCONNECT
COMBINER BOX



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:
ON OR NO MORE THAN 1 M (3 FT) FROM THE SERVICE DISCONNECTING
MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED.
PER CODE(S): NEC 2017: 690.56(C)(1)(a)



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HUDSON ELECTRIC**

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RESIDENCE

23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME

PLACARDS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-6



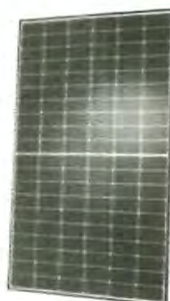
The new Q. PEAK DUO-C5 solar module from Q CELLS impresses thanks to innovative Q. ANTUM DUO Technology, which enables particularly high performance on a small surface. Q. ANTUM's world-record-holding cell concept has now been combined with state-of-the-art circuitry half cells and a six-busbar design, thus achieving outstanding performance under real conditions - both with low-intensity solar radiation as well as on hot, clear summer days.

- Q. ANTUM TECHNOLOGY: LOW EXPENSED COST OF ELECTRICITY**
Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.9%.
- INNOVATIVE ALL-WEATHER TECHNOLOGY**
Optimal yields, whatever the weather with excellent low-light and temperature behavior.
- ENDURING HIGH PERFORMANCE**
Long-term yield security with Anti LID and Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.
- EXTREME WEATHER RATING**
High-tech aluminum alloy frame, certified for high snow (5400Pa) and wind loads (4000Pa) regarding IEC.
- A BELIEVABLE INVESTMENT**
Inclusive 12-year product warranty and 25-year linear performance guarantee².
- STATE-OF-THE-ART MODULE TECHNOLOGY**
Q. ANTUM DUO combines cutting edge cell separation and innovative wiring with Q. ANTUM Technology.

THE IDEAL SOLUTION FOR:

- Tracking system for maximum yield
- Roof-top systems for maximum yield

Engineered in Germany



- ¹ AIE test conducted according to IEC 61215:2016, IEC 61730:2011, method B (-30°C, 168h)
- ² See data sheet on our website for further information.

Q CELLS

MECHANICAL SPECIFICATION

Format	65.3in x 39.4in x 1.26in (including frame)
Weight	41.2lbs (18.7kg)
Front Cover	0.13in (3.2mm) thermally processed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black-anodized aluminum
Cell	6 x 20 monocrystalline Q. ANTUM solar half cells
Junction box	2.76 x 3.35in x 1.07 x 2.76in x 0.51 x 0.83in (70.85mm x 85.73mm x 27.14mm, decoupled, IP67)
Cable	4mm ² Solar cable (4) x 48.2in (1100mm), 1-3 x 48.2in (1100mm)
Connector	Multi-Contact MC4, IP68

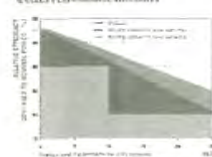


ELECTRICAL CHARACTERISTICS

POWER CLASS	315	320	325	330
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC (POWER TOLERANCE: ±5W / -0W)				
Power at MPP ¹	P _{MPP} [W]	315	320	325
Short Circuit Current ²	I _{sc} [A]	10.04	10.29	10.70
Open Circuit Voltage ²	V _{oc} [V]	39.87	40.13	40.65
Current at MPP ¹	I _{MPP} [A]	9.55	9.50	9.71
Voltage at MPP ¹	V _{MPP} [V]	32.98	33.37	33.66
Efficiency ³	η [%]	19.7	19.6	19.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NOCT ⁴				
Power at MPP	P _{MPP} [W]	235.3	239.0	242.8
Short Circuit Current	I _{sc} [A]	8.09	8.13	8.22
Open Circuit Voltage	V _{oc} [V]	37.52	37.77	38.07
Current at MPP	I _{MPP} [A]	7.52	7.56	7.64
Voltage at MPP	V _{MPP} [V]	31.30	31.52	31.94

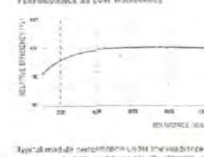
Measured at: P_{MPP} at 30°C, I_{sc} at 30°C, V_{oc} at 30°C, P_{MPP} at 30°C, I_{sc} at 30°C, V_{oc} at 30°C, P_{MPP} at 30°C, I_{sc} at 30°C, V_{oc} at 30°C

Q CELLS PERFORMANCE WARRANTY



At least 90% of nominal power during first year.
At least 90.1% of nominal power up to 25 years.
At least 85% of nominal power up to 25 years.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance at low irradiance and high temperature as compared to STC conditions (1000 W/m², 25°C, AM1.5).

TEMPERATURE COEFFICIENTS

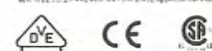
Temperature Coefficient of I _{sc}	α [%/K]	+0.04	Temperature Coefficient of V _{oc}	β [%/K]	-0.28
Temperature Coefficient of P _{MPP}	γ [%/K]	-0.37	Normal Module Operating Temperature	NOCT [°F]	130 ± 5.4 (43 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V _{max}	[V]	1000 (IEC) / 1000 (UL)	Safety Class	II
Maximum Series Fuse Rating	[A DC]	20	Fuse Rating	C (IEC) / TYPE 1 (UL)
Max. Design Load, peak ⁵	[lbs/ft ²] / [kN/m ²]	75 (3600Pa) / 35 (12667Pa)	Permissible module temperature on continuous duty	-60°F up to +185°F (-40°C up to +85°C)
Max. Test Load, Peak / Pub ⁶	[lbs/ft ²] / [kN/m ²]	113 (5400Pa) / 84 (4000Pa)	See installation manual	

QUALIFICATIONS AND CERTIFICATES

UL 1709, VDE Quality Index CE, mark with MC 61215:2016, MC 61730:2011, application class A



PACKAGING INFORMATION

Number of Modules per Pallet	32
Number of Pallets per 52' Trailer	30
Number of Pallets per 40' High Cube Container	26
Pallet Dimensions (L x W x H)	69.3in x 45.3in x 45.0in (1760mm x 1150mm x 1100mm)
Pallet Weight	1415lbs (642kg)

NOTE: Installation instructions must be followed. See the installation and operating manual for contact with technical service department for further information on approved installation and use of this product.

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300 Spectrum Center Drive, Suite 2250, Irvine, CA 92618, USA | Tel: +1 949 259 59 59 | Email: enquiries@q-cells.com | Website: www.q-cells.com



CONSOLIDATED HUDSON ELECTRIC

64 MAIN STREET
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SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-7

Enphase IQ Series
Enphase Microinverters
Enphase IQ7, IQ7+, and IQ7X

Enphase IQ 7, IQ 7+, and IQ 7X Microinverters with EN4 bulkhead



To learn more about Enphase offerings, visit enphase.com

The high-powered smart grid-ready Enphase IQ 7 Series Microinverters™ with Enphase EN4 bulkhead dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7, IQ 7+, and IQ 7X Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.

Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014, 2017, & 2020)
- Integrated Enphase EN4 bulkhead allows for direct connection to PV modules with TE PV4S SOLARLOCK connectors or other interconnectable connectors¹

Productive and Reliable

- Optimized for high-powered 60-cell, 72-cell², and 96-cell³ modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

1. Enphase adapters are available for use with other connectors. Consult Enphase for more information.
2. The IQ 7+ Microinverter is required to support 72-cell modules.
3. The IQ 7X Microinverter is required to support 96-cell modules.



Enphase IQ 7 and IQ 7+ Microinverters with EN4 bulkhead

INPUT DATA (DC)	IQ7-60-E-US	IQ7PLUS-72-E-US	IQ7X-96-E-US
Commonly used module pairings ⁴	235 W - 350 W +	235 W - 440 W +	320 W - 460 W +
Module compatibility	60-cell PV modules only	60-cell and 72-cell PV modules	96-cell PV modules
Maximum input DC voltage	48 V	60 V	79.5 V
Peak power tracking voltage	27 V - 37 V	27 V - 45 V	53 V - 64 V
Operating range	16 V - 48 V	16 V - 60 V	25 V - 79.5 V
Min/Max start voltage	22 V / 48 V	22 V / 60 V	33 V / 79.5 V
Max DC short circuit current (module fac)	15 A	15 A	10 A
Overvoltage class DC port	II	II	II
DC port backfeed current	0 A	0 A	0 A
PV array configuration	1 x 1 ungrounded array. No additional DC side protection required. AC side protection requires max 20A per branch circuit.		
OUTPUT DATA (AC)	IQ 7 Microinverter	IQ 7+ Microinverter	IQ 7X Microinverter
Peak output power	250 VA	295 VA	320 VA
Maximum continuous output power	240 VA	290 VA	315 VA
Nominal (L-L) voltage/range ⁵	240 V / 211-264 V	240 V / 211-264 V	240 V / 211-264 V
Maximum continuous output current	1.0 A (240 V) 1.15 A (208 V)	1.21 A (240 V) 1.39 A (208 V)	1.31 A (240 V) 1.51 A (208 V)
Nominal frequency	60 Hz	60 Hz	60 Hz
Extended frequency range	47 - 68 Hz	47 - 68 Hz	47 - 68 Hz
AC short circuit fault current over 3 cycles	5.8 Arms	5.8 Arms	5.8 Arms
Maximum units per 20 A (L-L) branch circuit ⁶	16 (240 VAC) 13 (208 VAC)	13 (240 VAC) 11 (208 VAC)	12 (240 VAC) 10 (208 VAC)
Overvoltage class AC port	III	III	III
AC port backfeed current	18 mA	18 mA	18 mA
Power factor setting	1.0	1.0	1.0
Power factor (adjustable)	0.85 leading, 0.85 lagging	0.85 leading, 0.85 lagging	0.85 leading, 0.85 lagging
EFFICIENCY	@240 V	@208 V	@240 V
Peak efficiency	97.6 %	97.6 %	97.5 %
CFC weighted efficiency	97.0 %	97.0 %	97.0 %
MECHANICAL DATA			
Ambient temperature range	-40°C to +65°C (-40°F to +149°F)		
Relative humidity range	4% to 100% (condensing)		
Connector type	Enphase EN4 bulkhead		
Adapters ⁷ (optional)	1. ECA-EN4-S22: DC adapter, EN4 to Multi-Contact MC4 type, 150 mm (5.9 in) 2. ECA-EN4-S22-L: DC adapter, EN4 to Multi-Contact MC4 type, 600 mm (23.6 in) 3. ECA-EN4-FW: DC adapter, EN4 to unterminated cable, 150 mm (5.9 in), for wiring of any DC connector type		
Dimensions (HxWxD)	217 mm x 175 mm x 30.7 mm (without bracket)		
Weight	1.08 kg (2.38 lbs)		
Cooling	Natural convection - No fans		
Approved for wet locations	Yes		
Pollution degree	PDB3		
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure		
Environmental category / UV exposure rating	NEMA Type 6 / outdoor		
FEATURES			
Communication	Power Line Communication (PLC)		
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.		
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect means required by NEC 690 and C22.1-2018 Rule 6-4-220.		
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL 1741/IEEE 1547, FCC Part 15 Class B, ICES 0000 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 7014, NEC 2017, and NEC 2020 section 710.12 and C22.1 2018 Rule 6-4-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.		

4. No inferred DC/AC ratio. See the compatibility calculator at <https://enphase.com/en-us/support/medusa-compatibility>.
5. Nominal voltage range can be extended beyond nominal if required by the utility.
6. Units may vary due to local requirements to define the number of microinverters per branch in your area.
7. Adapters 1 and 2 are qualified per UL subject 9703. Adapter 2 requires evaluators to field install their choice of connector.

To learn more about Enphase offerings, visit enphase.com

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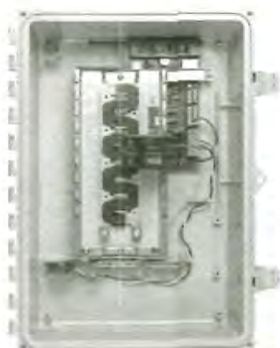
ANSI B
11" X 17"

SHEET NUMBER

PV-8

Enphase IQ Combiner 3 (X-IQ-AM1-240-3)

The Enphase IQ Combiner 3™ 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
- Optional AC receptacle available for PLC bridge
- Provides production metering and optional consumption monitoring
- Supports Ensemble Communications Kit for communication with Enphase Encharge™ storage and Enphase Enpower™ smart switch

Simple

- Reduced size from previous combiner
- Centered mounting brackets support single stud mounting
- Supports back and side conduit entry
- 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 limited warranty
- UL listed

Enphase IQ Combiner 3

MODEL NUMBER

IQ Combiner 3
X-IQ-AM1-240-3

IQ Combiner 3 with Enphase IQ Envoy™ printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional* consumption monitoring (+/- 2.5%).

