THE CITY OF
POMONA

Development Services Department

February 12, 2024

James Kercheval
490 Preciado St.
Pomona, CA 91768

Subject: Notice of Decision for File No. MINCOA 000178-2024

Dear James Kercheval,

The Planning Division has reviewed your Certificate of Appropriateness application to install a PV system on the roof of the primary structure located at **490 Preciado St**. Upon review of the City's historic preservation ordinance and design guidelines your project has been **approved**. The attached decision letter provides the analysis and basis for the decision.

All Minor Certificates of Appropriateness applications include a 20 day appeal period following the date of approval. The appeal period for this application will expire on March 04, 2024. The applicant or any member of the public may file an appeal. In the event that an appeal is submitted to the City, Planning staff will contact you to discuss the appeal. If there are no appeals, please contact the Building and Safety Division as early as March 05, 2024 to submit and pull a building permit for the installation of the proposed PV system. Please attach this letter to all required building permit applications as proof of MINCOA approval.

If you have any questions, please contact me at carlos.molina@pomonaca.gov.

Sincerely,

Carlos Molina
Assistant Planner

Attachments:

- Decision Letter
- Property Survey
- Project Plans

City of Pomona

MINOR CERTIFICATE OF APPROPRIATENESS DECISION LETTER

FILE NO:	**MINCOA 000178-2024** A request for a Minor Certificate of Appropriateness to install a PV system on the roof of a structure contributing to the Hacienda Park Historic District.
ADDRESS:	**490 Preciado St.**
APPLICANT:	James Kercheval
PROJECT PLANNER:	Carlos Molina, Assistant Planner
DECISION:	Approved File No(s). MINCOA 000178-2024

BASIS FOR DECISION

Staff reviewed Pomona's Historic Preservation Ordinance (Section .5809-13), and the applicable design standards in Preserving Pomona – The Pomona Guide to Historic Preservation. In order to approve a Minor Certificate of Appropriateness Staff must determine that the findings contained in the City's Historic Preservation Ordinance can be made.

Applicable Design Standards

X There will be no change in appearance of the roof.

X The solar panels are removable so that, if removed at a later date, will not cause a change in the appearance of the roof;

X The solar panels are removable so that, if removed at a later date, will not cause the historic roofing material of the roof to be removed; and

X Any removal of roofing material at the time of installation will be replaced in-kind, causing no change in appearance and is subject to a reroof permit.

____ Project meets City's preferred location for solar panels (Guide to Installing Solar Panels) (Not required under state law)

X Project Applicant or owner signed Conditions of Approval

CONDITIONS OF APPROVAL:

The Planning Division has completed its review of **MINCOA 000178-2024**. The request has been **approved**. The approval is subject to the following conditions:

City of Pomona

MINOR CERTIFICATE OF APPROPRIATENESS DECISION LETTER

1. The approval shall be used in the manner requested and shall be in substantial conformity with the plans approved by the Planning Division on the date listed on this letter, in accordance with the revision and/or additional conditions specifically required in this approval.

2. The approval shall be valid for not more than one year from the date of Permit approval. The Planning Division may grant a time extension for one (1) year provided that a written request by the applicant is submitted to the Planning Division within thirty (30) days prior to the expiration date without a fee. If plans are submitted to the Building and Safety division within one year from the date of approval, the proposed action shall be considered active.

3. The applicant shall obtain any required permits from the Building & Safety Division and/or Department of Public Works.

4. In the event that the approved plans under this Minor Certificate of Appropriateness are inconsistent with the provisions of the California Code of Regulations, Tittle 24 and/or any other applicable uniform building codes, the applicable building codes shall prevail.

5. Any deviation from the approved plans, shall require modification to the Certificate of Appropriateness and require approval of the Planning Division and, if necessary, the Historic Preservation Commission.

6. All project conditions shall be imprinted on the title sheet of the construction drawings (if required). The approved set of plans shall be retained on-site for review by Building Inspectors during the course of construction.

7. Prior to Occupancy the Planning Division shall inspect the premises to ensure the Conditions of Approval have been met and that the project has been constructed per the approved plans.

8. Construction Activities:

   Hours of construction activity shall be limited to:

   7:00 a.m. to 8:00 p.m., Monday through Saturday
   (There shall be no construction allowed on Sunday or on any Federal or State Holiday)

9. Violation of any of the conditions of this permit shall be cause for revocation and termination of all rights thereunder.

10. The applicant shall obtain a building permit prior to any demolition or construction.

11. All ground and roof-mounted equipment is required to be fully screened from view. Upon final inspection, Planning Division staff may require additional screening if warranted, through either landscaping, walls or a combination thereof.

City of Pomona

MINOR CERTIFICATE OF APPROPRIATENESS DECISION LETTER

12. There will be **NO** change in appearance of the roof;

13. The solar panels will be installed in such a manner that they are removable at a later date **WITHOUT** affecting the historic character of the roof;

14. The solar panels will be installed in such a manner that they are removable at a later date **WITHOUT** having to remove the historic roof material.

15. Any removal of existing roof material at the time of installation will be replaced with a like material causing **NO** change in appearance and subject to a reroof permit.

APPEALS

This decision will become final on March 05, 2024, unless an appeal is filed with the Planning Division prior to this date. The applicant or any member of the public may file an appeal. There is no cost to file an appeal for a Minor Certificate of Appropriateness. Appeals may be filed with the contact listed in this letter.

Sincerely,

Geoffrey Starns, AICP, LEED AP BD+C
Historic Preservation Supervisor

February 12, 2024

Date

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: (Assigned by Recorder) 490 PRECIADO ST

P1. Other Identifier:

*P2. Location: ☐ Not for Publication

and (P2b and P2c or P2d. Attach a location map as necessary.)

*b. USGS 7.5' Quad _____ Date _____ T ____; R ____; ___ 1/4 of ___ 1/4 of Sec ____; _____ B.M.

c. Address 490 PRECIADO ST City: Riverside Zip _____

d. UTM (Give more than one fr large and/or linear resource Zone _____; _____ mE/ _____ mN

e. Other Locational Data: Contributing with modifications

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition,alterations, size, setting, and boudnaries)

This 1926 home is identifiable as a Tudor Revival by its steeply pitched roof, dominant cross-front-gable, and multiple groups of multi-paned windows. It is uncommon to see clapboard siding in a Tudor home, but not unheard of. The original owner was a manager at the local Kerckhoff-Cuzner Mill, and perhaps this accounts for the redwood siding of the home.

Windows are casement window, which is also typical of the style with eight panes each. The second story features french doors.

The second story balcony is cantilevered and covered by the principle roof.

Garage is attached and located at the back of the house.

Some windows have been replaced on the west side of the house with aluminum framed windows in the 1950s.

*P3b. Resource Attributes: (List attributes and codes) HP2

*P4. Resources Present: ☑ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (isolates, etc.)

P5b. Description of Photo:
(View, date, accession #)

*P6. Date Constructed: 1926
Age and Sources: ☒ Historic
☐ Prehistoric ☐ Both

*P7. Owner and Address:

Pomona CA

*P8: Recorded by: (name, affiliation, and address)

*P9. Date Recorded: _____

*P10. Survey Type: (Describe)
Other Activity

*P11. Report Citation: (Cite survey report and other sources, or enter "none.")

*Attachments: NONE ☐ Location Map ☐ Sketch Map ☐ Continuation Sheet ☐ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Reature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record Other (List) _____

*Required Information

INDEX

JUSRISDICTION NOTES

JURISDICTION : CITY OF POMONA
UTILITY : SCE

ADDITIONAL CODE REFERENCES AND COMPLIANCE:
2022 CALIFORNIA BUILDING CODE
2022 CALIFORNIA GREEN BUILDING CODE
2022 CALIFORNIA ENERGY CODE
2022 CALIFORNIA PLUMBING CODE
2022 CALIFORNIA MECHANICAL CODE
2022 CALIFORNIA ELECTRICAL CODE
2022 CALIFORNIA RESIDENTIAL CODE
2022 CALIFORNIA FIRE CODE

ALL OTHER CODES ADOPTED BY LOCAL AHJ

ALL ELECTRICAL WORK SHALL BE DESIGNED PER 2020 LOS ANGELES COUNTY ELECTRICAL CODE, 2022 CALIFORNIA ELECTRICAL CODE, AND 2020 NATIONAL ELECTRICAL CODE.

110.3 APPROVAL: All electrical equipment shall be labeled, listed, or certified by a nationally recognized testing laboratory accredited by the United States Occupational Safety Health Administration.

INTERNATIONAL CODES

ALL WORK SHALL COMPLY WITH:
1. 2021 INTERNATIONAL BUILDING CODE
2. 2021 INTERNATIONAL RESIDENTIAL CODE
3. 2020 NATIONAL ELECTRICAL CODE

GENERAL INFO

OCCUPANCY:	R3
CONSTRUCTION:	SINGLE-FAMILY
ZONING:	RESIDENTIAL
GROUND SNOW LOAD:	0 PSF
WIND SPEED:	95MPH
WIND EXPOSURE:	C
NUMBER OF STORIES:	2

CONTRACTORS LICENSE

PROJECTSOLAR
License #: 1099181, C10
Expiry Date : 11/30/2024
JACOB MICHAEL WESTPHAL
Jacob Michael Westphal

