

PV-1

NOTES:

1. CONDUCTORS NORMALLY USED TO CARRY CURRENT SHALL BE OF COPPER. FOR ALUMINUM AND COPPER-CLAD ALUMINUM #6 AWG AND LARGER, SEE SEC. 310.15 CEC. EXCEPTION: ALUMINUM CONDUCTORS SMALLER THAN #6 AWG MAY BE USED PROVIDED THE METHOD OF CONNECTION IS APPROVED IN ADVANCE BY THE BUILDING OFFICIAL AND THE INSTALLATION IS MADE UNDER CONTINUOUS SPECIAL INSPECTION.

2. 250.53(A)(2). SUPPLEMENTAL ELECTRODE REQUIRED. A SINGLE ROD, PIPE, OR PLATE ELECTRODE SHALL BE SUPPLEMENTED BY AN ADDITIONAL ELECTRODE OF A TYPE SPECIFIED IN 250.52(A)(2) THROUGH (A)(8). THE SUPPLEMENTAL ELECTRODE SHALL BE PERMITTED TO BE BONDED LO ONE OF THE FOLLOWING:

- A. ROD, PIPE, OR PLATE ELECTRODE
- B. GROUNDING ELECTRODE CONDUCTOR
- C. GROUNDED SERVICE-ENTRANCE CONDUCTOR
- D. NONFLEXIBLE GROUNDED SERVICE RACEWAY
- E. ANY GROUNDED SERVICE ENCLOSURE

EXCEPTION: IF A SINGLE ROD, PIPE, OR PLATE GROUNDING ELECTRODE HAS A RESISTANCE TO EARTH OF 25 OHM OR LESS THE SUPPLEMENTAL ELECTRODE SHALL NOT BE REQUIRED.

F. SUPPLEMENTAL ELECTRODE, IF MULTIPLE ROD, PIPE, OR PLATE ELECTRODES ARE INSTALLED TO MEET THE REQUIREMENTS OF THIS SECTION THEY SHALL NOT BE LESS THAN 1.8 M (6 FT) APART.

3.

A SMOKE DETECTOR, APPROVED AND LISTED BY THE STATE FIRE MARSHAL, SHALL BE INSTALLED IN EACH DWELLING WHEN A PERMIT FOR ALTERATIONS, REPAIRS OR ADDITIONS EXCEEDS \$1,000.00. A BATTERY POWERED SMOKE DETECTOR SATISFIES THE REQUIREMENTS FOR A SMOKE DETECTOR. (R314.6.2 CRC)

4. PROVIDE SMOKE ALARMS AT THE FOLLOWING LOCATIONS AND NOTE ON THE PLANS; (R314.3 CRC)

- A. OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF BEDROOMS.
- B. IN EACH ROOM USED FOR SLEEPING PURPOSES.
- C. IN EACH STORY, INCLUDING BASEMENTS. IN SPLIT LEVEL UNITS WITHOUT AN INTERVENING DOOR BETWEEN ADJACENT
- D. ALARMS SHALL BE INTERCONNECTED SUCH THAT THE ACTUATION OF ONE ALARM SHALL ACTIVATE ALL ALARMS.
- E. ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WITH BATTERY BACKUP.
- F. APPROVED COMBINED SMOKE ALARMS AND CARBON DIOXIDE ALARMS SHALL BE ACCEPTABLE. LEVELS, A SMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL.