ACCESSORIES and REPLACEMENT PARTS (not included, order separately)

Enphase Mobile Connect™

CELLMODEM-C3 (4G/12-year data plan)
CELLMODEM-C1 (3G/5-year data plan)
CELLMODEM-M1 (4G based LTE-M/5-year data plan)
Consumption Monitoring* CT
CT 200-SPLIT

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.)
Split core current transformers enable whole home consumption metering (+/- 2.5%).

*Cellular equipment testing is required for Enphase Storage Systems.

Ensemble Communications Kit (COMUS-KIT-01)

Installed at the IQ Envoy. For communications with Enphase Encharge™ storage and Enphase Enpower™ smart switch. Includes USB cable for connection to IQ Envoy or Enphase IQ Contender™ and allows wireless communication with Encharge and Enpower.

Circuit Breakers

BRK-10A-2-240
BRK-15A-2-240
BRK-20A-2P-240

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

EPLC-01

Power line carrier (communication bridge pair), quantity - one pair

XA-SOLARSHIELD-ES

Replace the default solar shield with this Ensemble Combiner Solar Shield to match the look and feel of the Enphase Enpower™ smart switch and the Enphase Encharge™ storage system. Accessory receptacle for Power Line Carrier in IQ Combiner 3 (required for EPLC-01)

XA-PLUG-120-3

Replacement IQ Envoy printed circuit board (PCB) for Combiner 3

ELECTRICAL SPECIFICATIONS

Rating	Continuous duty
System voltage	120/240 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 of distributed generation / 95 A with IQ Envoy breaker included
Envy breaker	10A or 15A rating GE Q-line/Siemens Type OP / Eaton BR series included
Production Metering CT	200 A solid core pre-installed and wired to IQ Envoy

MECHANICAL DATA

Dimensions (Width)	49.5 x 37.5 x 16.8 cm (19.5" x 14.75" x 6.65") Height is 21.06" (54.5 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	<ul style="list-style-type: none"> 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors 60 A breaker branch input: 4 to 7/0 AWG copper conductors Main bus combined output: 10 to 7/0 AWG copper conductors Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing to 2600 meters (8,560 feet)
Altitude	

INTERNET CONNECTION OPTIONS

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

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) UL 61010-1/CAN/CSA 22.2 No. 61010-1
Compliance, IQ Envoy	

To learn more about Enphase offerings, visit enphase.com

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64 MAIN STREET
IRVINGTON, NY 10533

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	03/17/2022	A

Signature with Seal

PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
RESIDENCE
23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-9



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 FlatFoot 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 6000-series 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 spans up to 6 feet, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear & black 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 10 feet.

- 10' 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 up to 12 feet for commercial applications.

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

Tech Brief

Rail Selection

The table below was prepared in compliance with applicable engineering codes and standards.* Values are based on the following criteria: ASCE 7-16, Gable Roof Flush Mount, Roof Zones 1 & 2e, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

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

*Table values are for a design wind speed of 140 mph and a design snow load of 160 psf. Use appropriate code for other conditions. For actual design guidance.

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CONSOLIDATED HUDSON ELECTRIC

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64 MAIN STREET
IRVINGTON, NY 10533

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DESCRIPTION	DATE	REV
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PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
RESIDENCE
23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-10



Class A Fire Rating

Background

All roofing products are tested and classified for their ability to resist fire.

Recently, these fire resistance standards were expanded to include solar equipment as part of the roof system. Specifically, this requires the modules, mounting hardware and roof covering to be tested together as a system to ensure they achieve the same fire rating as the original roof covering.

These new requirements are being adopted throughout the country in 2016.

IronRidge Certification

IronRidge was the first company to receive a Class A Fire Rating—the highest possible rating—from Intertek Group plc., a Nationally Recognized Testing Laboratory.

IronRidge Flush Mount and Tilt Mount Systems were tested on sloped and flat roofs in accordance with the new UL 1703 & UL 2703 test standards. The testing evaluated the system's ability to resist flame spread, burning material and structural damage to the roof.

Refer to the table below to determine the requirements for achieving a Class A Fire Rating on your next project.

System	Roof Slope	Module	Fire Rating
 Flush Mount	Any Slope	Type 1, 2, & 3	Class A
 Tilt Mount	≤ 6 Degrees	Type 1, 2, & 3	Class A

*Class A rated PV systems can be installed on Class A, B, and C roofs.

Fire Testing Process

Test Setup

Solar Modules
Solar modules are given a Type classification based on their materials and construction.

Mounting System
Mounting is tested as part of a system that includes type-tested modules and fire-rated roof covering.

Roof Covering
Roof covering products are given a Fire Class Rating of A, B or C based on their tested fire resistance.

Burning Brand Test

A burning wooden block is placed on module as a fan blows at 12 mph. Flame cannot be seen on underside of roof within 90 minutes.

Spread of Flame Test

Flame at southern edge of roof is aimed up the roof as a fan blows at 12 mph. The flame cannot spread 6 feet or more in 10 minutes.

Frequently Asked Questions

What is a "module type"?

The new UL 1703 standard introduces the concept of a PV module type, based on 4 construction parameters and 2 fire performance parameters. The purpose of this classification is to certify mounting systems without needing to test it with every module.

What roofing materials are covered?

All fire rated roofing materials are covered within this certification including composition shingle, clay and cement tile, metal, and membrane roofs.

What if I have a Class C roof, but the jurisdiction now requires Class A or B?

Generally, older roofs will typically be "grandfathered in", and will not require re-roofing. However, if 50% or more of the roofing material is replaced for the solar installation the code requirement will be enforced.

Where is the new fire rating requirement code listed?

2012 IBC: 1509.7.2 Fire classification. Rooftop mounted photovoltaic systems shall have the same fire classification as the roof assembly required by Section 1505.

Where is a Class A Fire Rating required?

The general requirement for roofing systems in the IBC refers to a Class C fire rating. Class A or B is required for areas such as Wildland Urban Interface areas (WUI) and for very high fire severity areas. Many of these areas are found throughout the western United States. California has the most Class A and B roof fire rating requirements, due to wild fire concerns.

Are standard mid clamps covered?

Mid clamps and end clamps are considered part of the PV "system", and are covered in the certification.

What attachments and flashings are deemed compatible with Class A?

Attachments and their respective flashings are not constituents of the rating at this time. All code-compliant flashing methods are acceptable from a fire rating standpoint.

What mounting height is acceptable?

UL fire testing was performed with a gap of 5", which is considered worst case in the standard. Therefore, the rating is applicable to any module to roof gap.

Am I required to install skirting to meet the fire code?

No, IronRidge achieved a Class A fire rating without any additional racking components.

What determines Fire Classification?

Fire Classification refers to a fire-resistance rating system for roof covering materials based on their ability to withstand fire exposure.

Class A - effective against severe fire exposure
Class B - effective against moderate fire exposure
Class C - effective against light fire exposure

What if the roof covering is not Class A rated?

The IronRidge Class A rating will not diminish the fire rating of the roof, whether Class A, B, or C.

What tilts is the tilt mount system fire rated for?

The tilt mount system is rated for 1 degree and up and any roof to module gap, or mounting height.

More Resources



Installation Manuals

Visit our website for manuals that include UL 2703 Listing and Fire Rating Classification.

Go to ironridge.com



Engineering Certification Letters

We offer complete engineering resources and pre-stamped certification letters.

Go to ironridge.com



64 MAIN STREET
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PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
RESIDENCE

23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

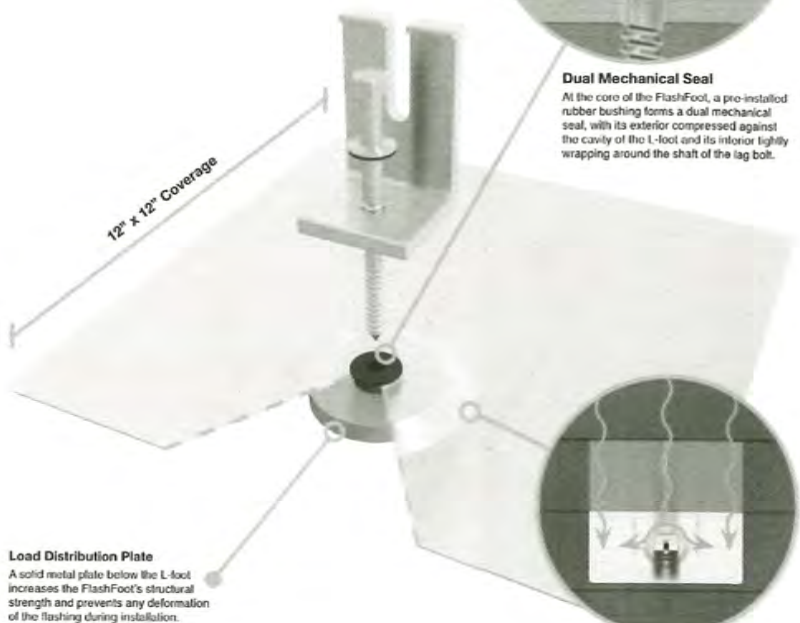
PV-11



Rapid & Secure Solar Attachments

IronRidge FlashFoot™ is an all-in-one solar mounting product for composition shingle roofs that eliminates the need for separate standoffs, flashings, and L-feet.

FlashFoot incorporates a number of structural and waterproofing features to securely attach IronRidge Rails to roof structures, while also protecting against water intrusion and weather damage.



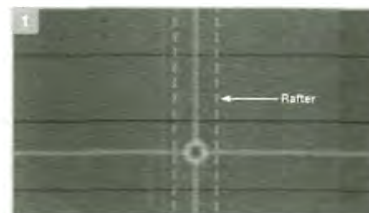
Certified compliant with IBC and IRC

FlashFoot™

Tech Brief

Installation Overview

Tools Required: tape measure, chalk line, stud finder, roofing bar, caulking gun with an approved sealant, drill with 1/4" bit and 1/2" socket.



Locate rafters and snap vertical and horizontal lines to mark locations of flashings. Drill 1/4" pilot holes, then backfill with an approved sealant.



Line up pilot hole with flashing hole and insert lag bolt through bonded washer, L-Foot, and flashing. Tighten lag bolt until fully seated.



Slide flashing, between 1st and 2nd course, so the top is at least 3/4" above the edge of the 3rd course and the bottom is above the edge of the 1st course.



The FlashFoot is now installed and ready for IronRidge Rails. With provided L-foot fasteners pre-loaded into rails, drop rails into open L-foot slots.

Testing & Certification

FlashFoot is certified for compliance with the International Building Codes (IBC) & International Residential Codes (IRC) by IAPMO-ES. Mechanical testing conformed to the standard for Testing and Analysis of Joist Hangers and Miscellaneous Connectors (EC002-2011), and rain testing conformed to the Underwriters Laboratory Standard for Gas Vents (UL 441-96 Section 25).

Logically, it is not unreasonable to assume that the typical roof deck is made of wood.	Minimum Thickness	Minimum Spacing, ft. (On-Center)
Douglas Fir Larch	58	218
Douglas Fir South	48	205
Engelmann Spruce, Lodgepole Pine (MSR 1650 I & higher)	48	205
Hem, Fir	42	190
Hem, Fir (Kard)	48	205
Southwest Pine	55	221
Species, Pine, Fir	42	190
Species, Pine, Fir (E of 2 million psi and higher grades of MSR and MEL)	50	218

Source: American Wood Council (AWC), Table 4-10, 2012 Edition. © 2012 American Wood Council. All rights reserved. FlashFoot is a registered trademark of IronRidge. All other trademarks are the property of their respective owners.



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64 MAIN STREET
IRVINGTON, NY 10533

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PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
RESIDENCE

23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-12

CERTIFICATE OF COMPLIANCE

Certificate Number 20180626-E341165
Report Reference E341165-20171030
Issue Date 2018-June-26

Issued to: Enphase Energy Inc.
1420 N. McDowell Blvd, Petaluma, CA 94954-6515

This is to certify that Photovoltaic Grid Support Utility Interactive Inverter with Rapid Shutdown
representative samples of Functionality

Models IQ7-60, IQ7PLUS-72, and IQ7X-96, followed by -2, -5, -B, or -
ACM, followed by -US.

Models IQ7PD-72-2-US and IQ7PD-84-2-US.

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 1741, Standard for Safety for Inverters, Converters, Controllers
and Interconnection System Equipment for Use With Distributed
Energy Resources, UL 1741, Second Edition, dated January 28,
2010. Including the requirements in UL 1741 Supplement SA,
sections as noted in the Technical considerations.
IEEE 1547, IEEE Standard for Interconnecting Distributed Resources
with Electric Power Systems.
IEEE 1547.1, IEEE Standard for Conformance Test Procedures for
Equipment Interconnecting Distributed Resources with Electric
Power Systems.
UL 62109-1, Safety of Converters for Use in Photovoltaic Power
Systems - Part 1: General Requirements; IEC 62109-2, Safety of
Power Converters for use in Photovoltaic Power Systems - Part 2:
Particular Requirements for Inverters.
CSA C22.2 No. 107.1-01, General Use Power Supplies.