REV	BY	COMMENTS
REV —	ARKIM F.	—

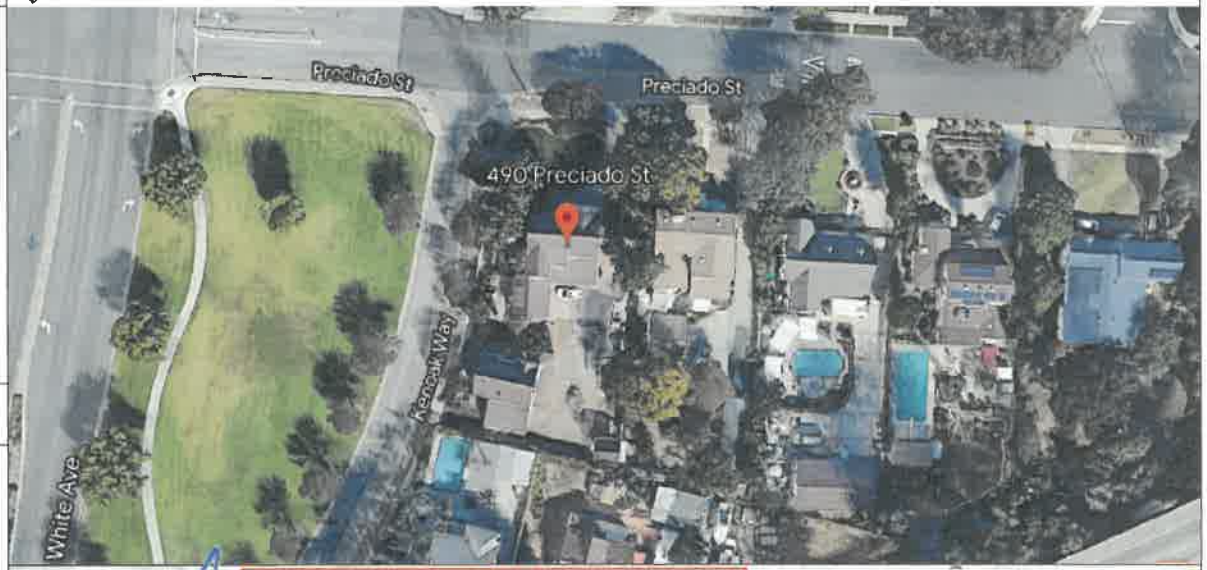
SCOPE OF WORK

INSTALLATION OF [N] 11.60 KW DC PV ARRAY

PV ONLY

29	Q.PEAK DUO BLK ML-G10 400W
29	ENPHASE IQ8PLUS-72-2-US (240V) [SI1-SB]
1	AC DISCONNECT(S)
1	ENPHASE IQ COMBINER PANEL
5	EZ SOLAR JBOX

SATELLITE & VICINITY PHOTOS



REGISTERED PROFESSIONAL ENGINEER
SCOTT WYSLOUZIL
C 83884
CIVIL
STATE OF CALIFORNIA
Signed 5/08/2023

REVIEWED FOR CODE COMPLIANCE
USING THE FOLLOWING CODES:
- ☐ 2022 CALIFORNIA RESIDENTIAL CODE
- ☐ 2022 CALIFORNIA BUILDING CODE
- ☐ 2022 CALIFORNIA ELECTRICAL CODE
- ☐ 2022 CALIFORNIA PLUMBING CODE
- ☐ 2022 CALIFORNIA MECHANICAL CODE
- ☐ 2022 CALIFORNIA ENERGY CODE
- ☐ 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
- ☐ 2022 CALIFORNIA BUILDING CODE - STRUCTURAL PROVISIONS ONLY
- ☐ 2022 CALIFORNIA FIRE CODE
- ☐ OTHER

490 Preciado St, Pomona, CA 91768, USA

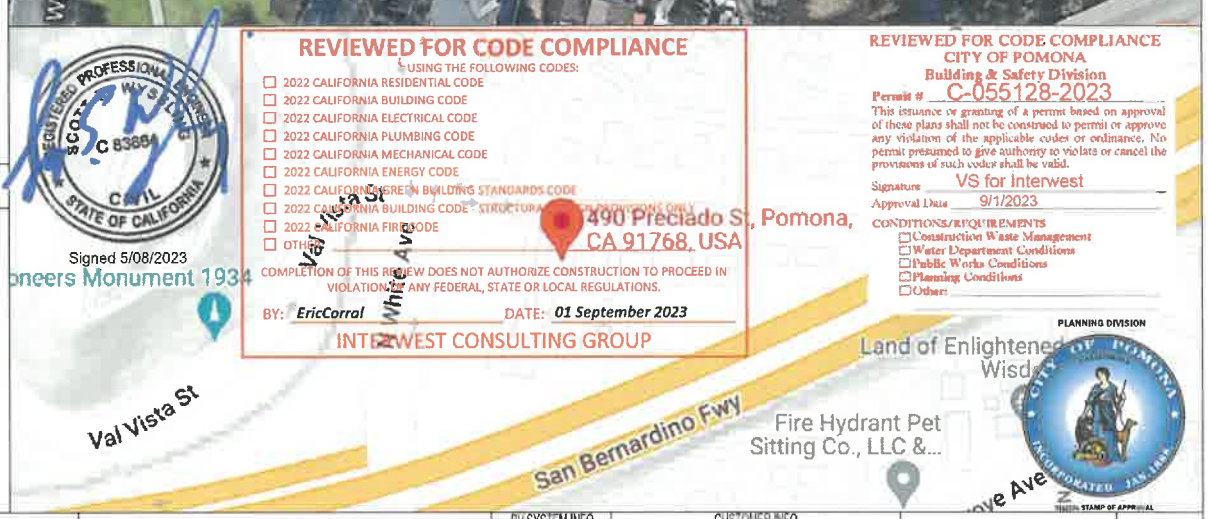
COMPLETION OF THIS REVIEW DOES NOT AUTHORIZE CONSTRUCTION TO PROCEED IN VIOLATION OF ANY FEDERAL, STATE OR LOCAL REGULATIONS.

BY: EricCorral DATE: 01 September 2023

INTERWEST CONSULTING GROUP

REVIEWED FOR CODE COMPLIANCE
CITY OF POMONA
Building & Safety Division
Permit # C-055128-2023
This issuance or granting of a permit based on approval of these plans shall not be construed to permit or approve any violation of the applicable codes or ordinance. No permit presumed to give authority to violate or cancel the provisions of such codes shall be valid.
Signature VS for Interwest
Approval Date 9/1/2023
CONDITIONS/REQUIREMENTS
- ☐ Construction Waste Management
- ☐ Water Department Conditions
- ☐ Public Works Conditions
- ☐ Planning Conditions
- ☐ Other:

PLANNING DIVISION
CITY OF POMONA INCORPORATED JAN 1888
STAMP OF APPROVAL



PROJECTSOLAR

JOB NUMBER	5803816732
MOUNTING SYSTEM	IRONRIDGE, L-MOUNT
MODULES	(29) Q.PEAK DUO BLK ML-G10 400W
INVERTER	(29) ENPHASE IQ8PLUS-72-2-US (240V) [SI1-SB]

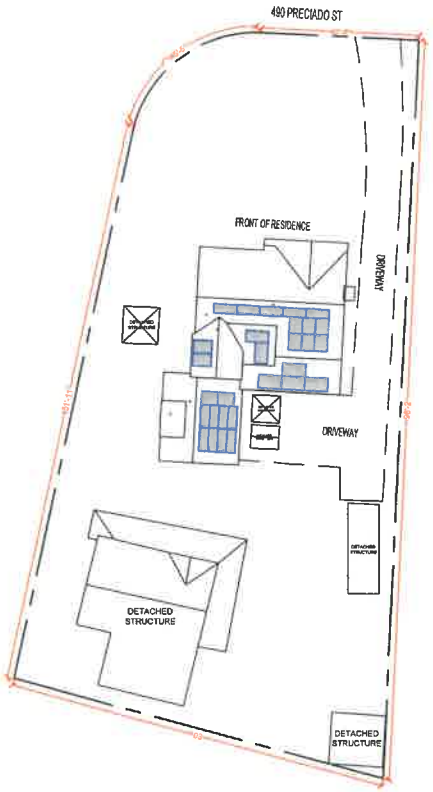
PV SYSTEM INFO
11.60 KW DC PV ARRAY
8.41 KW AC PV ARRAY

CUSTOMER INFO
KRISTIE KERCHEVAL
490 PRECIADO ST
POMONA
CA 91768

DESIGNED BY: ARKIM F.
REVISION: —
DATE: 4/13/2023

PAGE NAME: COVER SHEET
SHEET: PV 1.0

1/32" = 1'-0" SCALE



Signed 5/08/2023

PLANNING DIVISION

DIGITAL STAMP OF APPROVAL

REVIEWED

Sep 01, 2023

INTERWEST CONSULTING GROUP

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PROJECTSOLAR

License #: 1099181, C10

Expiry Date : 11/30/2024

JACOB MICHAEL WESTPHAL

Jacob Michael Westphal

PROJECTSOLAR

JOB NUMBER	5803816732
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8.41 KW AC PV ARRAY

CUSTOMER INFO

KRISTIE KERCHEVAL
490 PRECIADO ST
POMONA
CA 91768

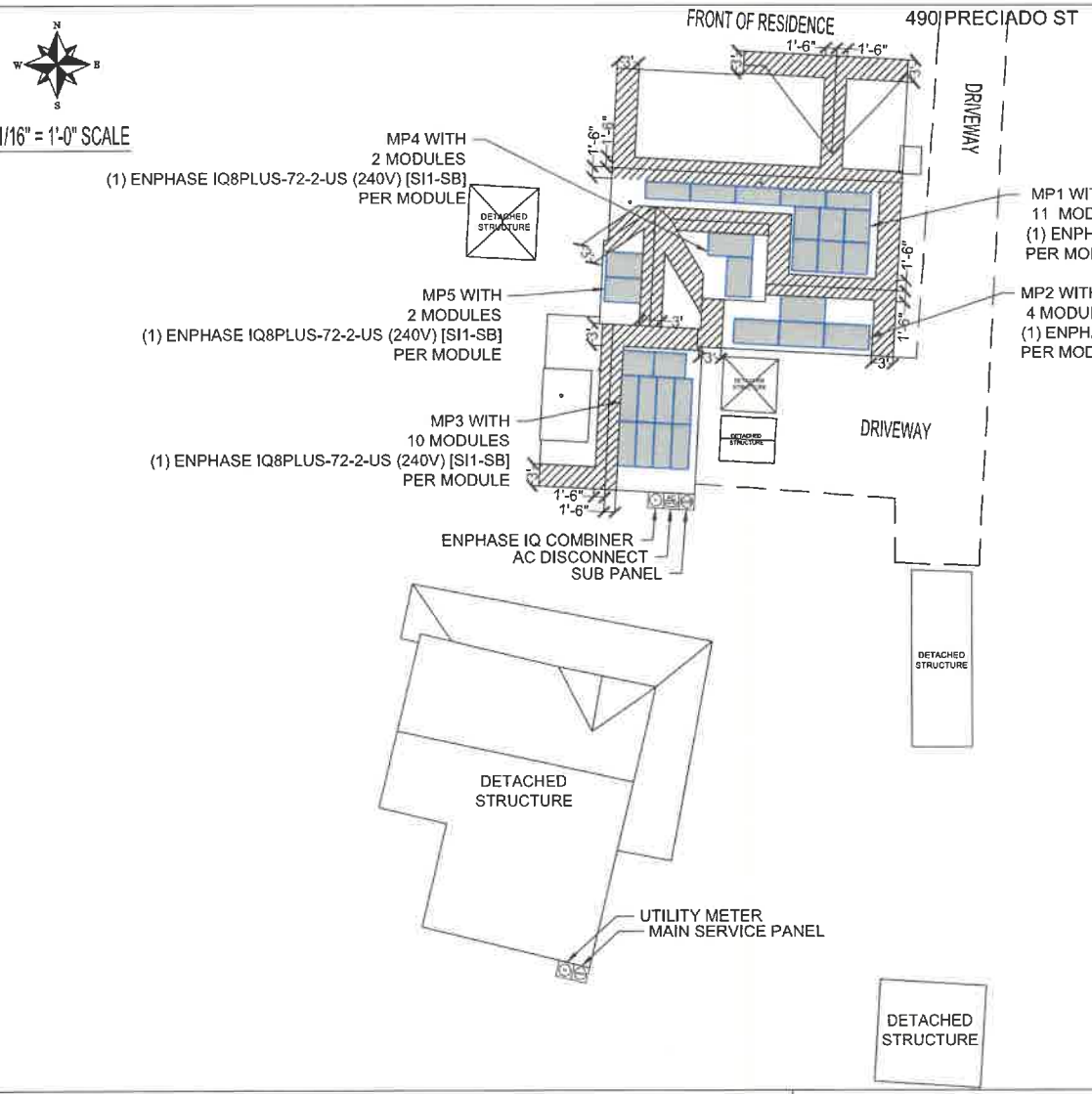
DESIGNED BY: ARKIM F.