5. A CARBON MONOXIDE DETECTOR SHALL BE INSTALLED IN THE SPECIFIC EXISTING DWELLING UNIT THAT HAVE ATTACHED GARAGES OR FUEL-BURNING APPLIANCES FOR WHICH A PERMIT IS ISSUED FOR ALTERATIONS, REPAIRS OR ADDITIONS EXCEEDING \$1,000.00. LISTED SINGLE- OR MULTI-STATION CARBON MONOXIDE ALARMS SHALL BE INSTALLED OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS AND ON EVERY LEVEL OF A DWELLING UNIT INCLUDING BASEMENTS. COMBINED SMOKE/CARBON MONOXIDE ALARMS MAY BE USED. THE ALARM SHALL RECEIVE ITS PRIMARY POWER FROM THE BUILDING WIRING EXCEPT IT IS PERMITTED TO BE SOLELY BATTERY OPERATED WHERE REPAIRS OR ALTERATIONS DO NOT RESULT IN THE REMOVAL OF WALL AND CEILING FINISHES OR THERE IS NO ACCESS BY MEANS OF AN ATTIC. SHOW ON THE PLANS. (R315 CRC)

6. APPLICATIONS FOR WHICH NO PERMIT IS ISSUED WITHIN 180 DAYS FOLLOWING THE DATE OF APPLICATION SHALL AUTOMATICALLY EXPIRE.

7. EVERY PERMIT ISSUED SHALL BECOME INVALID UNLESS WORK AUTHORIZED IS COMMENCED WITHIN 180 DAYS, A SUCCESSFUL INSPECTION IS NOT OBTAINED WITHIN 180 DAYS, OR IF WORK IS SUSPENDED OR ABANDONED FOR A PERIOD OF 180 DAYS. PERMITS WHICH HAVE BECOME INVALID SHALL PAY A RENEWAL FEE OF 50% OF THE ORIGINAL PERMIT FEE AMOUNT WHEN THE PERMIT HAS BEEN EXPIRED FOR UP TO ONE (1) YEAR. WHEN A PERMIT HAS BEEN EXPIRED FOR A PERIOD IN EXCESS OF ONE (1) YEAR, THE RENEWAL FEE SHALL BE 100% OF THE ORIGINAL PERMIT FEE.

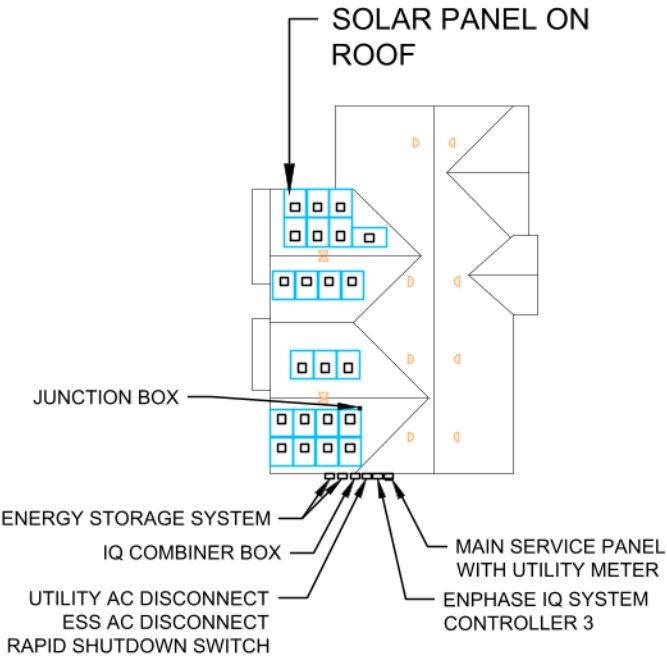
8. THE CONTRACTOR SHALL PROVIDE A WRITTEN LETTER TO THE BUILDING INSPECTOR STATING THAT ALL INACCESSIBLE STRUCTURAL CONNECTIONS HAVE BEEN INSTALLED IN CONFORMANCE WITH THE REQUIREMENTS OF THE APPROVED PLANS