Additional Information: See the UL Online Certifications Directory at
www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's
Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

B. Mahesh
Bruce Mahesh, Director North American Certification Program
UL LLC

Any information and documentation bearing UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please
contact a local UL Customer Service Representative at www.ul.com/customer-service



Intertek

8431 Murphy Drive
Middleton, WI 53562 USA
Telephone: 608.838.4400
Facsimile: 608.831.9279
www.intertek.com

Test Verification of Conformity

In the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the requirements of
the referenced specifications at the time the tests were carried out.

Applicant Name & Address:	IronRidge, Inc. 1495 Zephyr Ave. Hayward, CA 94544 USA
Product Description:	Flush Mount System with XR Rails.
Ratings & Principle Characteristics:	Fire Class Resistance Rating: -Flush Mount (Symmetrical). Class A Fire Rated for Low Slope applications when using Type 1, 2 and 3, listed photovoltaic modules. Class A Fire Rated for Steep Slope applications with Type1, 2 and 3, listed photovoltaic modules. Tested with a 5" gap (distance between the bottom the module frame and the roof covering), per the standard this system can be installed at any gap allowed by the manufacturers installation instructions. No perimeter guarding is required. This rating is applicable with any IronRidge or 3rd party roof anchor.
Models:	IronRidge Flush Mount with XR Rails
Brand Name:	IronRidge Flush Mount
Relevant Standards:	UL 2703 (Section 15.2 and 15.3) Standard for Safety Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels, First Edition dated Jan. 28, 2015 Referencing ULL703 Third Edition dated Nov. 18, 2014, (Section 31.2) Standard for Safety for Flat-Plate Photovoltaic Modules and Panels. Intertek Testing Services NA, Inc.
Verification Issuing Office:	8431 Murphy Drive Middleton, WI 53562
Date of Tests:	08/27/2014 to 03/17/2015
Test Report Number(s):	101769343MID-001r1, 101769343MID-001a, 101915978MID-001 & 10199492MID-001ar1-cr1.
This verification is part of the full test report(s) and should be read in conjunction with them. This report does not automatically imply product certification.	
Completed by:	Chris Zimbrich
Title:	Technician II, Fire Resistance
Reviewed by:	Chad Naggs
Title:	Technician I, Fire Resistance
Signature:	<i>Chris Zimbrich</i>
Date:	05/25/2016
Signature:	<i>Chad Naggs</i>
Date:	05/25/2016

This Verification is for the exclusive use of Intertek's client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Verification. Only the Client is authorized to permit copying or distribution of this Verification. Any use of the Intertek name or any of its marks for the sale or advertisement of the tested product or service must first be approved in writing by Intertek. The observations and test results are referenced in this Verification are relevant only to the sample tested/inspected. This Verification by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

GFT-OP-11a (24-MAR-2016)

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64 MAIN STREET
IRVINGTON, NY 10533

REVISIONS		
DESCRIPTION	DATE	REV
INITIAL	03/17/2022	A

Signature with Seal

PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
RESIDENCE
23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-13

SCOPE OF WORK

PHOTOVOLTAIC SYSTEM SUMMARY
SYSTEM SIZE: DC - 3.300 KW
AC - 2.900 KW
MODULES: (10) HANWHA QCELLS Q.PEAK DUO-G5 330 (330W) MODULES

INVERTER: (10) ENPHASE IQ7PLUS-72-2-US MICRO-INVERTER

ROOF 1:-ARRAY TILT: 30°
ROOF 1:-AZIMUTH: 190°

ELECTRICAL INFORMATION
UTILITY COMPANY: CONSOLIDATED EDISON
MAIN SERVICE AMPERAGE: 225A

GOVERNING CODES & STANDARDS
INTERNATIONAL RESIDENTIAL CODE 2018
INTERNATIONAL BUILDING CODE 2018
INTERNATIONAL FIRE CODE 2018
NATIONAL ELECTRIC CODE 2017

GENERAL NOTES:

- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO INITIATING CONSTRUCTION.
- CONTRACTOR SHALL REVIEW ALL MANUFACTURER INSTALLATION DOCUMENTS PRIOR TO INITIATING CONSTRUCTION.
- ALL EQUIPMENT SHALL BE LISTED BY U.L. (OR EQUAL) AND LISTED FOR ITS SPECIFIC APPLICATION.
- ALL EQUIPMENT SHALL BE RATED FOR THE ENVIRONMENT IN WHICH IT IS INSTALLED.
- ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- ACCESS TO ELECTRICAL COMPONENTS OVER 150 VOLTS TO GROUND SHALL BE RESTRICTED TO QUALIFIED PERSONNEL.
- WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, CONTRACTOR SHALL SIZE THEM ACCORDING TO APPLICABLE CODES.
- PV MODULE FRAMES SHALL BE BONDED TO RACKING RAIL OR BARE COPPER G.E.C. PER THE MODULE MANUFACTURER'S LISTED INSTRUCTION SHEET.
- PV MODULE RACKING RAIL SHALL BE BONDED TO BARE COPPER G.E.C. VIA WEEB LUG, ILSCO GBL-4DBT LAY-IN LUG, OR EQUIVLENT LISTED LUG.
- GROUNDING ELECTRODE CONDUCTOR (G.E.C.) SHALL BE CONTINUOUS AND/OR IRREVERSIBLY SPLICED/WELDED.
- ALL JUNCTION BOXES, COMBINER BOXES, AND DISCONNECTS SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION.
- WORKING SPACE AROUND ELECTRIAL EQUIPMENT SHALL COMPLY WITH NEC 110.26



1

AERIAL VIEW

PV-0

SCALE: NTS



2

VICINITY MAP

PV-0

SCALE: NTS



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64 MAIN STREET
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PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
RESIDENCE

23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME

COVER SHEET

SHEET SIZE

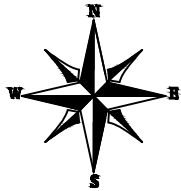
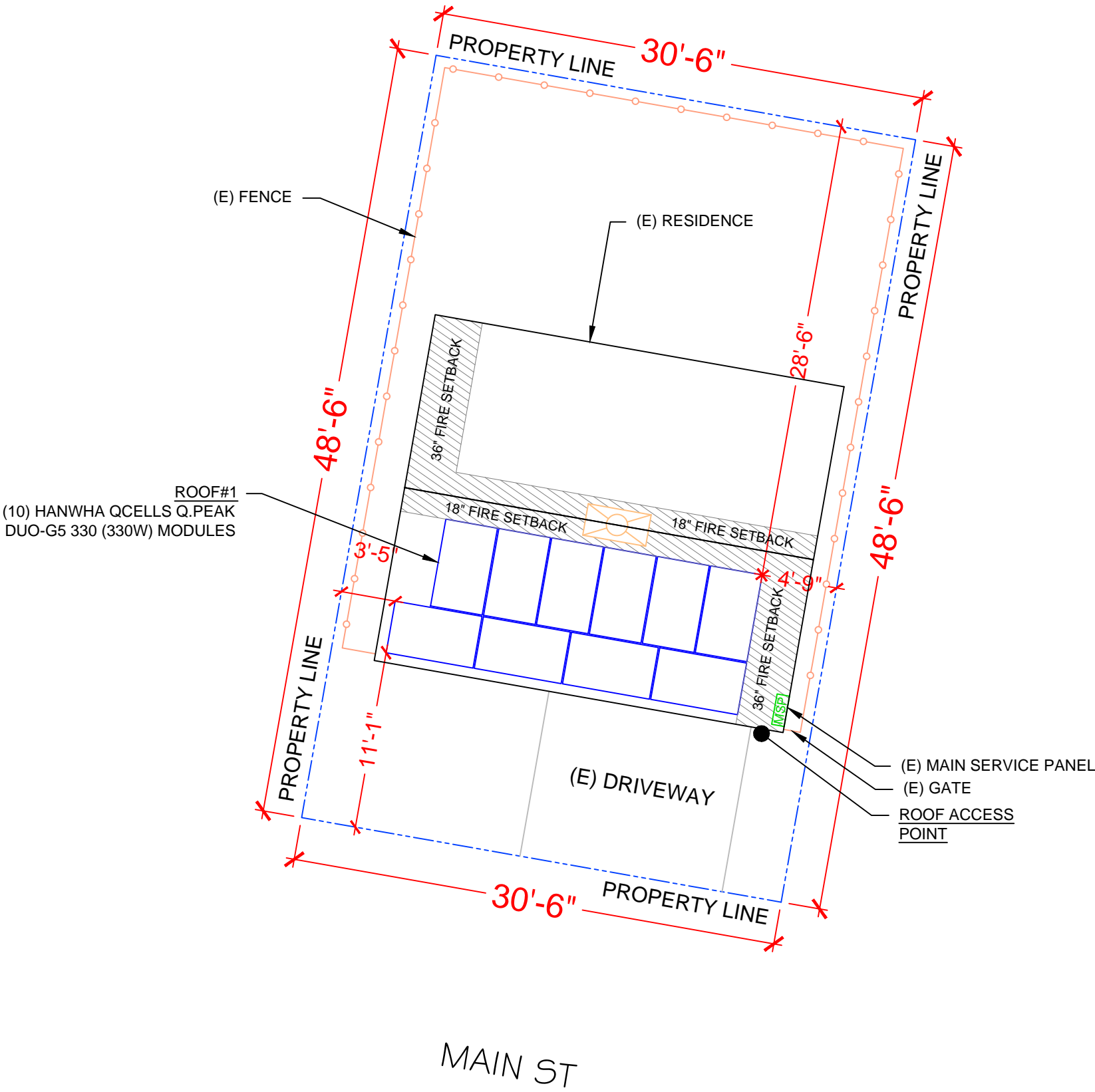
ANSI B
11" X 17"

SHEET NUMBER

PV-0



ROOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF 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.





CONSOLIDATED HUDSON ELECTRIC

64 MAIN STREET
IRVINGTON, NY 10533

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PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
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23 MAIN ST
IRVINGTON, NY 10533

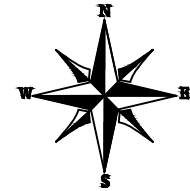
SHEET NAME
SITE PLAN &
ROOF PLAN

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-1

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 10 MODULES
MODULE TYPE = HANWHA QCELLS Q.PEAK DUO-G5 330 (330W) MODULES
MODULE WEIGHT = 41.2 LBS / 18.7 KG.
MODULE DIMENSIONS = 66.3" x 39.4" = 18.14 SF
UNIT WEIGHT OF ARRAY = 2.27 PSF



(E) BACK YARD

ROOF DESCRIPTION				
ROOF TYPE			ASPHALT SHINGLE	
ROOF	ARRAY TILT	AZIMUTH	RAFTER SIZE	RAFTER SPACING
#1	30°	190°	4"X4"	24" O.C.

ARRAY AREA				
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	10	181.4	286.00	63.43



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64 MAIN STREET
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PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
RESIDENCE
23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
ROOF PLAN & MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

ROOF#1
(10) HANWHA QCELLS Q.PEAK
DUO-G5 330 (330W) MODULES

ROOF #1
ARRAY TILT - 30°
AZIM. - 190°

(N) IRONRIGE XR100
RACKING SYSTEM
(25) PV ATTACHMENT
@ 48" o.c.

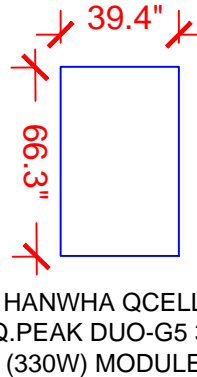
18" FIRE SETBACK

18" FIRE SETBACK

36" FIRE SETBACK

- (N) JUNCTION BOX
- (N) EMT CONDUIT
- (N) ENPHASE IQ COMBINER BOX
- (N) UNFUSED AC DISCONNECT
- (E) UTILITY METER
- (E) MAIN SERVICE PANEL

ROOF ACCESS POINT



LEGEND

MSP

- MAIN SERVICE PANEL

JB

- JUNCTION BOX

ACD

- AC DISCONNECT

CB

- COMBINER BOX

- VENT, ATTIC FAN (ROOF OBSTRUCTION)

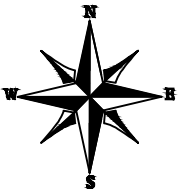
- PV ATTACHMENT @ 48" o.c.