REVISION: —

DATE: 4/13/2023

PAGE NAME: PLOT PLAN

SHEET: PV 2.0



1/16" = 1'-0" SCALE

HEIGHT OF THE SYSTEM WILL NOT EXCEED THE BUILDING HEIGHT

ALL 3' FIRE SETBACKS ARE MEASURED INWARD FROM THE LOAD-BEARING WALL NOT FROM THE EDGE OF ANY EAVE OR OVERHANG.

THE HOUSE IS LOCATED ON A CORNER STREET

LEGEND

- M — UTILITY METER
- AC — AC DISCONNECT
- DC/AC — MICROINVERTER
- C — COMBINER PANEL
- SUB — SUB PANEL
- MSP — MAIN SERVICE PANEL
- M — DEDICATED PV METER
- J-BOX — JUNCTION BOX
- SETBACK

REGISTERED PROFESSIONAL ENGINEER SCOTT C. WYSE C 83684 CIVIL STATE OF CALIFORNIA

Signed 5/08/2023

PLANNING DIVISION

CITY OF POMONA INCORPORATED JAN 1888

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INVERTER	(29) ENPHASE IQ8PLUS-72-2-US (240V) [SI1-SB]

PV SYSTEM INFO

11.60 KW DC PV ARRAY
8.41 KW AC PV ARRAY

CUSTOMER INFO

KRISTIE KERCHEVAL
490 PRECIADO ST
POMONA
CA 91768

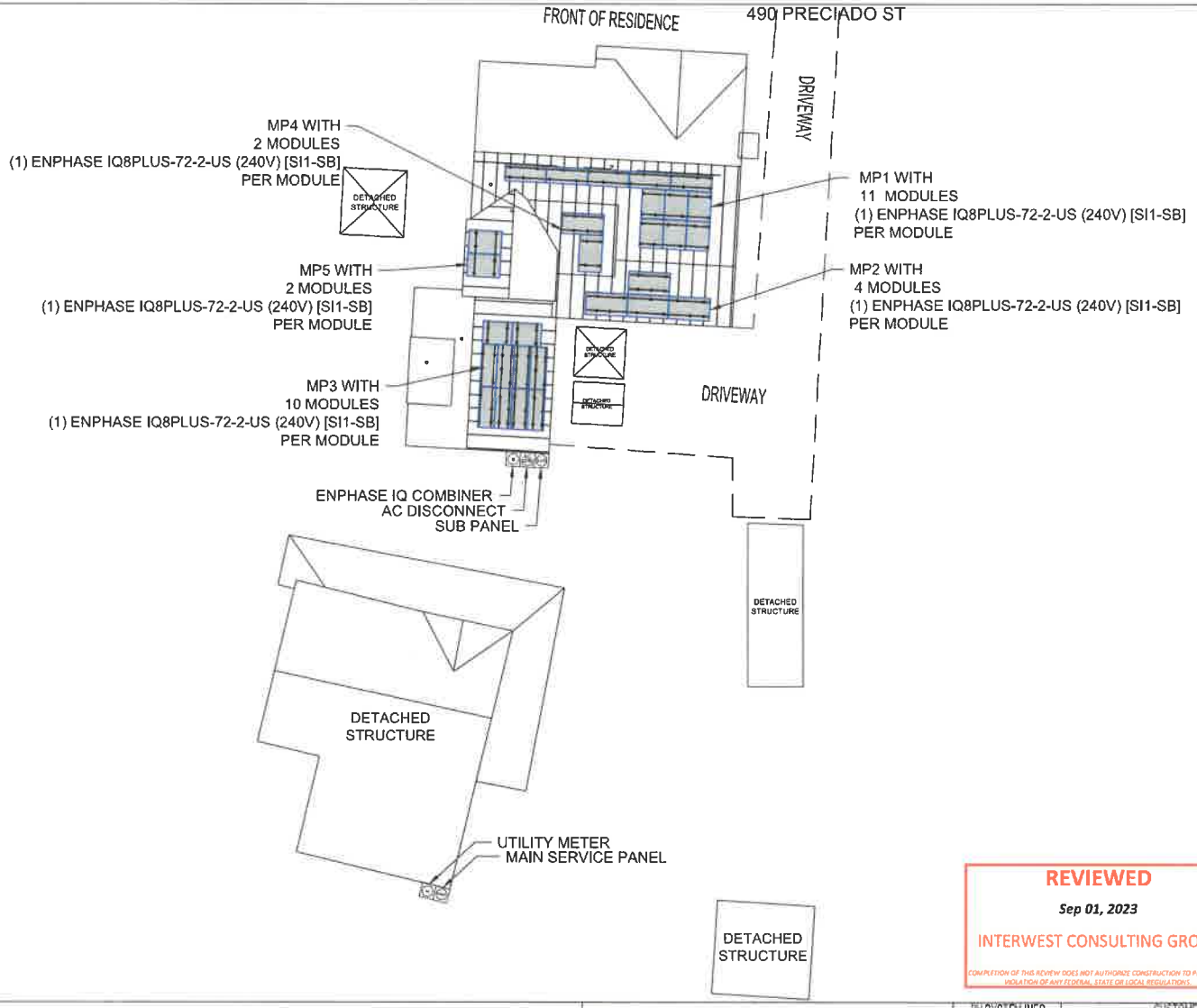
DESIGNED BY
ARKIM F.

REVISION
=

DATE
4/13/2023

PAGE NAME
SITE PLAN

SHEET
PV 2.1



1/16" = 1'-0" SCALE

STRUCTURAL INFO

FRAMING	: CONVENTIONAL
RAFTER SIZE	: 2X4
RAFTER SPACING	: 24

ROOF AREA

TOTAL ARRAY AREA (SQFT)	: 612.5
TOTAL ROOF AREA (SQFT)	: 2655
AREA OF MODULES/TOTAL	: 23.07

NUMBER OF ATTACHMENTS

105

ROOF INFORMATION

MP 1	AZIMUTH 183	PITCH 12.0/12	COMP SHINGLE
MP 2	AZIMUTH 183	PITCH 2.1/12	COMP SHINGLE
MP 3	AZIMUTH 93	PITCH12.0/12	COMP SHINGLE
MP 4	AZIMUTH 183	PITCH6.1/12	COMP SHINGLE
MP 5	AZIMUTH 273	PITCH9.0/12	COMP SHINGLE

REVIEWED
Sep 01, 2023
INTERWEST CONSULTING GROUP
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REGISTERED PROFESSIONAL ENGINEER
C 83684
CIVIL
STATE OF CALIFORNIA
Signed 5/08/2

CITY OF POMONA
BUILDING DIVISION
INCORPORATED JAN. 1888
DIGITAL STAMP OF APPROVAL

PROJECTSOLAR
License #: 1099181, C10
Expiry Date : 11/30/2024
JACOB MICHAEL WESTPHAL
Jacob Michael Westphal

PROJECTSOLAR

JOB NUMBER	5803816732
MOUNTING SYSTEM	IRONRIDGE, L-MOUNT
MODULES	(29) Q.PEAK DUO BLK ML-G10 408W
INVERTER	(29) ENPHASE IQ8PLUS-72-2-US (240V) [SI1-SB]

PV SYSTEM INFO
11.60 KW DC PV ARRAY
8.41 KW AC PV ARRAY

CUSTOMER INFO
KRISTIE KERCHEVAL
490 PRECIADO ST
POMONA
CA 91768

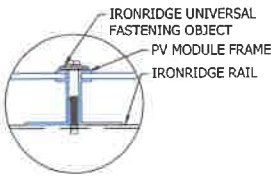
DESIGNED BY
ARKIM F.