	CONTRACTOR:	CLIENT:	
		COVER SHEET	
		REV: ----	03/26/2026
		PV-1.1	

- NOTES AND SPECIFICATIONS:
- SIGNS AND LABELS SHALL MEET THE REQUIREMENTS OF THE 2008 ARTICLE 110.21(B), UNLESS SPECIFIC INSTRUCTIONS ARE REQUIRED BY SECTION 690, OR IF REQUESTED BY THE LOCAL AHJ.
 - SIGNS AND LABELS SHALL ADEQUATELY WARN OF HAZARDS USING EFFECTIVE WORDS, COLORS AND SYMBOLS.
 - LABELS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HAND WRITTEN.
 - LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
 - SIGNS AND LABELS SHALL COMPLY WITH ANSI Z535.4-2011, PRODUCT SAFETY SIGNS AND LABELS, UNLESS OTHERWISE SPECIFIED.
 - DO NOT COVER EXISTING MANUFACTURER LABELS.

CAUTION:

MULTIPLE SOURCES OF POWER



WEATHER RESISTANT PLASTIC PLACARD
PLACEMENT: MAIN PANEL (COVER)
PER CODE: 110.21(B) [2025 CEC 705.10]

WARNING

ELECTRICAL SHOCK HAZARD

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

LABEL LOCATION: COMBINER PANEL, AC DISCONNECT, POINT OF INTERCONNECTION
PER CODE: CEC 706.15(C)(4), CEC 690.13(B)

WARNING

TURN OFF PHOTOVOLTAIC AC
DISCONNECT PRIOR TO
WORKING INSIDE PANEL

LABEL LOCATION: COMBINER PANEL(S), MAIN SERVICE DISCONNECT
PER CODE: CEC 110.27(C), OSHA 1910.145(f)(7)

PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION: DC CONDUIT/RACEWAYS
PER CODE: CEC 690.31(D)(2)

SOLAR PV DC CIRCUIT

LABEL LOCATION: DC CONDUIT/RACEWAYS
PER CODE: CEC 690.31(D)(2)

PHOTOVOLTAIC SYSTEM AC DISCONNECT

RATED AC OUTPUT CURRENT: 26.62 A

NOMINAL OPERATING AC VOLTAGE: 240 V

LABEL LOCATION: AC DISCONNECT/POINT OF INTERCONNECTION
PER CODE: CEC 690.54

WARNING MULTIPLE POWER SOURCE
SOURCES: UTILITY GRID, PV AND ESS SYSTEM

LABEL LOCATION: MAIN SERVICE DISCONNECT
PER CODE: CEC 705.12(B)(3-4), NEC 690.59

PV SYSTEM

DISCONNECT

LABEL LOCATION: AC DISCONNECT
PER CODE: CEC 690.13(B)

WARNING

THIS EQUIPMENT FED BY MULTIPLE
SOURCES:
TOTAL RATING OF ALL OVERCURRENT
DEVICES EXCLUDING MAIN POWER
SUPPLY SHALL NOT EXCEED
AMPACITY OF BUSBAR

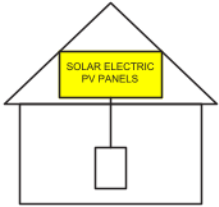
LABEL LOCATION: AC DISCONNECT
PER CODE: CEC 705.12(B)(3)(3)

WARNING
POWER SOURCE OUTPUT
CONNECTION. DO NOT RELOCATE
THIS OVERCURRENT DEVICE.

LABEL LOCATION: POINT OF INTERCONNECTION
PER CODE: CEC 705.12(B)(3)(2)

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: MAIN SERVICE DISCONNECT
PER CODE: CEC 690.56(C)

MAIN PHOTOVOLTAIC
SYSTEM DISCONNECT

LABEL LOCATION: MAIN SERVICE DISCONNECT, UTILITY METER
PER CODE: CEC 690.13(B)

RAPID SHUTDOWN FOR
SOLAR PV SYSTEM

LABEL LOCATION: RSD INITIATION DEVICE, AC DISCONNECT
PER CODE: CEC 690.56(C)(2)

DO NOT ENERGIZE –
UTILITY AND BATTERY
SOURCES PRESENT

LABEL LOCATION: LABEL SHALL BE
PERMANENTLY AFFIXED AT THE ESS AC
DISCONNECT LOCATION.