- CONDUIT

(E) FRONT YARD
MAIN ST

BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	10	HANWHA QCELLS Q.PEAK DUO-G5 330 (330W) MODULES
INVERTER	10	ENPHASE IQ7PLUS-72-2-US MICRO-INVERTER
COMBINER BOX	1	ENPHASE IQ COMBINER BOX X-IQ-AM1-240-3
AC DISCONNECT	1	30A UNFUSED, 240V, NEMA 3R, UL LISTED,
ATTACHMENT	25	PV ATTACHMENT @ 48" O.C.
MID CLAMPS	16	MID CLAMPS
END CLAMPS	8	END CLAMPS

DC SYSTEM SIZE- 3.300 KW AC SYSTEM SIZE- 2.900 KW
(10) HANWHA QCELLS Q.PEAK DUO-G5 330 (330W) MODULES (10) ENPHASE IQ7PLUS-72-2-US MICRO-INVERTERS
(01) CIRCUIT OF 10 MODULES



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64 MAIN STREET
IRVINGTON, NY 10533

REVISIONS

DESCRIPTION	DATE	REV
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Signature with Seal

PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
RESIDENCE

23 MAIN ST
IRVINGTON, NY 10533

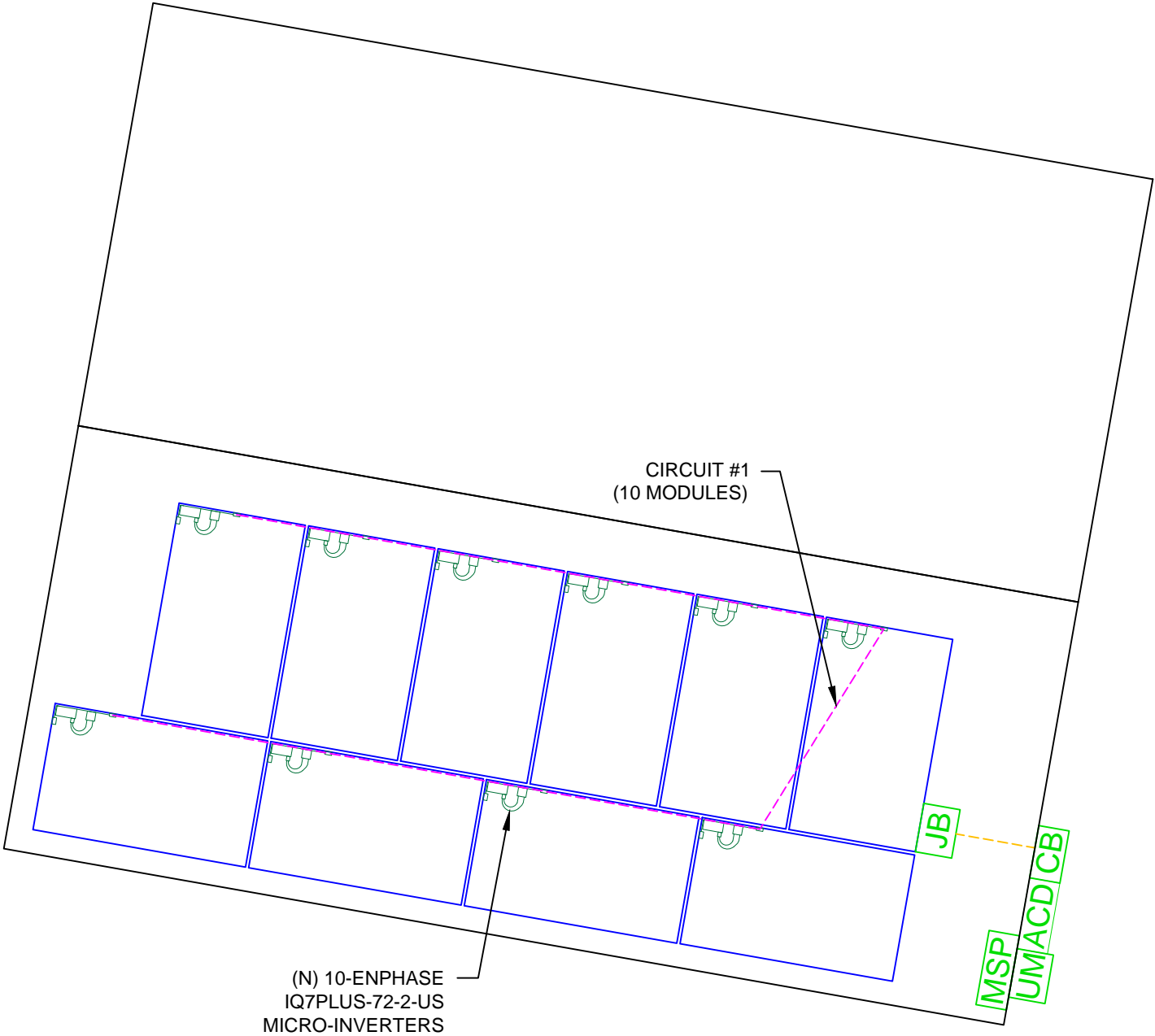
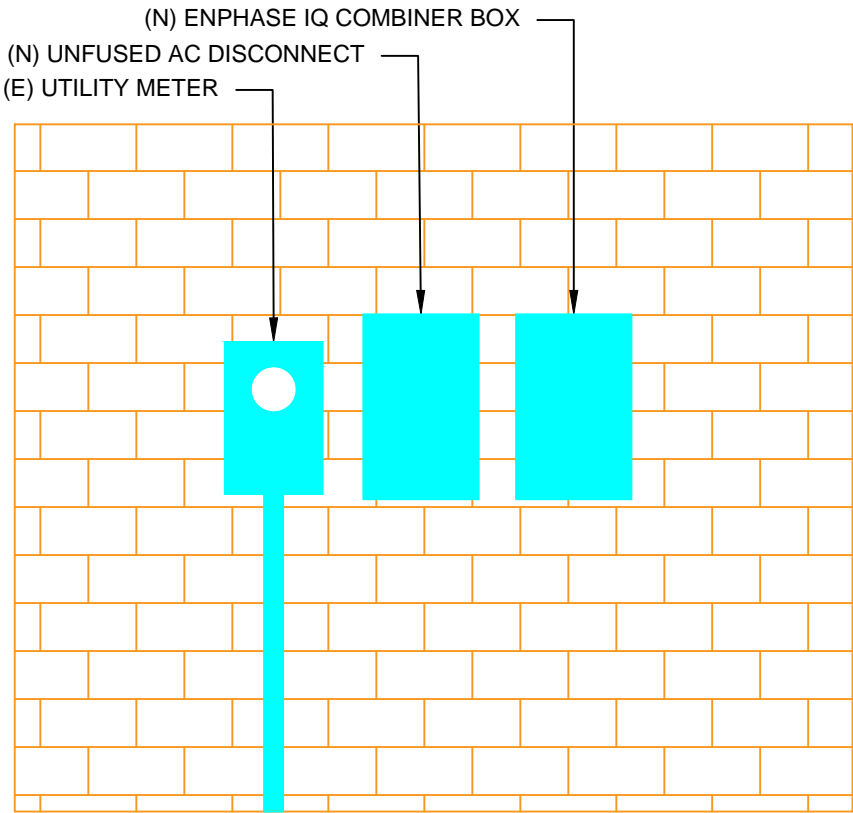
SHEET NAME
ELEC. SITE
PLAN

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-2A



1

ELEVATION DETAIL

PV-2A

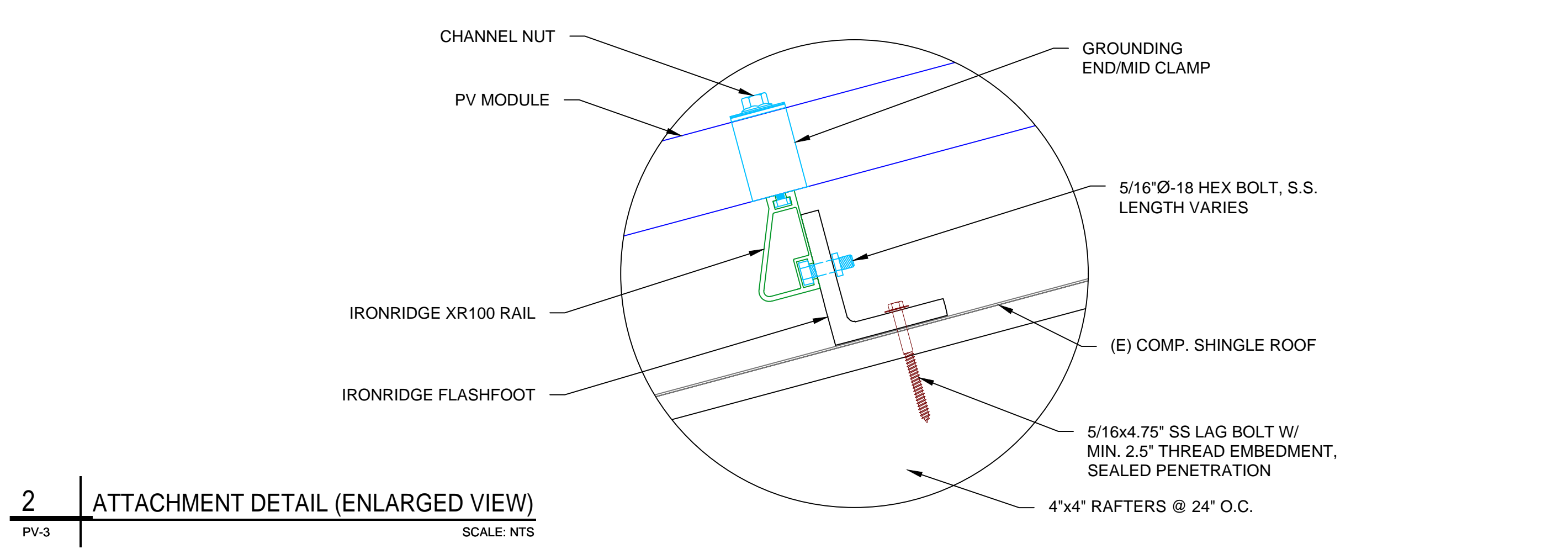
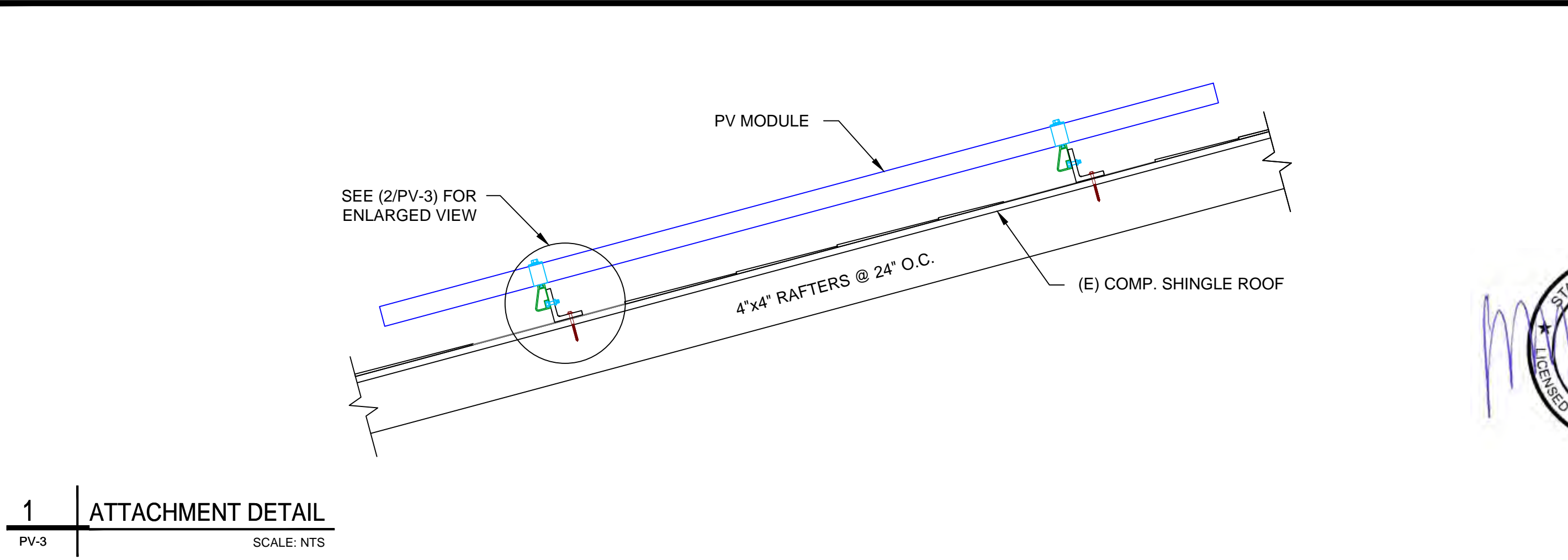
SCALE: NTS