REVISION
—

DATE
4/13/2023

PAGE NAME
RAFTER & ATTACHMENT PLAN

SHEET
PV 2.2



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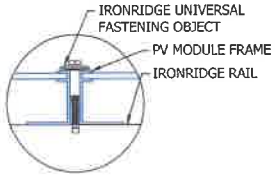

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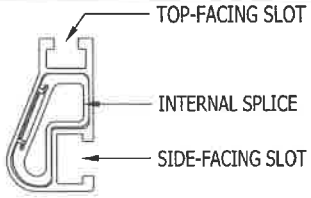
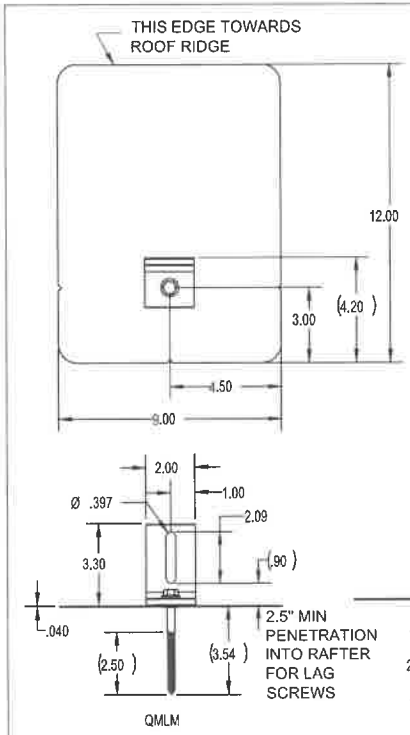
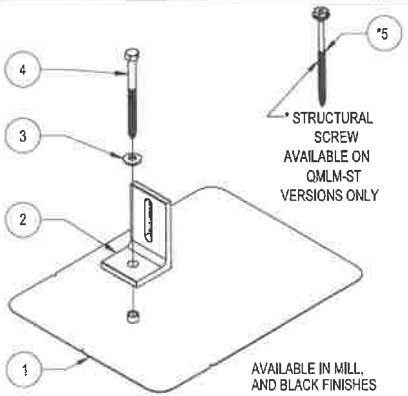


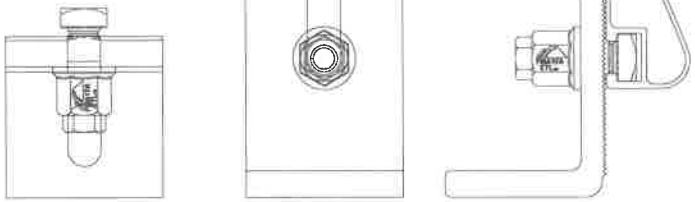
O DETAIL, SPLICE XR10

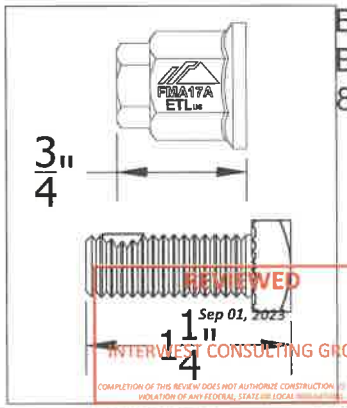
Signed 5/08/2023



ITEM NO.	DESCRIPTION	QTY.
1	FLASHING, ROUNDED CORNERS, 9" X 12" X .040", .438" HOLE, 5052, MILL	1
2	L-FOOT, 2" X 3.30" FOR .438" O.D. FASTENER, 2-1/16" SLOT, 6061-T6/6005A-T61, MILL	1
3	WASHER, SEALING, 5/16" ID X 3/4" OD, EPDM BONDED SS	1
4	LAG SCREW, HEX HEAD, 5/16" x 4", 18-8 SS	1
*5	STRUCTURAL SCREW, QMPV, T-30 HEX WASHER HEAD, 5/16" X 4-1/2", 18-8SS	1







BOLT
BONDING 3
8-16 HEAD

TITLE: QMLM & QMLM-ST: L-MOUNT, 2-1/16" SLOT

UNLESS OTHERWISE SPECIFIED:	SIZE	DRAWN BY: RAD	REV
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/8 TWO PLACE DECIMAL ± .10 THREE PLACE DECIMAL ± .004	A	DATE: 7/16/2018	9
	SCALE: 1:4	WEIGHT: 1.0723	SHEET 1 OF 1

DO NOT SCALE DRAWING

REVIEWED
Sep 01, 2023
INTERWEST CONSULTING GROUP
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PLANNING DIVISION
CITY OF POMONA
INCORPORATED JAN 1888
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PROJECTSOLAR
License #: 1099181, C10
Expiry Date : 11/30/2024
JACOB MICHAEL WESTPHAL
Jacob Michael Westphal

PROJECTSOLAR

JOB NUMBER	5803816732
MOUNTING SYSTEM	IRONRIDGE, L-MOUNT
MODULES	(29) Q.PEAK DUO BLK ML-G10 400W
INVERTER	(29) ENPHASE IQ8PLUS-72-2-US (240V) [S11-SB]

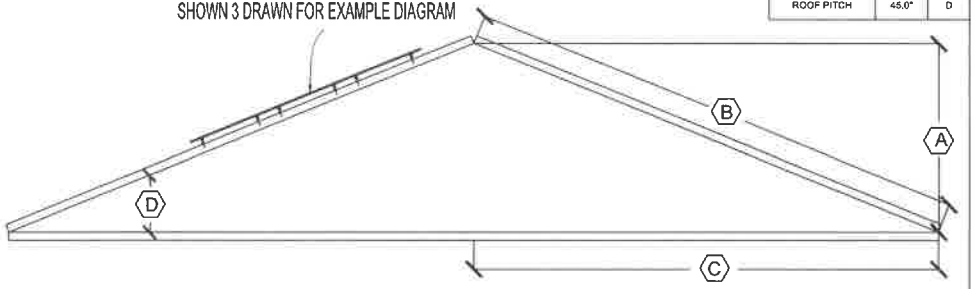
PV SYSTEM INFO	CUSTOMER INFO		
11.60 KW DC PV ARRAY 8.41 KW AC PV ARRAY	KRISTIE KERCHEVAL 490 PRECIADO ST POMONA CA 91768	DESIGNED BY ARKIM F. REVISION — DATE 4/13/2023	PAGE NAME RACKING SHEET PV 3.0

A ATTIC INFO
NOT DRAWN TO SCALE

STRUCTURAL INFO
FRAMING : CONVENTIONAL
RAFTER SIZE : 2X4
RAFTER SPACING : 24

ROOF INFO		TAG ID
ROOF RISE	14.84924 24'	A
ROOF SPAN	21'	B
ROOF RUN	14.84924 24'	C
ROOF PITCH	45.0°	D

* # OF ROWS MAY DIFFER
SHOWN 3 DRAWN FOR EXAMPLE DIAGRAM



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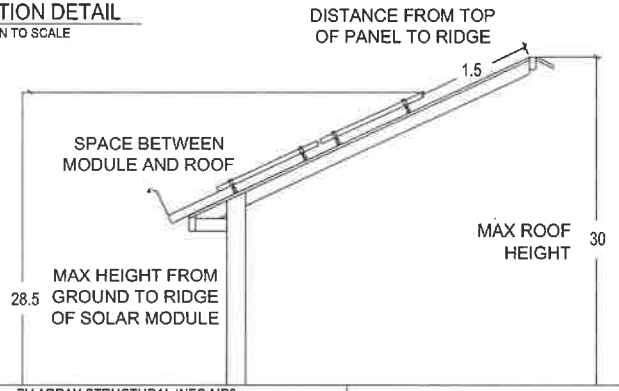

PV ARRAY STRUCTURAL INFO MP1			
ROOF TYPE:	COMP SHINGLE		
MP1 MODULE COUNT:	(TOTAL NUMBER OF MODULES BEING INSTALLED ON SECTION)	11	MODULES
INDIVIDUAL MODULE AREA:	(MODULE LENGTH) X (MODULE WIDTH)	21.1	FT^2
MP1 ARRAY AREA:	(INDIVIDUAL ARRAY AREA) X (TOTAL MODULE COUNT) = FT^2	232.3	FT^2
TOTAL MP1 AREA:	(MP1 AREA TOTAL) = FT^2	591	FT^2
% ARRAY/ROOF:	(ARRAY AREA) / (MP1 AREA) = %	39%	%
MP1 ARRAY WEIGHT:	(MP1 MODULE COUNT) X (MODULE WEIGHT) = LBS	533.5	LBS
TOTAL DISTRIBUTED LOAD ON ROOF:	(MP1 ARRAY WEIGHT) / (ARRAY AREA) = LBS / FT^2	2.3	LBS / FT^2

PV ARRAY STRUCTURAL INFO MP2			
ROOF TYPE:	COMP SHINGLE		
MP2 MODULE COUNT:	(TOTAL NUMBER OF MODULES BEING INSTALLED ON SECTION)	4	MODULES
INDIVIDUAL MODULE AREA:	(MODULE LENGTH) X (MODULE WIDTH)	21.1	FT^2
MP2 ARRAY AREA:	(INDIVIDUAL ARRAY AREA) X (TOTAL MODULE COUNT) = FT^2	84.5	FT^2
TOTAL MP2 AREA:	(MP2 AREA TOTAL) = FT^2	225	FT^2
% ARRAY/ROOF:	(ARRAY AREA) / (MP2 AREA) = %	38%	%
MP2 ARRAY WEIGHT:	(MP2 MODULE COUNT) X (MODULE WEIGHT) = LBS	194	LBS
TOTAL DISTRIBUTED LOAD ON ROOF:	(MP2 ARRAY WEIGHT) / (ARRAY AREA) = LBS / FT^2	2.3	LBS / FT^2

PV ARRAY STRUCTURAL INFO MP3			
ROOF TYPE:	COMP SHINGLE		
MP3 MODULE COUNT:	(TOTAL NUMBER OF MODULES BEING INSTALLED ON SECTION)	10	MODULES
INDIVIDUAL MODULE AREA:	(MODULE LENGTH) X (MODULE WIDTH)	21.1	FT^2
MP3 ARRAY AREA:	(INDIVIDUAL ARRAY AREA) X (TOTAL MODULE COUNT) = FT^2	84.5	FT^2
TOTAL MP3 AREA:	(MP3 AREA TOTAL) = FT^2	225	FT^2
% ARRAY/ROOF:	(ARRAY AREA) / (MP3 AREA) = %	38%	%
MP3 ARRAY WEIGHT:	(MP3 MODULE COUNT) X (MODULE WEIGHT) = LBS	485	LBS
TOTAL DISTRIBUTED LOAD ON ROOF:	(MP3 ARRAY WEIGHT) / (ARRAY AREA) = LBS / FT^2	2.3	LBS / FT^2

PV ARRAY STRUCTURAL INFO MP4			
ROOF TYPE:	COMP SHINGLE		
MP4 MODULE COUNT:	(TOTAL NUMBER OF MODULES BEING INSTALLED ON SECTION)	2	MODULES
INDIVIDUAL MODULE AREA:	(MODULE LENGTH) X (MODULE WIDTH)	21.1	FT^2
MP4 ARRAY AREA:	(INDIVIDUAL ARRAY AREA) X (TOTAL MODULE COUNT) = FT^2	42.2	FT^2
TOTAL MP4 AREA:	(MP4 AREA TOTAL) = FT^2	124	FT^2
% ARRAY/ROOF:	(ARRAY AREA) / (MP4 AREA) = %	34%	%
MP4 ARRAY WEIGHT:	(MP4 MODULE COUNT) X (MODULE WEIGHT) = LBS	97	LBS
TOTAL DISTRIBUTED LOAD ON ROOF:	(MP4 ARRAY WEIGHT) / (ARRAY AREA) = LBS / FT^2	2.3	LBS / FT^2

PV ARRAY STRUCTURAL INFO MP5			
ROOF TYPE:	COMP SHINGLE		
MP5 MODULE COUNT:	(TOTAL NUMBER OF MODULES BEING INSTALLED ON SECTION)	2	MODULES
INDIVIDUAL MODULE AREA:	(MODULE LENGTH) X (MODULE WIDTH)	21.1	FT^2
MP5 ARRAY AREA:	(INDIVIDUAL ARRAY AREA) X (TOTAL MODULE COUNT) = FT^2	42.2	FT^2
TOTAL MP5 AREA:	(MP5 AREA TOTAL) = FT^2	120	FT^2
% ARRAY/ROOF:	(ARRAY AREA) / (MP5 AREA) = %	35%	%
MP5 ARRAY WEIGHT:	(MP5 MODULE COUNT) X (MODULE WEIGHT) = LBS	97	LBS
TOTAL DISTRIBUTED LOAD ON ROOF:	(MP5 ARRAY WEIGHT) / (ARRAY AREA) = LBS / FT^2	2.3	LBS / FT^2

REGISTERED PROFESSIONAL ENGINEER
SCOTT WAYNE LONG
C 83684
CIVIL
STATE OF CALIFORNIA

Signed 5/08/2023

PLANNING DIVISION
CITY OF POMONA
INCORPORATED JAN 1888
DIGITAL STAMP OF APPROVAL

REVIEWED
Sep 01, 2023
INTERWEST CONSULTING GROUP
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PROJECTSOLAR
License #: 1099181, C10
Expiry Date : 11/30/2024
JACOB MICHAEL WESTPHAL
Jacob Michael Westphal

PROJECTSOLAR

JOB NUMBER	5803816732
MOUNTING SYSTEM	IRONRIDGE, L-MOUNT
MODULES	(29) Q.PEAK DUO BLK ML-G10 400W
INVERTER	(29) ENPHASE IQ8PLUS-72-2-US (240V) [S11-SB]

PV SYSTEM INFO
11.60 KW DC PV ARRAY
8.41 KW AC PV ARRAY

CUSTOMER INFO
KRISTIE KERCHEVAL
490 PRECIADO ST
POMONA
CA 91768

DESIGNED BY
ARKIM F.

REVISION —

DATE 4/13/2023

PAGE NAME
STRUCTURAL

SHEET
PV 3.1

UTILITY PROVIDER	:SCE
MAIN SERVICE VOLTAGE	:240
MAIN CIRCUIT BREAKER RATING	:150
SERVICE ENTRANCE	:OVERHEAD
METER NUMBER	:222013-211773

NEC 705.12.B(2)(3)(B)

ONLY A C-10 OR B LICENSED CONTRACTOR IS PERMITTED TO INSTALL/UPGRADE SERVICE EQUIPMENT OR DOWNSIZE THE MAIN BREAKER 82-8(c)(2)

DESIGNED IN ACCORDANCE TO MINIMUM NEC STANDARDS FOR WIRE AND BREAKER SIZE. INSTALLATION MAY DEVIATE SLIGHTLY, AS REQUIRED ON SITE

CAUTION
INSTALLATION & INTERCONNECTION OF PV EQUIPMENT SHOULD BE DONE BY A CERTIFIED ELECTRICIAN

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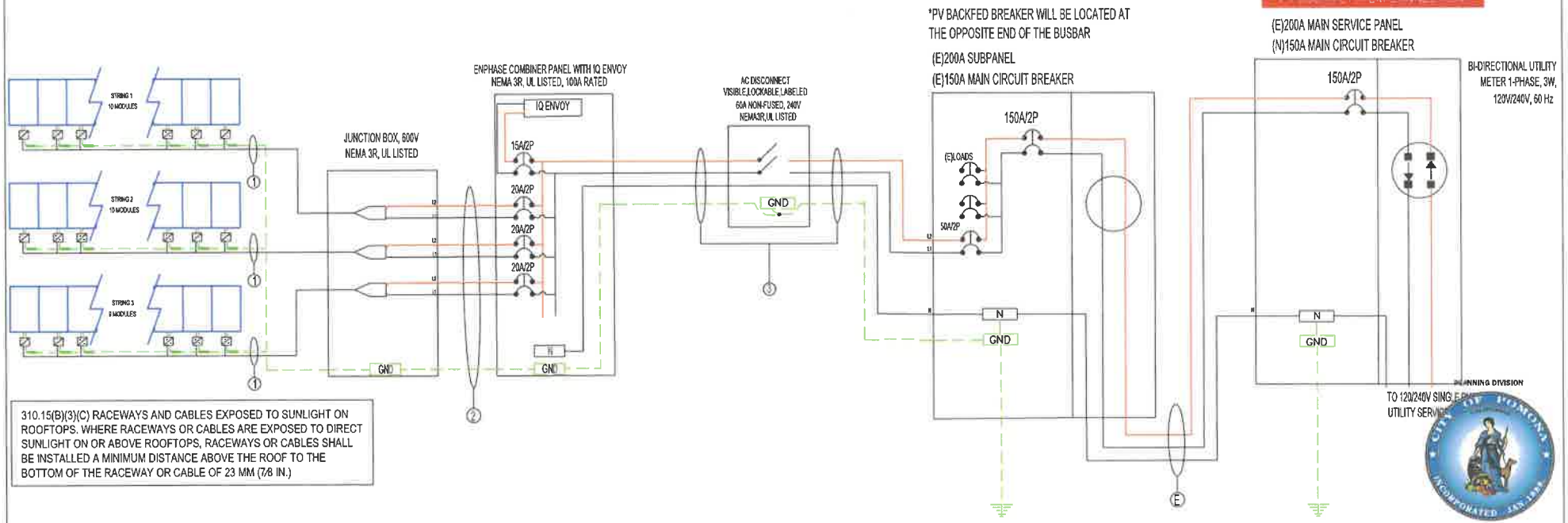
ALL STRINGS CONNECTED IN PARALLEL

DO NOT UPSIZE MAIN BREAKER
BREAKER HAS BEEN DOWN SIZED FOR PV SOLAR SYSTEM CONNECTION



310.15(B)(3)(C) RACEWAYS AND CABLES EXPOSED TO SUNLIGHT ON ROOFTOPS. WHERE RACEWAYS OR CABLES ARE EXPOSED TO DIRECT SUNLIGHT ON OR ABOVE ROOFTOPS, RACEWAYS OR CABLES SHALL BE INSTALLED A MINIMUM DISTANCE ABOVE THE ROOF TO THE BOTTOM OF THE RACEWAY OR CABLE OF 23 MM (7/8 IN.)

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#1	1	Q CABLE	**#2**	6	10 AWG THHN/THWN-2
	1	6 AWG SOLID BARE COPPER		1	10 AWG THHN/THWN-2 GND
				1	CONDUIT KIT 3/4" EMT
#3	3	8 AWG THHN/THWN-2			
	1	10 AWG THHN/THWN-2 GND			
	1	CONDUIT KIT 3/4" EMT			

PROJECTSOLAR

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8.41 KW AC PV ARRAY

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490 PRECIADO ST
POMONA
CA 91768

DESIGNED BY
ARKIM F.

REVISION: ---
DATE: 4/13/2023

PAGE NAME: MULTILINE DIAGRAM
SHEET: PV 4.0

ELECTRICAL NOTES

1. ENPHASE IQ8 SERIES MICROINVERTERS DO NOT REQUIRE GROUNDING ELECTRODE CONDUCTORS OR EQUIPMENT GROUNDING CONDUCTORS, THE MICROINVERTERS ITSELF HAS CLASS II DOUBLE-INSULATED RATING, WHICH INCLUDES GROUND FAULT PROTECTION.
2. ENPHASE Q CABLE HAS NO NEUTRAL WIRE - (2 WIRE DOUBLE INSULATED CABLING)
3. RAILS ARE BONDED WITH UL 2703 RATED LAY-IN LUGS
4. BARE COPPER IS TRANSITIONED TO THHN/THWN-W VIA IRREVERSIBLE CRIMP; GEC TO BE CONTINUOUS PER CEC 250.64(C)
5. ENPHASE IQ ENVOY INSIDE IQ COMBINER REQUIRES A NEUTRAL TO BE LANDED AT THE NEUTRAL BUSS AT MAIN PANEL PER ENPHASE INSTALLATION INSTRUCTIONS.
6. ENPHASE MICROINVERTERS ARE ALL RAPID SHUTDOWN READY PER NEC 690.12
7. DISCONNECT SHALL BE INSTALLED WITHIN 10FT OF BI-DIRECTIONAL UTILITY METER, OR BE PROPERLY LABELED WITH DIRECTIONAL MAPPING.
8. INVERTER SHALL BE CERTIFIED UNDER UL1741.
9. 24/7 UNESCORTED KEYLESS ACCESS SHALL BE PROVIDED TO UTILITY EQUIPMENT.
10. THERE ARE 1 UTILITIES TO THE PROPERTY BUT NOT OVER THE ROOF.
11. THIS SYSTEM IS GRID-INTERTIED VIA A UL-LISTED POWER-CONDITIONING INVERTER.
12. A NATIONALLY - RECOGNIZED TESTING LABORATORY SHALL LIST ALL EQUIPMENT IN COMPLIANCE WITH ART. 110.3.
13. WHERE ALL TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A SIGN WILL BE PROVIDED WARNING OF THE HAZARDS PER ART. 690.12(B)
14. CIRCUITS OVER 250V TO GROUND SHALL COMPLY WITH ART. 250.97, 250.92(B).
15. .ALL WIRES SHALL BE PROVIDED WITH STRAIN RELIEF AT ALL ENTRY INTO BOXES AS REQUIRED BY UL LISTING.
16. MODULE FRAMES SHALL BE GROUNDED AT THE UL - LISTED LOCATION PROVIDED BY THE MANUFACTURER USING UL LISTED GROUNDING HARDWARE.
17. MODULE FRAMES, RAIL, AND POSTS SHALL BE BONDED WITH EQUIPMENT GROUND CONDUCTORS.