2

STRING LAYOUT

PV-2A

SCALE: 1/4"=1'






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**IRVINGTON ROASTERS
RESIDENCE**

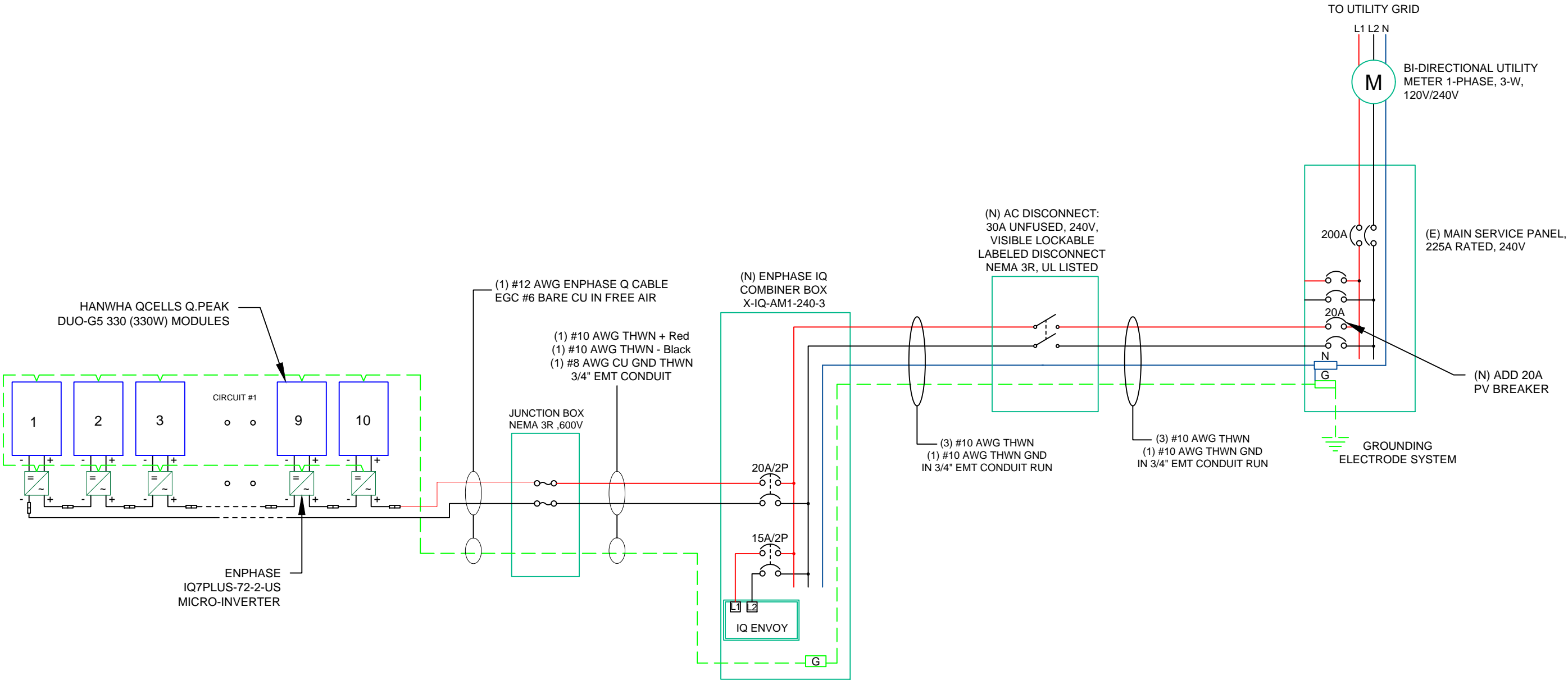
23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
RACKING DETAIL
SHEET SIZE
ANSI B 11" X 17"
SHEET NUMBER
PV-3

DC SYSTEM SIZE- 3.300 KW
AC SYSTEM SIZE- 2.900 KW

(10) HANWHA QCELLS Q.PEAK DUO-G5 330 (330W) MODULES
(10) ENPHASE IQ7PLUS-72-2-US MICRO-INVERTERS

(01) CIRCUIT OF 10 MODULES



INTERCONNECTION
120% RULE - NEC 705.12(D)(2)

UTILITY FEED + SOLAR BACKFEED
200A + 20A = 220A

BUSS RATING x 120%
225A x 120% = 270A

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RESIDENCE

23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
**ELECTRICAL
LINE DIAGRAM**

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

SHEET NUMBER
PV-4

AC CONDUCTOR AMPACITY CALCULATIONS:
FROM ROOF TOP JUNCTION BOX TO COMBINER BOX

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
PER NEC 310.15(B)(2)(c): + 22°
EXPECTED WIRE TEMP (°C): 32° + 22°= 54°
TEMP CORRECTION PER TABLE 310.16: 0.76
OF CURRENT CARRYING CONDUCTORS: 2
CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a): 1
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40 A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X MAX AC OUTPUT CURRENT X # OF INVERTERS PER STRING
CIRCUIT 1 = 1.25 X 1.21 X 10 = 15.13A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.16
TEMP CORR. PER NEC TABLE 310.16 X CONDUIT FILL CORR. PER NEC 310.15(B)(2)(a) X
CIRCUIT CONDUCTOR AMPACITY = 0.76 X 1 X 40 = 30.4A

AC CONDUCTOR AMPACITY CALCULATIONS:
FROM COMBINER BOX TO AC DISCONNECT

EXPECTED WIRE TEMP (°C): 32°
TEMP CORRECTION PER NEC TABLE 310.16: 0.96
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40 A
OF CURRENT CARRYING CONDUCTORS: 3
CONDUIT FILL PER NEC 310.15(B)(2)(a): 1
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B):
1.25 X MAX AC OUTPUT CURRENT X # OF INVERTERS
1.25 X 1.21 X 10 = 15.13A

DERATED AMPACITY OF CIRCUIT CONDUCTORS PER NEC TABLE 310.16:
TEMP CORR. PER NEC 310.16 X CONDUIT FILL CORR. PER NEC 310.15(B)(2)(a) X
CIRCUIT CONDUCTOR AMPACITY = 0.96 X 1 X 40= 38.4A

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 600 V AND 90 DEGREE 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 ACESSORIES 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.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

MICRO-INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASE IQ7PLUS-72-2-US
AC MAX CONTINUOUS OUTPUT	1.21A
AC MAX. CONT. OUTPUT POWER	290W
CEC WEIGHTED EFFICIENCY	97.0%

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
.80	4-6
.70	7-9
.50	10-20

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-17°
AMBIENT TEMP (HIGH TEMP 2%)	32°
CONDUIT HEIGHT	0.5"
ROOF TOP TEMP	54°
CONDUCTOR TEMPERATURE RATE	90°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.28%/°C



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64 MAIN STREET
IRVINGTON, NY 10533

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DESCRIPTION	DATE	REV
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Signature with Seal

PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
RESIDENCE
23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
WIRING
CALCULATIONS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

⚠

WARNING

ELECTRIC SHOCK HAZARD

IF A GROUND FAULT IS INDICATED
NORMALLY GROUNDED CONDUCTORS
MAY BE UNGROUNDED AND ENERGIZED

LABEL LOCATION:
DC DISCONNECT, INVERTER
(PER CODE: CEC 690.35(F))
[To be used when inverter is ungrounded]

⚠

WARNING

ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS
PHOTOVOLTAIC SYSTEM ARE UNGROUNDED
AND MAY BE ENERGIZED

LABEL LOCATION:
DC DISCONNECT, INVERTER
(PER CODE: CEC 690.35(F))
[To be used when inverter is ungrounded]

⚠

WARNING

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS
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: CEC 690.17(E))

⚠

WARNING

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS
TERMINALS ON BOTH LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
PER CODE: CEC 690.17(E), CB

⚡

WARNING - Electric Shock Hazard

No user serviceable parts inside

Contact authorized service provider for assistance

LABEL LOCATION:
INVERTER, JUNCTION BOXES (ROOF), AC DISCONNECT
(PER CODE: CEC690.13.G.3 & CEC 690.13.G.4)

WARNING: PHOTOVOLTAIC
POWER SOURCE

LABEL LOCATION:
CONDUIT, COMBINER BOX
(PER CODE: CEC690.31(G)(3)(4) & CEC 690.13(G)(4)

- ADHESIVE FASTENED SIGNS:
- THE LABEL SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE IT IS INSTALLED.
 - WHERE REQUIRED ELSEWHERE IN THIS CODE, ALL FIELD APPLIED LABELS, WARNINGS, AND MARKINGS SHOULD COMPLY WITH ANSI Z535.4 [NEC 110.21(B) FIELD MARKING].
 - ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT [IFC 605.11.1.3]

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 12.1 AMPS
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: CEC690.54)

WARNING

INVERTER OUTPUT CONNECTION DO NOT
RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: CEC 705.12(D)(7))
[Not required if panelboard is rated not less than sum of ampere ratings
of all overcurrent devices supplying it]

CAUTION: SOLAR CIRCUIT

LABEL LOCATION:
MARKINGS PLACED ON ALL INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES,
AND CABLE ASSEMBLIES AT LEAST EVERY 10 FT, AT TURNS AND ABOVE/BELOW PENETRATIONS
AND ALL COMBINER/JUNCTION BOXES. (PER CODE: IFC605.11.1.4)

SOLAR DISCONNECT

LABEL LOCATION:
DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: CEC690.13(B))

⚠

WARNING

DUAL POWER SOURCE

SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: CEC 705.12(D)(4))

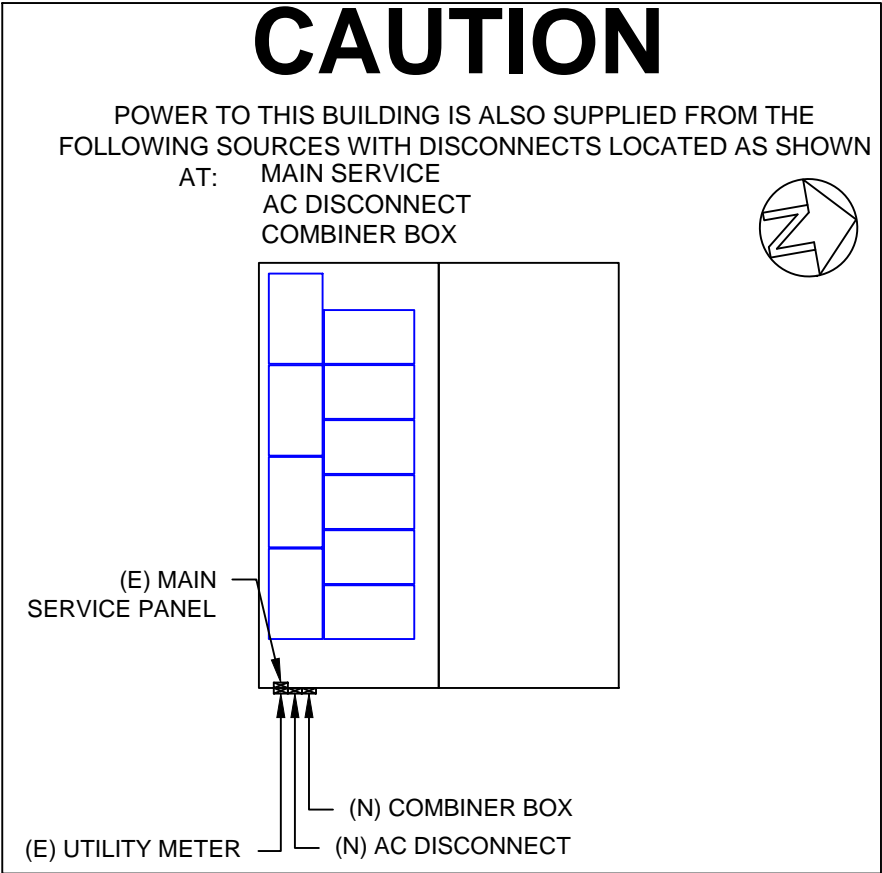
CAUTION: SOLAR ELECTRIC
SYSTEM CONNECTED

LABEL LOCATION:
WEATHER RESISTANT MATERIAL, DURABLE ADHESIVE,
UL969 AS STANDARD TO WEATHER RATING (UL LISTING
OF MARKINGS NOT REQUIRED), MIN 3/8" LETTER HEIGHT
ARIAL OR SIMILAR FONT NON-BOLD, PLACED WITHIN
THE MAIN SERVICE DISCONNECT, PLACED ON THE
OUTSIDE OF THE COVER WHEN DISCONNECT IS
OPERABLE WITH SERVICE PANEL CLOSED.
(PER CODE: CEC690.15, 690.13(B))

NOTICE

PV SYSTEM COMBINER PANEL
DO NOT ADD LOADS TO THIS PANEL

LABEL LOCATION:
LOAD CENTER
[Only use when applicable for PV load center]



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.