SYSTEM CALCULATIONS

MODULE OPERATING CURRENT =11.14 A
INVERTER MAX INPUT CURRENT=15 A
11.14 A < 15 A, OK
MODULE OPERATING VOLTAGE = 38.09 V
INVERTER INPUT OPERATING VOLTAGE RANGE = 16 V - 60 V
16 V < 38.09 V < 60 V, OK
MODULE Voc = 45.55 V
VOLTAGE CORRECTION FACTOR = 1.14
45.55 V (1.14) = 51.93 V
INVERTER MAX INPUT VOLTAGE = 60 V
51.93 V < 60 V, OK
MODULE ISC = 11.14 A

INVERTER SPECIFICATIONS

MANUFACTURER/MODEL #	ENPHASE IQ8PLUS-72-2-US (240V) [SI1-SB]
MIN/MAX DC VOLT RATING	25-58V
MAX INPUT POWER	235W-440W
NOMINAL AC VOLTAGE RATING	240/211-264V
MAX AC CURRENT	1.21A
MAX MODULES PER CIRCUIT	10 (SINGLE PHASE)
MAX OUTPUT POWER	290 VA

SOLAR MODULE SPECIFICATION

MANUFACTURER/MODEL #	Q.PEAK DUO BLK ML-G10 400W
VMP	38.09 V
IMP	10.45 A
VOC	45.55 V
ISC	11.14 A
TEMP. COEFF. VOC	-0.27%/K
MODULE DIMENSION	74in x 41.1in x1.26in

NUMBER OF MICROINVERTERS IN CIRCUIT #1 = 10 INVERTER MAX OUTPUT CURRENT = 1.21 A
10(1.21 A) (1.25) = 15.125 A, USE 20 A BREAKER
NUMBER OF MICROINVERTERS IN CIRCUIT #2 = 10 INVERTER MAX OUTPUT CURRENT = 1.21 A
10(1.21 A) (1.25) = 15.125 A, USE 20 A BREAKER
NUMBER OF MICROINVERTERS IN CIRCUIT #3 = 9 INVERTER MAX OUTPUT CURRENT = 1.21 A
9(1.21 A) (1.25) = 13.6125 A, USE 20 A BREAKER

TOTAL SOLAR BACKFEED

TOTAL INVERTERS = 29
29 X 1.21 X 1.25 = 43.86 A; BREAKER USED: 50A

MAX SYSTEM VOLTAGE

Max String Length :10
Max Voltage (V) :240 V

UTILITY METER

MSP DEADPLATE OFF

SUBPANEL DEADPLATE OFF

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License #: 1099181, C10
Expiry Date : 11/30/2024
JACOB MICHAEL WESTPHAL
Jacob Michael Westphal

PROJECTSOLAR

JOB NUMBER	5803816732
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PV SYSTEM INFO
11.60 KW DC PV ARRAY
8.41 KW AC PV ARRAY

CUSTOMER INFO
KRISTIE KERCHEVAL
490 PRECIADO ST
POMONA
CA 91768

DESIGNED BY
ARKIM F.

REVISION =

DATE 4/13/2023

PAGE NAME ELECTRICAL CALCS
SHEET PV 4.1

PROJECTSOLAR

Residential Load Calculation Worksheet **NEC 220.83 & 220.60**

Conditions: Added equipment/accessory structure to an existing service in a single family dwelling.
(IE: Hot tub, swimming pool, HVAC upgrade, car charger, solar, etc.)

Existing plus Added Loads (less HVAC)

2300	sq. ft. @ 3 watts sq. ft	6900	watts
6	Small Appliance Circuits @ 1500 watts ea. (Minimum is two)	9000	watts
1	Laundry Circuit(s) @ 1500 watts ea. (Minimum is one)	1500	watts
0	Electric Water Heater	0	watts
0	Heaters	0	watts
			watts
			watts
			watts
1030	Dishwasher	1030	watts
960	Disposal	960	watts
			watts
			watts
1440	Microwave Oven	1440	watts
			watts
			watts
			watts
	Total Calculated Load (less HVAC)	20830	watts

HVAC Load (Only Choose ONE)

Compute the HVAC load and enter the LARGER of these air-conditioning or space heating loads

Air Conditioning Load (Volts X Amps = Watts)		watts
Furnace/Air Handler (Volts X Amps = Watts)	7200	
OR		
Electric Space Heating Load (Volts X Amps = Watts) (Central electric furnace, electric baseboard heaters, ceiling radiant heat, etc.)		watts
OR		
Heat Pump with Central Electric Furnace (Volts X Amps = Watts) (Nameplate rating of heat pump compressor plus electric furnace)		watts
HVAC Load	7,200	watts

Service Demand
Total Computed Load (NEC 220.83)

	First 8kw of Total Calculated Load (less HVAC) @ 100%	8000	watts
	Remainder of Total Calculated Load (less HVAC) @ 40%	5132	watts
	HVAC Load @ 100%	7,200	watts
	Car Charger @125%	0	watts
	Calculated Service Load	20332	watts

Calculated Service Load			Service Voltage	
20332	watts	/	240	84.72 amps

This Calculation is subject to field verification by inspector

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JACOB MICHAEL WESTPHAL
Jacob Michael Westphal

PROJECTSOLAR

		PV SYSTEM INFO	CUSTOMER INFO		
JOB NUMBER	5803816732		KRISTIE KERCHEVAL	DESIGNED BY	PAGE NAME
MOUNTING SYSTEM	IRONRIDGE, L-MOUNT	11.60 KW DC PV ARRAY	490 PRECIADO ST	ARKIM F.	LOAD CALCULATION
MODULES	(29) Q.PEAK DUO BLK ML-G10 400W	8.41 KW AC PV ARRAY	POMONA	REVISION / DATE	SHEET
INVERTER	(29) ENPHASE IQ8PLUS-72-2-US (240V) [SI1-SB]		CA 91768	--- 4/13/2023	PV 4.2

MAIN PHOTOVOLTAIC

SYSTEM DISCONNECT

NEC 690.13(B) Each PV system disconnecting means shall plainly indicate whether in the open (off) or closed (on) position and be permanently marked: "PV SYSTEM DISCONNECT" Or equivalent

⚠ WARNING

ELECTRIC SHOCK HAZARD

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

690.13(B) & 690.15(C) (Where all terminals of the disconnecting means may be energized in the open position, a warning sign shall be mounted on or adjacent to the disconnecting means.)

⚠WARNING

705.12 (B)(3)(2) (A permanent warning label shall be applied to the distribution equipment adjacent to the back-fed breaker from the inverter.)

⚠WARNING

705.12 (B)(3)(3) (Permanent warning labels shall be applied to distribution equipment)

PHOTOVOLTAIC AC DISCONNECT

43.86 A

240V

NEC 690.54(All interactive system(s) points of interconnection with other sources shall be marked at an accessible location at the disconnecting means as a power source and with the rated ac output current and the nominal operating ac voltage.)

PHOTOVOLTAIC

AC DISCONNECT

NEC 690.13(B) Each PV system disconnecting means shall plainly indicate whether in the open (off) or closed (on) position and be permanently marked: "PV SYSTEM DISCONNECT" Or equivalent.

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

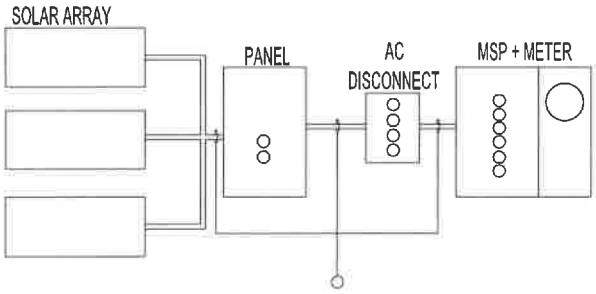
690.56 (C) Buildings with PV systems shall have a permanent label located at each service equipment location to which the PV systems are connected or at an approved readily visible location and shall indicate the location of rapid shutdown initiation devices. The label shall include a simple diagram of a building with a roof and shall include the following words: The title "SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN" shall utilize capitalized characters with a minimum height of 3/8 in. in black on yellow background, and the remaining characters shall be capitalized with a minimum height of 3/16 in. in black on white background.)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

690.56 (C) (2) (A rapid shutdown switch shall have a label located on or no more than 3 ft from the switch that includes this wording. The label shall be reflective, with all letters capitalized and having a minimum height of 3/8 in., in white on red background.)

DO NOT UPSIZE MAIN BREAKER

BREAKER HAS BEEN DOWN-SIZED FOR PV SOLAR SYSTEM CONNECTION



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JACOB MICHAEL WESTPHAL

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PV SYSTEM INFO

11.60 KW DC PV ARRAY

8.41 KW AC PV ARRAY

CUSTOMER INFO

KRISTIE KERCHEVAL

490 PRECIADO ST

POMONA

CA 91768

DESIGNED BY

ARKIM F.

REVISION ---

DATE 4/13/2023

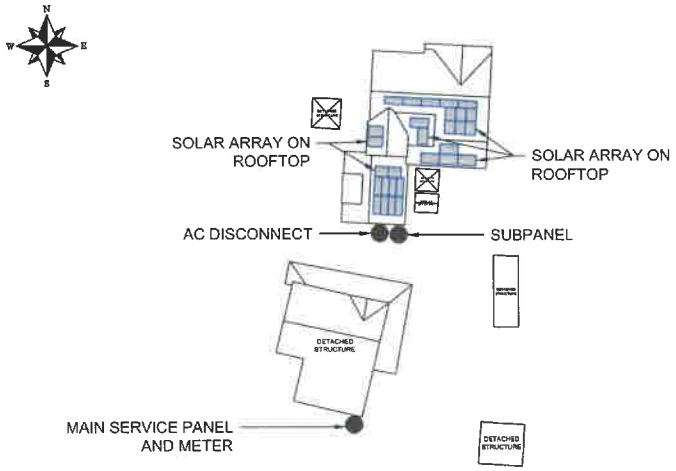
PAGE NAME LABELS

SHEET PV 5.0

NEC 690.54
(A permanent plaque or directory shall be installed at each service equipment location, or at an approved readily visible location. The plaque or directory shall denote the location of each power source disconnecting means for the building or structure and be grouped with other plaques or directories for other on-site sources. The plaque or directory shall be marked with the wording "CAUTION: MULTIPLE SOURCES OF POWER." Any posted diagrams shall be correctly oriented with respect to the diagram's location. The marking shall comply with 110.21(B).)

CAUTION

MULTIPLE SOURCES OF POWER
WITH AC DISCONNECTS LOCATED AS SHOWN



PLACARD

1 OF 1

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INCORPORATED JAN. 1888
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PAGE NAME PLACARD

SHEET PV 5.1

powered by Q.ANTUM DUO Z

Q.PEAK DUO BLK ML-G10+

385-405

ENDURING HIGH PERFORMANCE

25 YR Warranty Product & Performance

TOP BRAND PV EUROPE 2021

Q CELLS Yield Security

BREAKING THE 20 % EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9 %.

THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

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 Technology, Anti PID Technology[2], 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).

A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty[2].

[1] APT test conditions according to IEC/TS 62804-1:2015, method A (−1500 V, 96 h)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

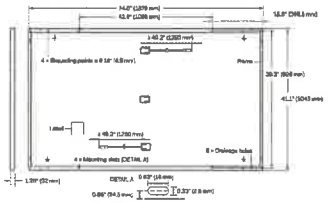
Rooftop arrays on residential buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
Weight	48.5 lbs (22.0 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 × 22 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09–3.98 in × 1.26–2.36 in × 0.59–0.71 in (53–101 mm × 32–60 mm × 15–18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥ 49.2 in (1250 mm), (−) ≥ 49.2 in (1250 mm)
Connector	Stäubli MC4; IP68

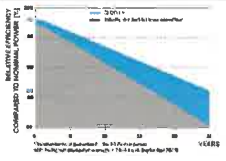


ELECTRICAL CHARACTERISTICS

POWER CLASS				385	390	395	400	405
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / −0 W)								
Minimum	Power at MPP[3]	P_{MPP}	[W]	385	390	395	400	405
	Short Circuit Current[4]	I_{SC}	[A]	11.04	11.07	11.10	11.14	11.17
	Open Circuit Voltage[4]	V_{OC}	[V]	45.19	45.23	45.27	45.30	45.34
	Current at MPP	I_{MPP}	[A]	10.59	10.65	10.71	10.77	10.83
	Voltage at MPP	V_{MPP}	[V]	36.36	36.62	36.88	37.13	37.39
	Efficiency[4]	η	[%]	≥ 19.6	≥ 19.9	≥ 20.1	≥ 20.4	≥ 20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]								
Minimum	Power at MPP	P_{MPP}	[W]	288.8	292.6	296.3	300.1	303.8
	Short Circuit Current	I_{SC}	[A]	8.90	8.92	8.95	8.97	9.00
	Open Circuit Voltage	V_{OC}	[V]	42.62	42.65	42.69	42.72	42.76
	Current at MPP	I_{MPP}	[A]	8.35	8.41	8.48	8.51	8.57
	Voltage at MPP	V_{MPP}	[V]	34.59	34.81	35.03	35.25	35.46

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

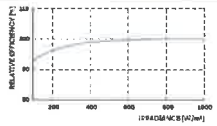
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.5 % degradation per year. At least 93.5 % of nominal power up to 10 years. At least 86 % 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 organisation 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]	−0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	−0.34	Nominal 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)	PV module classification	
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	
Max. Design Load, Push / Pull[3]	[lbs/ft²]	75 (3600 Pa) / 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	
Max. Test Load, Push / Pull[3]	[lbs/ft²]	113 (5400 Pa) / 84 (4000 Pa)		

[3] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, Quality Controlled PV - TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells), QCPV Certification ongoing.

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PACKAGING INFORMATION

Number of packaging	Height	Width	Length	43.3 in	48.0 in	1656 lbs	24 pallets	24 pallets	32 modules
	1940 mm	1100 mm	1220 mm			751 kg			

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.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us

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Q CELLS Q.PEAK DUO BLK ML-G10+_385-405_2021-04_Rev01_NA Specifications subject to change without notice.

ENPHASE

IQ8 Series Microinverters

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

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

Enphase 25

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

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

UL CERTIFIED

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

Easy to install

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

High productivity and reliability

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

Microgrid-forming

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

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

IQ8 Series Microinverters

INPUT DATA							
Commonly used module pairings[3]	W	235 – 350	235 – 440	260 – 460	295 – 500	320 – 540+	295 – 500+
Module compatibility		60-cell/120 half-cell		60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell			
MPPT voltage range	V	27 – 37	29 – 45	33 – 45	36 – 45	38 – 45	38 – 45
Operating range	V	25 – 48			25 – 58		
Min/max start voltage	V	30 / 48			30 / 58		
Max input DC voltage	V	50			60		
Max DC current[3] [module Isc]	A	15					
Overvoltage class DC port		II					
DC port backfeed current	mA	0					
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit					
OUTPUT DATA (AC)		IQ8M-208-72-2-US	IQ8M-240-72-2-US	IQ8M-208-72-2-US	IQ8A-240-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-US
Peak output power	VA	245	300	330	366	384	366
Max continuous output power	VA	240	290	325	349	380	360
Nominal (L-L) voltage/range[4]	V	240 / 211 – 264					208 / 183 – 250
Max continuous output current	A	1.0	1.21	1.35	1.45	1.58	1.73
Nominal frequency	Hz	60					
Extended frequency range	Hz	50 – 68					
AC short circuit fault current over 3 cycles	Arms	2					4.4
Max units per 20 A (L-L) branch circuit[5]		16	13	11	11	10	9
Total harmonic distortion		<5%					
Overvoltage class AC port		III					
AC port backfeed current	mA	30					
Power factor setting		1.0					
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging					
Peak efficiency	%	97.5	97.6	97.6	97.6	97.6	97.4
CEC weighted efficiency	%	97	97	97	97.5	97	97
Night-time power consumption	mW	60					
MECHANICAL DATA							
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)					
Relative humidity range		4% to 100% (condensing)					
DC Connector type		MC4					
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")					
Weight		1.08 kg (2.38 lbs)					
Cooling		Natural convection – no fans					
Approved for wet locations		Yes					
Pollution degree		PD3					
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure					
Environ. category / UV exposure rating		NEMA Type 6 / outdoor					
COMPLIANCE							
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/C					
		This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.					

(1) The IQ8H-208 variant will be operating in grid-tied mode only at 208V AC. (2) No enforced DC/AC ratio. See the compatibility calculator at https://link.enphase.com/module-compatibility (3) Maximum continuous input DC current is 10.6A (4) Nominal voltage range can be extended beyond nominal if required by the utility. (5) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

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

Tech Brief

IRONRIDGE

QuickMount™ L-Mount®

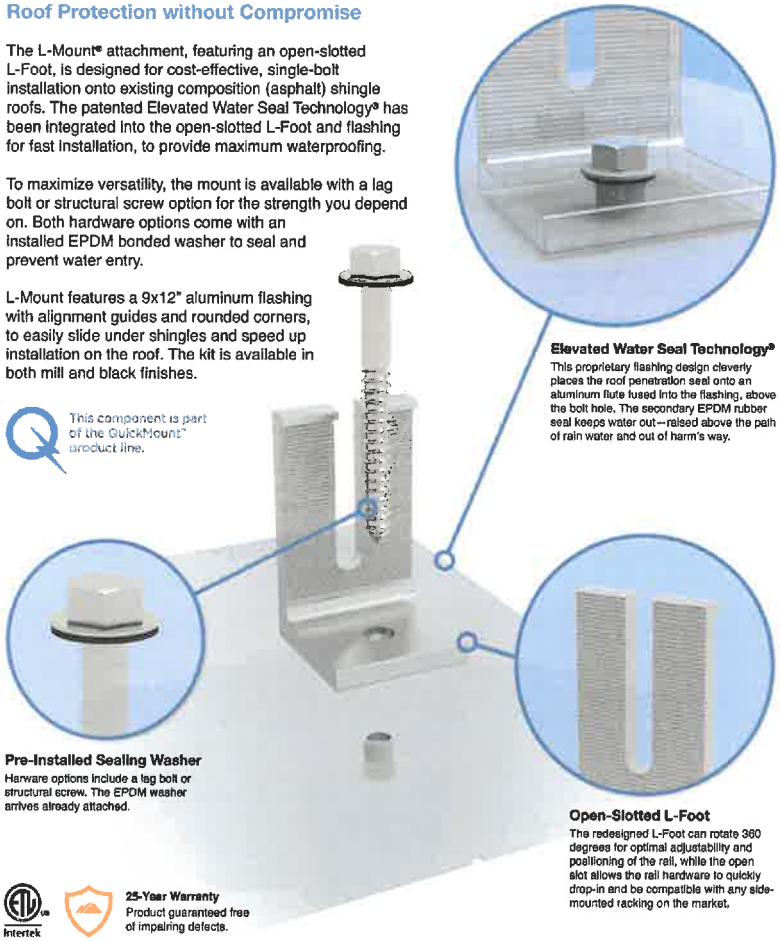
Roof Protection without Compromise

The L-Mount® attachment, featuring an open-slotted L-Foot, is designed for cost-effective, single-bolt installation onto existing composition (asphalt) shingle roofs. The patented Elevated Water Seal Technology® has been integrated into the open-slotted L-Foot and flashing for fast installation, to provide maximum waterproofing.

To maximize versatility, the mount is available with a lag bolt or structural screw option for the strength you depend on. Both hardware options come with an installed EPDM bonded washer to seal and prevent water entry.

L-Mount features a 9x12" aluminum flashing with alignment guides and rounded corners, to easily slide under shingles and speed up installation on the roof. The kit is available in both mill and black finishes.

This component is part of the QuickMount™ product line.



Elevated Water Seal Technology®
This proprietary flashing design cleverly places the roof penetration seal onto an aluminum flute fused into the flashing, above the bolt hole. The secondary EPDM rubber seal keeps water out—raised above the path of rain water and out of harm's way.