SOLAR
ELECTRIC PV
PANELS

LABEL LOCATION:
ON OR NO MORE THAT 1 M (3 FT) FROM THE SERVICE DISCONNECTING
MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED.
PER CODE(S): NEC 2017: 690.56(C)(1)(a)

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64 MAIN STREET
IRVINGTON, NY 10533

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PROJECT NAME & ADDRESS

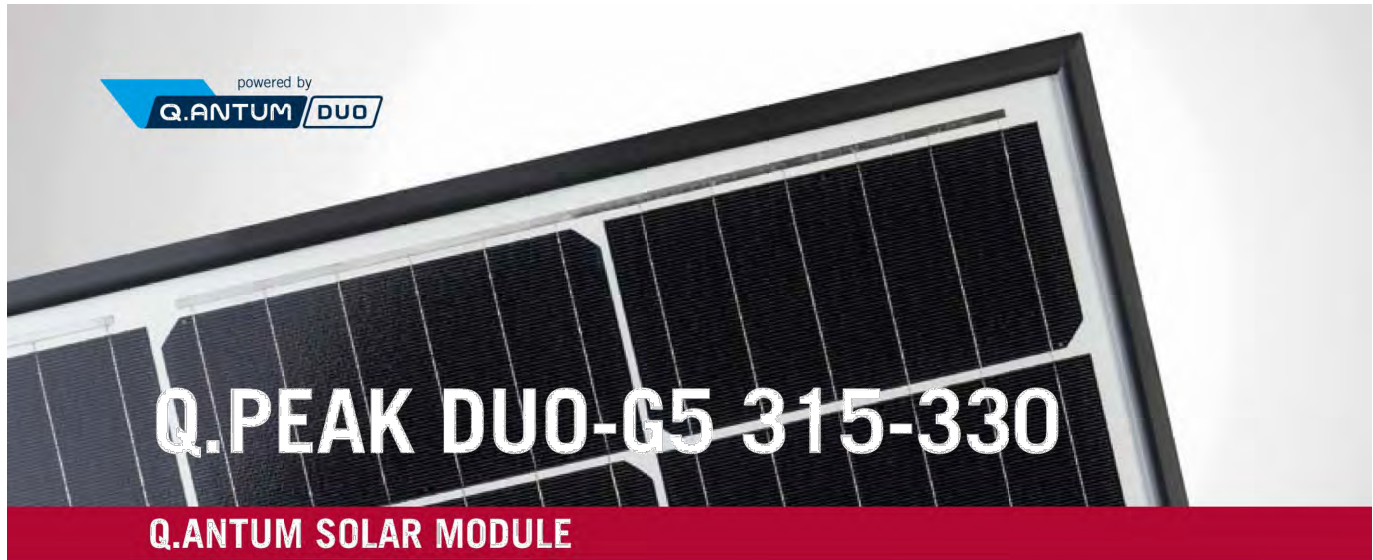
IRVINGTON ROASTERS
RESIDENCE

23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
PLACARDS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6



The new **Q.PEAK DUO-G5** solar module from **Q CELLS** impresses thanks to innovative **Q.ANTUM DUO** Technology, which enables particularly high performance on a small surface. **Q.ANTUM**'s world-record-holding cell concept has now been combined with state-of-the-art circuitry half cells and a six-busbar design, thus achieving outstanding performance under real conditions - both with low-intensity solar radiation as well as on hot, clear summer days.



Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY

Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.9%.



INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID and Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.



EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa) regarding IEC.



A RELIABLE INVESTMENT

Inclusive 12-year product warranty and 25-year linear performance guarantee².



STATE-OF-THE-ART MODULE TECHNOLOGY

Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with **Q.ANTUM** Technology.

THE IDEAL SOLUTION FOR:



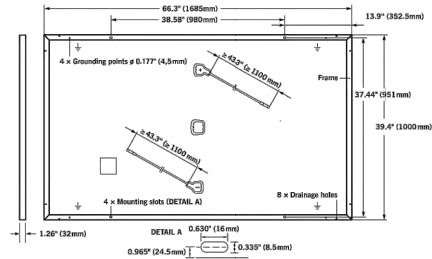
¹ APT test conditions according to IEC/TS 62804-1:2015, method B (-1500V, 168 h)
² See data sheet on rear for further information.



Engineered in Germany

MECHANICAL SPECIFICATION

Format	66.3 in × 39.4 in × 1.26 in (including frame) (1685 mm × 1000 mm × 32 mm)
Weight	41.2 lbs (18.7 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 20 monocrystalline Q.ANTUM solar half-cells
Junction box	2.76-3.35 in × 1.97-2.76 in × 0.51-0.83 in (70-85 mm × 50-70 mm × 13-21 mm), decentralized, IP67
Cable	4 mm ² Solar cable; (+) ≥ 43.3 in (1100 mm), (-) ≥ 43.3 in (1100 mm)
Connector	Multi-Contact MC4, IP68

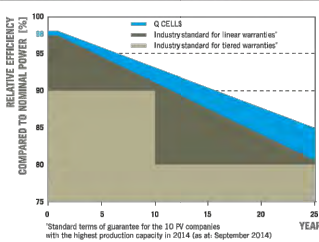


ELECTRICAL CHARACTERISTICS

POWER CLASS			315	320	325	330
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W / -0 W)						
Minimum	Power at MPP ¹	P _{MPP} [W]	315	320	325	330
	Short Circuit Current ¹	I _{SC} [A]	10.04	10.09	10.14	10.20
	Open Circuit Voltage ¹	V _{OC} [V]	39.87	40.13	40.40	40.66
	Current at MPP ¹	I _{MPP} [A]	9.55	9.60	9.66	9.71
	Voltage at MPP	V _{MPP} [V]	32.98	33.32	33.65	33.98
	Efficiency ¹	η [%]	≥ 18.7	≥ 19.0	≥ 19.3	≥ 19.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT ²						
Minimum	Power at MPP	P _{MPP} [W]	235.3	239.0	242.8	246.5
	Short Circuit Current	I _{SC} [A]	8.09	8.13	8.17	8.22
	Open Circuit Voltage	V _{OC} [V]	37.52	37.77	38.02	38.27
	Current at MPP	I _{MPP} [A]	7.52	7.56	7.60	7.64
	Voltage at MPP	V _{MPP} [V]	31.30	31.62	31.94	32.25

¹ Measurement tolerances P_{MPP} ± 3 %; I_{SC}, V_{OC} ± 5 % at STC: 1000 W/m², 25 ± 2 °C, AM 1.5 G according to IEC 60904-3 · 800 W/m², NMOT, spectrum AM 1.5 G

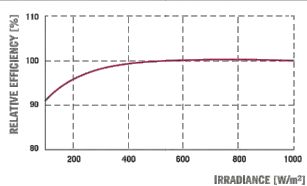
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year.
Thereafter max. 0.54 % degradation per year.
At least 93.1 % of nominal power up to 10 years.
At least 85 % of nominal power up to 25 years.

All data within measurement tolerances.
Full warranties in accordance with the warranty terms of the Q CELLS sales organization of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	α	[%/K]	+0.04	Temperature Coefficient of V _{OC}	β	[%/K]	-0.28
Temperature Coefficient of P _{MPP}	γ	[%/K]	-0.37	Normal Module Operating Temperature	NMOT	[°F]	109 ± 5.4 (43 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V _{sys}	[V]	1000 (IEC) / 1000 (UL)	Safety Class	II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating	C (IEC) / TYPE 1 (UL)
Max. Design Load, push ²	[lbs/ft ²]	75 (3600 Pa) / 55 (2667 Pa)	Permitted module temperature on continuous duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull ²	[lbs/ft ²]	113 (5400 Pa) / 84 (4000 Pa)	² see installation manual	

QUALIFICATIONS AND CERTIFICATES

UL 1703; VDE Quality Tested; CE-compliant;
IEC 61215:2016; IEC 61730:201, application class A



NOTE: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
300 Spectrum Center Drive, Suite 1250, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us

Specifications subject to technical changes © Hanwha Q CELLS Q.PEAK DUO-G5_315-330_2018-03_Rev03_NA



CONSOLIDATED HUDSON ELECTRIC

64 MAIN STREET
IRVINGTON, NY 10533

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	03/17/2022	A

Signature with Seal

PROJECT NAME & ADDRESS

**IRVINGTON ROASTERS
RESIDENCE**

**23 MAIN ST
IRVINGTON, NY 10533**

**SHEET NAME
EQUIPMENT
SPECIFICATION**

SHEET SIZE

**ANSI B
11" X 17"**

SHEET NUMBER

PV-7

Enphase IQ 7, IQ 7+, and IQ 7X Microinverters

with EN4 bulkhead

The high-powered smart grid-ready **Enphase IQ 7 Series Microinverters™** with Enphase EN4 bulkhead dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7, IQ 7+, and IQ 7X Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.



Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014, 2017, & 2020)
- Integrated Enphase EN4 bulkhead allows for direct connection to PV modules with TE PV4S SOLARLOK connectors or other intermatable connectors¹

Productive and Reliable

- Optimized for high-powered 60-cell, 72-cell², and 96-cell³ modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

1. Enphase adapters are available for use with other connectors. Consult Enphase for more information..
2. The IQ 7+ Microinverter is required to support 72-cell modules.
3. The IQ 7X Microinverter is required to support 96-cell modules.



To learn more about Enphase offerings, visit enphase.com



Enphase IQ 7 and IQ 7+ Microinverters with EN4 bulkhead

INPUT DATA (DC)	IQ7-60-E-US	IQ7PLUS-72-E-US	IQ7X-96-E-US
Commonly used module pairings⁴	235 W - 350 W +	235 W - 440 W +	320 W - 460 W +
Module compatibility	60-cell PV modules only	60-cell and 72-cell PV modules	96-cell PV modules
Maximum input DC voltage	48 V	60 V	79.5 V
Peak power tracking voltage	27 V - 37 V	27 V - 45 V	53 V - 64 V
Operating range	16 V - 48 V	16 V - 60 V	25 V - 79.5 V
Min/Max start voltage	22 V / 48 V	22 V / 60 V	33 V / 79.5 V
Max DC short circuit current (module Isc)	15 A	15 A	10 A
Overvoltage class DC port	II	II	II
DC port backfeed current	0 A	0 A	0 A
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit		

OUTPUT DATA (AC)	IQ 7 Microinverter		IQ 7+ Microinverter		IQ 7X Microinverter	
Peak output power	250 VA		295 VA		320 VA	
Maximum continuous output power	240 VA		290 VA		315 VA	
Nominal (L-L) voltage/range⁵	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current	1.0 A (240 V)	1.15 A (208 V)	1.21 A (240 V)	1.39 A (208 V)	1.31 A (240 V)	1.51 A (208 V)
Nominal frequency	60 Hz		60 Hz		60 HZ	
Extended frequency range	47 - 68 Hz		47 - 68 Hz		47-68 Hz	
AC short circuit fault current over 3 cycles	5.8 Arms		5.8 Arms		5.8 Arms	
Maximum units per 20 A (L-L) branch circuit⁶	16 (240 VAC)	13 (208 VAC)	13 (240 VAC)	11 (208 VAC)	12 (240 VAC)	10 (208 VAC)
Overvoltage class AC port	III		III		III	
AC port backfeed current	18mA		18mA		18 mA	
Power factor setting	1.0		1.0		1.0	
Power factor (adjustable)	0.85 leading ... 0.85 lagging		0.85 leading ... 0.85 lagging		0.85 leading ... 0.85 lagging	
EFFICIENCY	@240 V	@208 V	@240 V	@208 V	@240 V	@208 V
Peak efficiency	97.6 %	97.6 %	97.5 %	97.3 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %	97.5 %	97.0 %

MECHANICAL DATA	
Ambient temperature range	-40°C to +65°C (-40°F to +149°F)
Relative humidity range	4% to 100% (condensing)
Connector type	Enphase EN4 bulkhead
Adapters⁷ (optional)	1. ECA-EN4-S22: DC adapter, EN4 to Multi-Contact MC4 type, 150 mm (5.9in) 2. ECA-EN4-S22-L: DC adapter, EN4 to Multi-Contact MC4 type, 600 mm (23.6in) 3. ECA-EN4-FW: DC adapter, EN4 to unterminated cable, 150 mm (5.9in), for wiring of any DC connector type.
Dimensions (HxWxD)	212 mm x 175 mm x 30.2 mm (without bracket)
Weight	1.08 kg (2.38 lbs)
Cooling	Natural convection - No fans
Approved for wet locations	Yes
Pollution degree	PD3
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure
Environmental category / UV exposure rating	NEMA Type 6 / outdoor

FEATURES	
Communication	Power Line Communication (PLC)
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect means required by NEC 690 and C22.1-2018 Rule 64-220.
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, 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 manufacturer's instructions.

4. No enforced DC/AC ratio. See the compatibility calculator at <https://enphase.com/en-us/support/module-compatibility>.
5. Nominal voltage range can be extended beyond nominal if required by the utility.
6. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.
7. Adapters 1 and 2 are qualified per UL subject 9703. Adapter 3 requires installers to field install their choice of connector.

To learn more about Enphase offerings, visit enphase.com

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CONSOLIDATED HUDSON
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64 MAIN STREET
IRVINGTON, NY 10533

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	03/17/2022	A

Signature with Seal

PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
RESIDENCE

23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

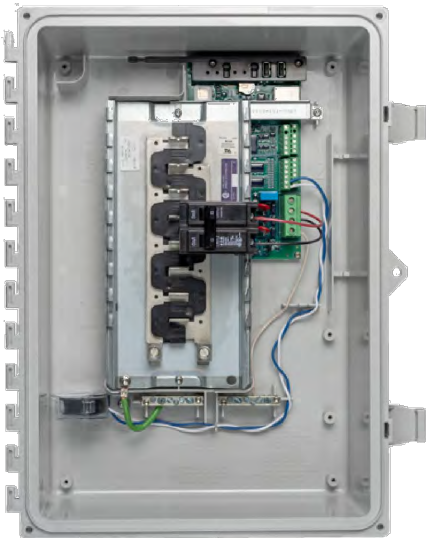
ANSI B
11" X 17"

SHEET NUMBER

PV-8

Enphase IQ Combiner 3 (X-IQ-AM1-240-3)

The **Enphase IQ Combiner 3™** 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
- Optional AC receptacle available for PLC bridge
- Provides production metering and optional consumption monitoring
- Supports Ensemble Communications Kit for communication with Enphase Encharge™ storage and Enphase Enpower™ smart switch

Simple

- Reduced size from previous combiner
- Centered mounting brackets support single stud mounting
- Supports back and side conduit entry
- 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 limited warranty
- UL listed



To learn more about Enphase offerings, visit enphase.com



Enphase IQ Combiner 3

MODEL NUMBER	
IQ Combiner 3 X-IQ-AM1-240-3	IQ Combiner 3 with Enphase IQ Envoy™ printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional* consumption monitoring (+/- 2.5%).
ACCESSORIES and REPLACEMENT PARTS (not included, order separately)	
Enphase Mobile Connect™ CELLMODEM-03 (4G/12-year data plan) CELLMODEM-01 (3G/5-year data plan) CELLMODEM-M1 (4G based LTE-M/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%).
* Consumption monitoring is required for Enphase Storage Systems	
Ensemble Communications Kit COMMS-KIT-01	Installed at the IQ Envoy. For communications with Enphase Encharge™ storage and Enphase Enpower™ smart switch. Includes USB cable for connection to IQ Envoy or Enphase IQ Combiner™ and allows wireless communication with Encharge and Enpower.
Circuit Breakers BRK-10A-2-240 BRK-15A-2-240 BRK-20A-2P-240	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
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replace the default solar shield with this Ensemble Combiner Solar Shield to match the look and feel of the Enphase Enpower™ smart switch and the Enphase Encharge™ storage system
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 3 (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Envoy printed circuit board (PCB) for Combiner 3
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 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 of distributed generation / 95 A with IQ Envoy breaker included
Envoy breaker	10A or 15A rating GE Q-line/Siemens Type QP /Eaton BR series included
Production Metering CT	200 A solid core pre-installed and wired to IQ Envoy
MECHANICAL DATA	
Dimensions (WxHxD)	49.5 x 37.5 x 16.8 cm (19.5" x 14.75" 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
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
Cellular	CELLMODEM-M1 4G based LTE-M cellular modem (not included). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
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 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit enphase.com

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64 MAIN STREET
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SHEET NAME
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SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-9



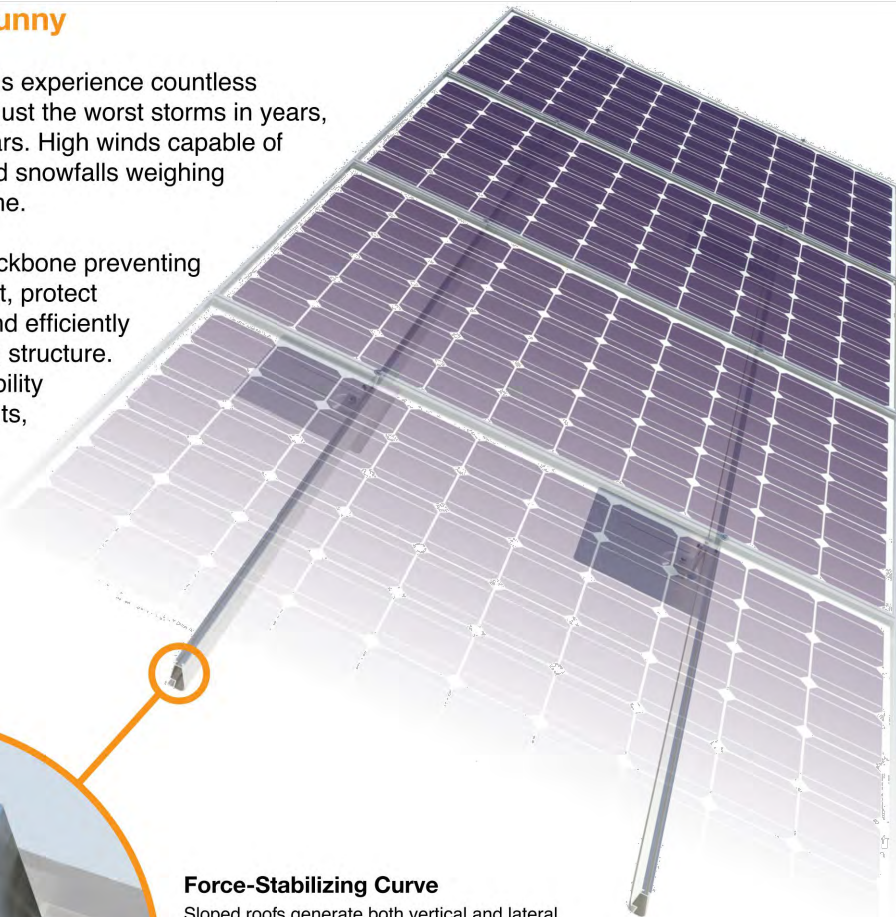
XR Rail Family

Tech Brief

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 6000-series aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.



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 spans up to 6 feet, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear & black 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 10 feet.

- 10' 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 up to 12 feet for commercial applications.

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

Rail Selection

The table below was prepared in compliance with applicable engineering codes and standards.* Values are based on the following criteria: ASCE 7-16, Gable Roof Flush Mount, Roof Zones 1 & 2e, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

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

*Table is meant to be a simplified span chart for conveying general rail capabilities. Use approved certification letters for actual design guidance.

Tech Brief



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RESIDENCE
23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-10



Tech Brief

Class A Fire Rating

Background

All roofing products are tested and classified for their ability to resist fire.

Recently, these fire resistance standards were expanded to include solar equipment as part of the roof system. Specifically, this requires the modules, mounting hardware and roof covering to be tested together as a system to ensure they achieve the same fire rating as the original roof covering.



These new requirements are being adopted throughout the country in 2016.

IronRidge Certification

IronRidge was the first company to receive a Class A Fire Rating—the highest possible rating—from Intertek Group plc., a Nationally Recognized Testing Laboratory.

IronRidge Flush Mount and Tilt Mount Systems were tested on sloped and flat roofs in accordance with the new UL 1703 & UL 2703 test standards. The testing evaluated the system's ability to resist flame spread, burning material and structural damage to the roof.

Refer to the table below to determine the requirements for achieving a Class A Fire Rating on your next project.

System	Roof Slope	Module	Fire Rating*
Flush Mount 	Any Slope	Type 1, 2, & 3	Class A
Tilt Mount 	≤ 6 Degrees	Type 1, 2, & 3	Class A

*Class A rated PV systems can be installed on Class A, B, and C roofs.

Fire Testing Process

Test Setup

Solar Modules

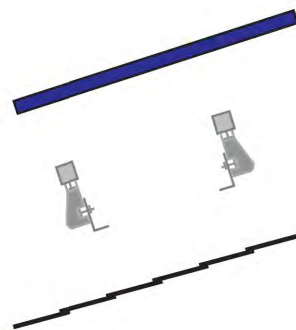
Solar modules are given a Type classification based on their materials and construction.

Mounting System

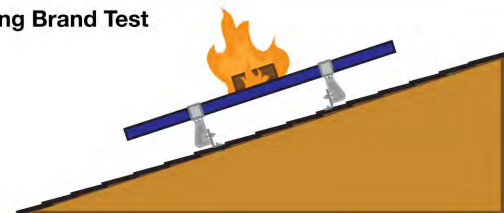
Mounting is tested as part of a system that includes type-tested modules and fire-rated roof covering.

Roof Covering

Roof covering products are given a Fire Class Rating of A, B or C based on their tested fire resistance.

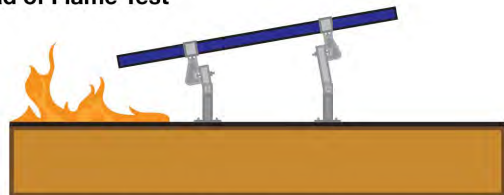


Burning Brand Test



A burning wooden block is placed on module as a fan blows at 12 mph. Flame cannot be seen on underside of roof within 90 minutes.

Spread of Flame Test



Flame at southern edge of roof is aimed up the roof as a fan blows at 12 mph. The flame cannot spread 6 feet or more in 10 minutes.

Frequently Asked Questions

What is a “module type”?

The new UL1703 standard introduces the concept of a PV module type, based on 4 construction parameters and 2 fire performance parameters. The purpose of this classification is to certify mounting systems without needing to test it with every module.

What roofing materials are covered?

All fire rated roofing materials are covered within this certification including composition shingle, clay and cement tile, metal, and membrane roofs.

What if I have a Class C roof, but the jurisdiction now requires Class A or B?

Generally, older roofs will typically be “grandfathered in”, and will not require re-roofing. However, if 50% or more of the roofing material is replaced for the solar installation the code requirement will be enforced.

Where is the new fire rating requirement code listed?

2012 IBC: 1509.7.2 Fire classification. Rooftop mounted photovoltaic systems shall have the same fire classification as the roof assembly required by Section 1505.

Where is a Class A Fire Rating required?

The general requirement for roofing systems in the IBC refers to a Class C fire rating. Class A or B is required for areas such as Wildland Urban Interface areas (WUI) and for very high fire severity areas. Many of these areas are found throughout the western United States. California has the most Class A and B roof fire rating requirements, due to wild fire concerns.

Are standard mid clamps covered?

Mid clamps and end clamps are considered part of the PV “system”, and are covered in the certification.

What attachments and flashings are deemed compatible with Class A?

Attachments and their respective flashings are not constituents of the rating at this time. All code-compliant flashing methods are acceptable from a fire rating standpoint.

What mounting height is acceptable?

UL fire testing was performed with a gap of 5”, which is considered worst case in the standard. Therefore, the rating is applicable to any module to roof gap.

Am I required to install skirting to meet the fire code?

No, IronRidge achieved a Class A fire rating without any additional racking components.

What determines Fire Classification?

Fire Classification refers to a fire-resistance rating system for roof covering materials based on their ability to withstand fire exposure.

Class A - effective against severe fire exposure
Class B - effective against moderate fire exposure
Class C - effective against light fire exposure

What if the roof covering is not Class A rated?

The IronRidge Class A rating will not diminish the fire rating of the roof, whether Class A, B, or C.

What tilts is the tilt mount system fire rated for?

The tilt mount system is rated for 1 degrees and up and any roof to module gap, or mounting height.

More Resources



Installation Manuals

Visit our website for manuals that include UL 2703 Listing and Fire Rating Classification.

Go to IronRidge.com



Engineering Certification Letters

We offer complete engineering resources and pre-stamped certification letters.