Pre-Installed Sealing Washer
Hardware options include a lag bolt or structural screw. The EPDM washer arrives already attached.

Open-Slotted L-Foot
The redesigned L-Foot can rotate 360 degrees for optimal adjustability and positioning of the rail, while the open slot allows the rail hardware to quickly drop-in and be compatible with any side-mounted racking on the market.

Intertek

25-Year Warranty
Product guaranteed free of impairing defects.

Tech Brief

L-Mount® Installation Instructions

Installation Tools Required: tape measure, roofing bar, chalk line, stud finder, caulking gun, sealant compatible with roofing materials, drill with 7/32" or 1/8" bit, drill or impact gun with 1/2" socket.

Locate, choose, and mark centers of rafters to be mounted. Select the courses of shingles where mounts will be placed.

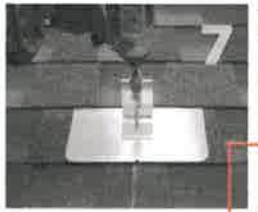
Carefully lift composition roof shingle with roofing bar, just above placement of mount. Remove nails as required and backfill holes with aproved sealant. See "Proper Flashing Placement" on next page.

Insert flashing between 1st and 2nd course. Slide up so top edge of flashing is at least ¾" higher than the butt-edge of the 3rd course and lower flashing edge is above the butt-edge of 1st course. Mark center for drilling.

If attaching with lag bolt use a 7/32" bit (Lag). Use a ⅛" bit (ST) for attaching with the structural screw. Drill pilot hole into roof and rafter, taking care to drill square to the roof. Do not use mount as a drill guide. Drill a 2" deep hole into rafter.

Clean off any sawdust, and fill hole with sealant compatible with roofing materials.

Place L-foot onto elevated flute and rotate L-foot to desired orientation.



Prepare lag bolt or structural screw with sealing washer. Using a ½-Inch socket on an impact gun, drive prepared lag bolt through L-foot until L-foot can no longer easily rotate. **DO NOT over-torque.** NOTE: Structural screw can be driven with T-30 Torx head bit.

You are now ready for the rest of your racking. Follow all the directions of the rack manufacturer as well as the module manufacturer. NOTE: Make sure top of L-Foot makes solid contact with racking.

All roofing manufacturers' written instructions must also be followed by anyone modifying a roof system. Consult the roof manufacturer's specs and instructions prior to working on the roof.

Tech Brief

IRONRIDGE

UFO Family of Components

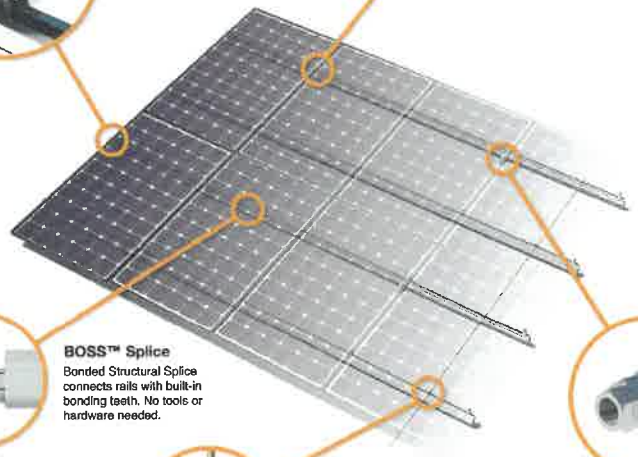
Simplified Grounding for Every Application

The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.

Universal Fastening Object (UFO)
The UFO securely bonds solar modules to XR Rails. It comes assembled and lubricated, and can fit a wide range of module heights.

Stopper Sleeve
The Stopper Sleeve snaps onto the UFO, converting it into a bonded end clamp.



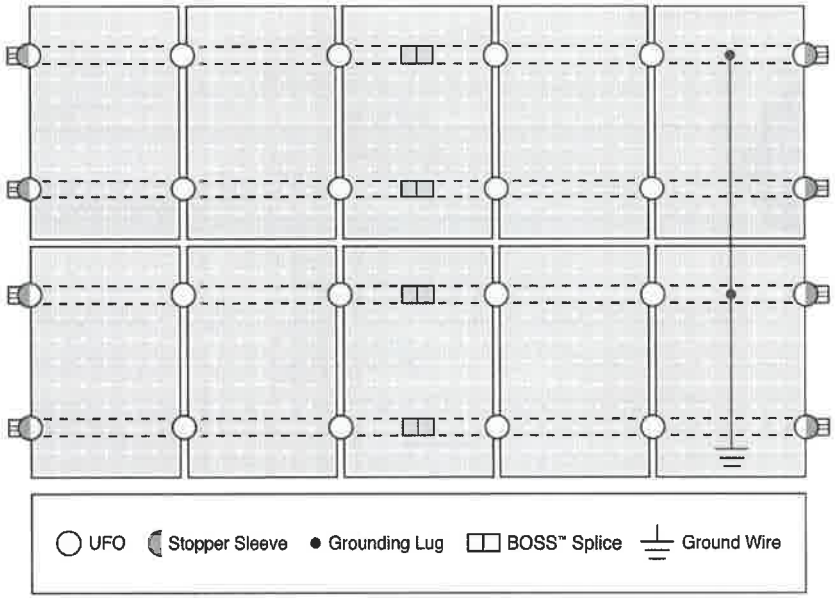
BOSS™ Splice
Bonded Structural Splice connects rails with built-in bonding teeth. No tools or hardware needed.

Grounding Lug
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.

Bonded Attachments
The bonding bolt attaches and bonds the L-foot to the rail. It is installed with the same socket as the rest of the system.

Tech Brief

System Diagram



Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to IronRidge.com/UFO

Cross-System Compatibility

Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails	✔	✔	XR1000 Only
UFO/Stopper	✔	✔	✔
BOSS™ Splice	✔	✔	✔
Grounding Lugs	1 per Row	1 per Row	1 per Row
Microinverters & Power Optimizers	Enphase - M250-72, M250-60, M215-[illegible] Darfon - MIG240, MIG300, G320 SolarEdge - P300, P320, P400, P405, P60[illegible]		
Fire Rating	Class A	Class A	Class A
Modules	Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for a detailed list.		

Data Sheet
Enphase Networking

Enphase IQ Combiner 4/4C

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

X-IQ-AM1-240-4C

X-IQ-AM1-240-4

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

Smart

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

Simple

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

Reliable

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

UL LISTED

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Enphase IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Cellular	[illegible] based LTE-M1 cellular modem). Note that [illegible] Mobile Connect [illegible] required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES-003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

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making solar simple.

JB-1

Specification Sheet

PV Junction Box for Composition/Asphalt Shingle Roofs

A. System Specifications and Ratings

- Maximum Voltage: 600 Volts
- Maximum Current: 60 Amps
- Allowable Wire: 14 AWG – 6 AWG
- Spacing: Please maintain a spacing of at least ½" between uninsulated live parts and fittings for conduit, armored cable, and uninsulated live parts of opposite polarity.
- Enclosure Rating: Type 3R
- Roof Slope Range: 2.5 – 12:12
- Max Side Wall Fitting Size: 1"
- Max Floor Pass-Through Fitting Size: 1"
- Ambient Operating Conditions: (-35°C) - (+75°C)
- Compliance:
  - JB-1: UL1741
  - Approved wire connectors: must conform to UL1741
- System Marking: **Interek Symbol and File #5015705**
- Periodic Re-inspections: If re-inspections yield loose components, loose fasteners, or any corrosion between components, components that are found to be affected are to be replaced immediately.

Table 1: Typical Wire Size, Torque Loads and Ratings

	1 Conductor	2 Conductor	Torque				
			Type	NM	Inch Lbs	Voltage	Current
ABB ZS6 terminal block	10-24 awg	16-24 awg	Sol/Str	0.5-0.7	6.2-8.85	600V	30 amp
ABB ZS10 terminal block	6-24 awg	12-20 awg	Sol/Str	1.0-1.6	8.85-14.16	600V	40 amp
ABB ZS16 terminal bock	4-24 awg	10-20 awg	Sol/Str	1.6-2.4	14.6-21.24	600V	60 amp
ABB M6/8 terminal block	8-22 awg		Sol/Str	.08-1	8.85	600V	50 amp
Ideal 452 Red WING-NUT Wire Connector	8-18 awg		Sol/Str			600V	
Ideal 451 Yellow WING-NUT Wire Connector	10-18 awg		Sol/Str			600V	
Ideal, In-Sure Push-In Connector Part #39	10-14 awg		Sol/Str			600V	
WAGO, 221-612	10-14 awg		Sol/Str			600V	
International Hydraulics 252/0	10-14 awg		Sol/Str	4	35		
	8 awg		Sol/Str	4.5	40		
Brumall 4-5,3	4-6 awg		Sol/Str		45	2000V	
	10-14 awg		Sol/Str		35		
Blackburn LL414	4-14 awg		Sol/Str				

Table 2: Minimum wire-bending space for conductors through a wall opposite terminals in mm (inches)

Wire size, AWG or		Wires per terminal (pole)							
		1		2		3		4 or More	
kcmil	(mm2)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
14-10	(2.1-5.3)	Not specified				-			
8	(8.4)	38.1	(1-1/2)	-		-			
6	(13.3)	50.8	(2)	-		-			

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PLANNING DIVISION
CITY OF POMONA
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Tech Brief

IRONRIDGE

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.

Fire Testing Process

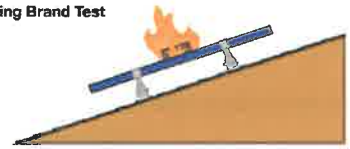
Test Setup

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.

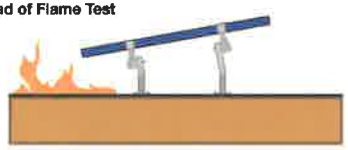
Roof Covering
Roof covering products are given a Fire Class Rating of A, B or C based on their tested fire resistance.

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.

System	Roof Slope	Module	Fire Rating*
Flush Mount	Any Slope	Type 1, 2, & 3	Class A
Tilt Mount	≤ 9.5 Degrees	Type 1, 2, & 3	Class A

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

Tech Brief

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