Go to IronRidge.com



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64 MAIN STREET
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PROJECT NAME & ADDRESS

IRVINGTON ROASTERS
RESIDENCE

23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME

EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-11



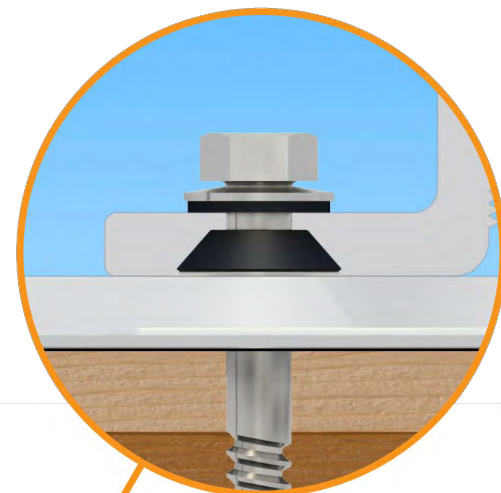
Tech Brief

FlashFoot™

Rapid & Secure Solar Attachments

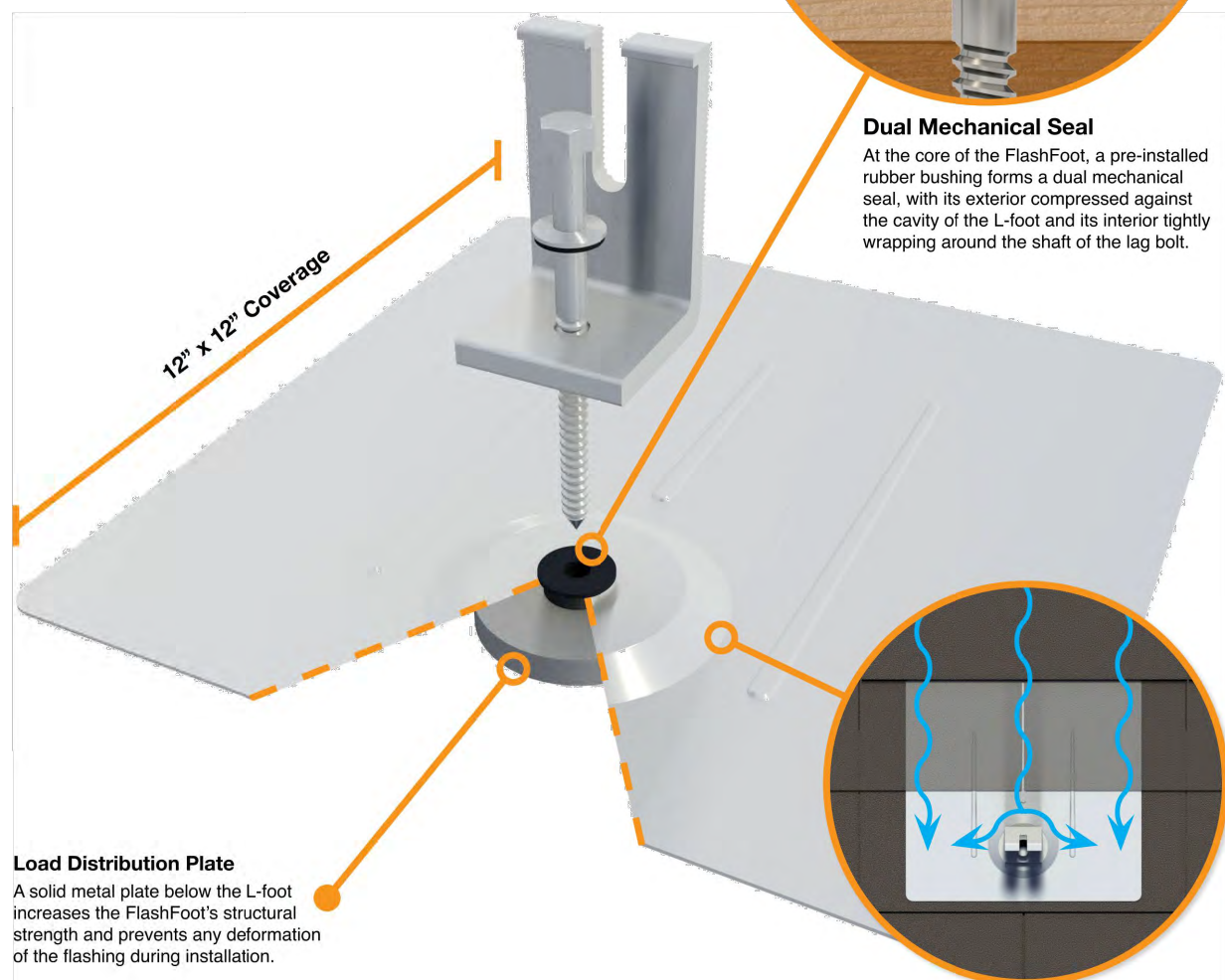
IronRidge FlashFoot™ is an all-in-one solar mounting product for composition shingle roofs that eliminates the need for separate standoffs, flashings, and L-feet.

FlashFoot incorporates a number of structural and waterproofing features to securely attach IronRidge Rails to roof structures, while also protecting against water intrusion and weather damage.



Dual Mechanical Seal

At the core of the FlashFoot, a pre-installed rubber bushing forms a dual mechanical seal, with its exterior compressed against the cavity of the L-foot and its interior tightly wrapping around the shaft of the lag bolt.



Load Distribution Plate

A solid metal plate below the L-foot increases the FlashFoot's structural strength and prevents any deformation of the flashing during installation.

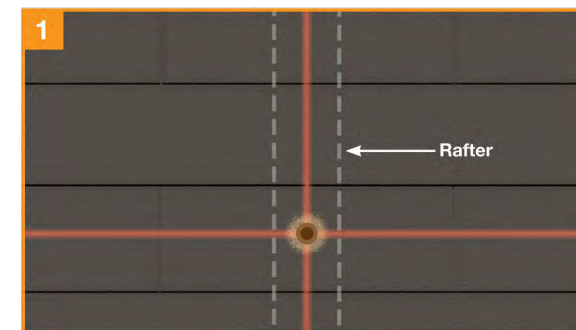


Water Shedding Design

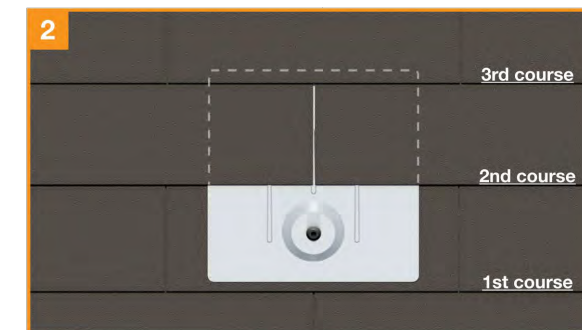
A wide flashing layer combined with an elevated sealing platform maximizes the FlashFoot's water shedding ability.

Installation Overview

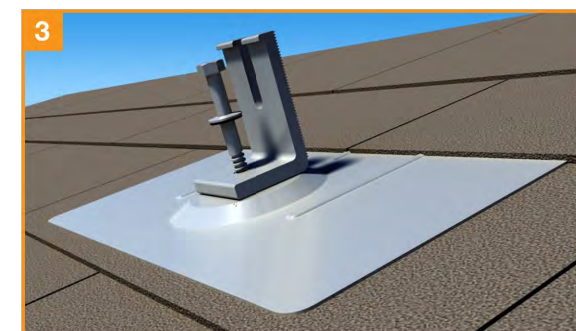
Tools Required: tape measure, chalk line, stud finder, roofing bar, caulking gun with an approved sealant, drill with 1/4" bit and 1/2" socket.



Locate rafters and snap vertical and horizontal lines to mark locations of flashings. Drill 1/4" pilot holes, then backfill with an approved sealant.



Slide flashing, between 1st and 2nd course, so the top is at least 3/4" above the edge of the 3rd course and the bottom is above the edge of the 1st course.



Line up pilot hole with flashing hole and insert lag bolt through bonded washer, L-Foot, and flashing. Tighten lag bolt until fully seated.



The FlashFoot is now installed and ready for IronRidge Rails. With provided L-foot fasteners pre-loaded into rails, drop rails into open L-foot slots.

Testing & Certification

FlashFoot is certified for compliance with the International Building Codes (IBC) & International Residential Codes (IRC) by IAPMO-ES. Mechanical testing conformed to the standard for Testing and Analysis of Joist Hangers and Miscellaneous Connectors (EC002-2011), and rain testing conformed to the Underwriters Laboratory Standard for Gas Vents (UL 441-96 Section 25).

Lag pull-out (withdrawal) capacities (lbs) in typical roof lumber (ASD)	Specific Gravity	5/16" Shaft, 3" Thread Depth
Douglas Fir, Larch	.50	798
Douglas Fir, South	.46	705
Engelmann Spruce, Lodgepole Pine (MSR 1650 f & higher)	.46	705
Hem, Fir	.43	636
Hem, Fir (North)	.46	705
Southern Pine	.55	921
Spruce, Pine, Fir	.42	615
Spruce, Pine, Fir (E of 2 million psi and higher grades of MSR and MEL)	.50	798

Sources: American Wood Council, NDS 2005, Table 11.2A, 11.3.2A; Notes: i) Thread must be embedded in a rafter or other structural roof member. ii) See IBC for required edge distances.



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23 MAIN ST
IRVINGTON, NY 10533

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-12

CERTIFICATE OF COMPLIANCE

Certificate Number 20180626-E341165
Report Reference E341165-20171030
Issue Date 2018-June-26

Issued to: Enphase Energy Inc.
1420 N. McDowell Blvd. Petaluma, CA 94954-6515

This is to certify that representative samples of Photovoltaic Grid Support Utility Interactive Inverter with Rapid Shutdown Functionality

Models IQ7-60, IQ7PLUS-72, and IQ7X-96, followed by -2, -5, -B, or -ACM, followed by -US.

Models IQ7PD-72-2-US and IQ7PD-84-2-US.

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 1741, Standard for Safety for Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources, UL 1741, Second Edition, dated January 28, 2010. Including the requirements in UL 1741 Supplement SA, sections as noted in the Technical considerations.
IEEE 1547, IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems.
IEEE 1547.1, IEEE Standard for Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems.
UL 62109-1, Safety of Converters for Use in Photovoltaic Power Systems - Part 1: General Requirements; IEC 62109-2, Safety of Power Converters for use in Photovoltaic Power Systems - Part 2: Particular Requirements for Inverters.
CSA C22.2 No. 107.1-01, General Use Power Supplies.

Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.


Bruce Mahrenholz, Director North American Certification Program
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



Intertek

8431 Murphy Drive
Middleton, WI 53562 USA
Telephone: 608.836.4400
Facsimile: 608.831.9279
www.intertek.com

Test Verification of Conformity

In the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the requirements of the referenced specifications at the time the tests were carried out.

Applicant Name & Address: IronRidge, Inc.
1495 Zephyr Ave.
Hayward, CA 94544
USA

Product Description: Flush Mount System with XR Rails.

Ratings & Principle Characteristics: Fire Class Resistance Rating:
-Flush Mount (Symmetrical). Class A Fire Rated for Low Slope applications when using Type 1, 2 and 3, listed photovoltaic modules. Class A Fire Rated for Steep Slope applications with Type1, 2 and 3, listed photovoltaic modules. Tested with a 5" gap (distance between the bottom the module frame and the roof covering), per the standard this system can be installed at any gap allowed by the manufacturers installation instructions. No perimeter guarding is required. This rating is applicable with any IronRidge or 3rd party roof anchor.

Models: IronRidge Flush Mount with XR Rails

Brand Name: IronRidge Flush Mount

Relevant Standards: UL 2703 (Section 15.2 and 15.3) Standard for Safety Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels, First Edition dated Jan. 28, 2015 Referencing UL1703 Third Edition dated Nov. 18, 2014, (Section 31.2) Standard for Safety for Flat-Plate Photovoltaic Modules and Panels.

Verification Issuing Office: Intertek Testing Services NA, Inc.
8431 Murphy Drive
Middleton, WI 53562

Date of Tests: 08/27/2014 to 03/17/2015

Test Report Number(s): 101769343MID-001r1, 101769343MID-001a, 101915978MID-001 & 101999492MID-001ar1-cr1.

This verification is part of the full test report(s) and should be read in conjunction with them. This report does not automatically imply product certification.

Completed by: Chris Zimbrich
Title: Technician II, Fire Resistance

Reviewed by: Chad Naggs
Title: Technician I, Fire Resistance

Signature: 
Date: 05/25/2016

Signature: 
Date: 05/25/2016

This Verification is for the exclusive use of Intertek's client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Verification. Only the Client is authorized to permit copying or distribution of this Verification. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test/inspection results referenced in this Verification are relevant only to the sample tested/inspected. This Verification by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

GFT-OP-11a (24-MAR-2014)



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SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-13