ENERGY STORAGE
SYSTEM DISCONNECT

LABEL LOCATION: LABEL SHALL BE
PERMANENTLY AFFIXED AT THE ESS AC
DISCONNECT LOCATION.
(PER CODE : CEC 706.15(C)).

DO NOT DISCONNECT
UNDER LOAD

LABEL LOCATION: MAIN SERVICE DISCONNECT
PER CODE: CEC 690.15(B) & CEC 690.33(D)(2)

MAXIMUM DC VOLTAGE

OF PV SYSTEM

LABEL LOCATION: DC DISCONNECT/INVERTER/PV DIST.
EQUIPMENT
PER CODE: CEC 690.53

WARNING

ELECTRICAL SHOCK HAZARD

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

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

LABEL LOCATION: DC DISCONNECT
PER CODE: CEC 690.13(B)

CAUTION
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION: MAIN SERVICE DISCONNECT
PER CODE: CEC 705.12(D), CEC 690.59

BUS BAR OVERLOAD PROTECTION USED TO LIMIT
CONTINUOUS CURRENT ON BUS BAR TO: 40A
THE MAXIMUM OUTPUT CURRENT FROM THIS
SYSTEM TOWARDS THE MAIN PANEL IS
CONTROLLED ELECTRONICALLY

NOTE: PCS WILL BE BASED ON CEC 2025
LABEL LOCATION: ESS UNIT(S)

CAUTION: THIS ELECTRICAL SERVICE IS
SUPPLIED BY THREE SOURCES OF POWER:
1. ELECTRICAL UTILITY GRID
2. SOLAR PHOTOVOLTAIC SYSTEM
3. BATTERY SYSTEM

LABEL LOCATION: SERVICE ENTRANCE, COMBINER, BATTERIES

CONTRACTOR:

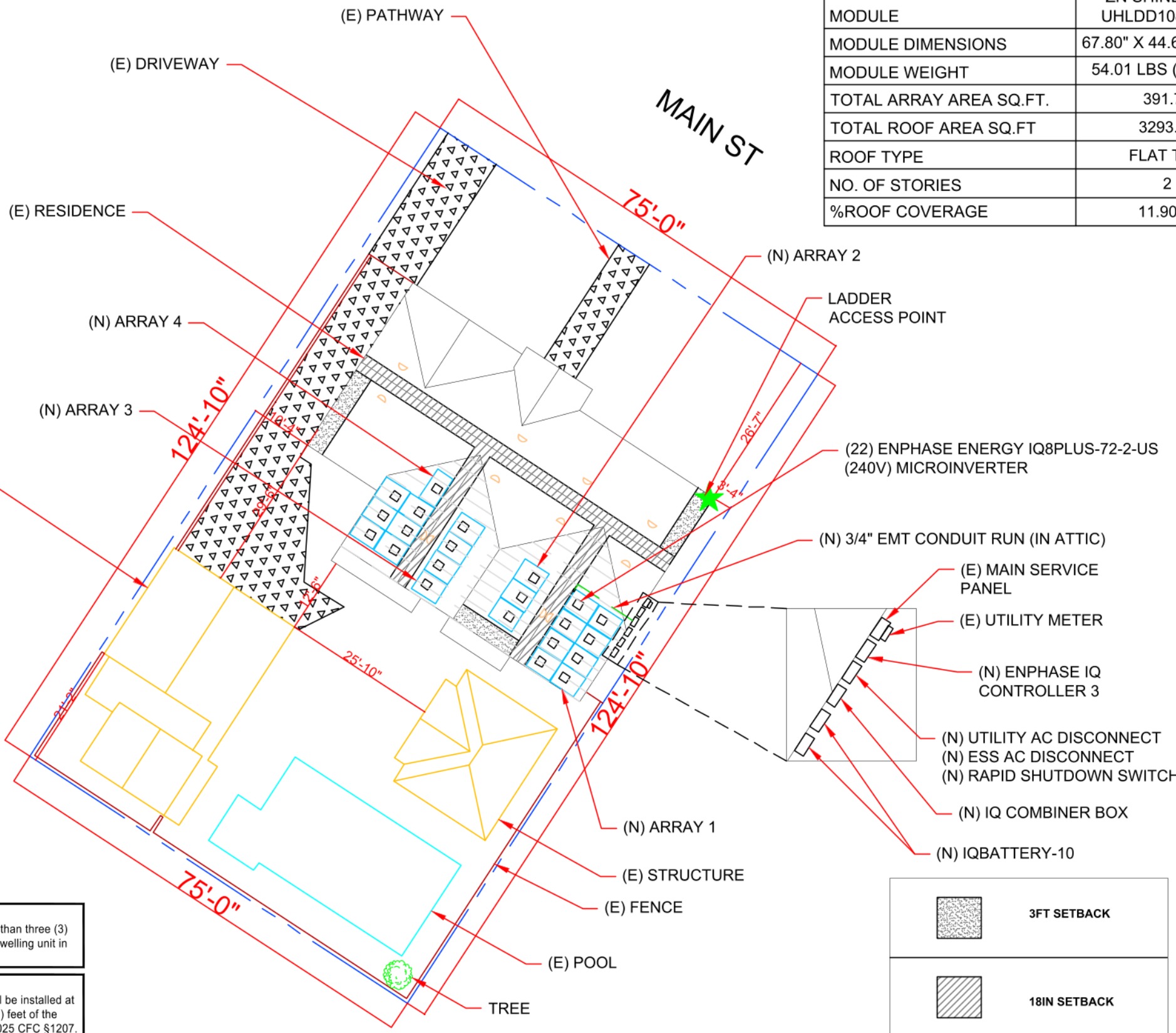
CLIENT:

SIGNAGE

REV: ---- 03/26/2026

PV-2

SITE PLAN
SCALE: 1"=20'-0"



MODULE	ZN SHINE ZXM7 UHLDD108-440/N
MODULE DIMENSIONS	67.80" X 44.65" X 1.18"
MODULE WEIGHT	54.01 LBS (24.5 KG)
TOTAL ARRAY AREA SQ.FT.	391.77
TOTAL ROOF AREA SQ.FT	3293.18
ROOF TYPE	FLAT TILE
NO. OF STORIES	2
%ROOF COVERAGE	11.90 %

	ROOF PITCH (DEG)	AZIMUTH (DEG)	PV AREA (SQ. FT)	NO. OF MODS
#1	34°	123°	143.03	8
#2	34°	303°	53.07	3
#3	34°	123°	70.89	4
#4	34°	303°	124.78	7

BILL OF MATERIALS		
EQUIPMENT	QTY.	DESCRIPTION
SOLAR PV MODULE	22	ZN SHINE ZXM7 UHLDD108-440/N
MICROINVERTER	22	ENPHASE ENERGY IQ8PLUS-72-2-US (240V)
COMBINER BOX	1	ENPHASE IQ COMBINER 5 W/ IQ GATEWAY (X-IQ-AM1-240-5)
JUNCTION BOX	1	4"X4"X4" JUNCTION BOX PVC JCT BOX W/CVR
AC DISCONNECT	1	60A NON-FUSED AC DISCONNECT, LOCKABLE,VISIBLE BLADE TYPE,NEMA 3R, 240V, 1Ø
ENERGY STORAGE	2	ENPHASE ENERGY INC. / (N) ENPHASE ENERGY INC. IQBATTERY-10-1P-NA
INTERCONNECTION DEVICE	1	IQ SYSTEM CONTROLLER 3 (SC200D111C240US01)
ATTACHMENT	53	QUICKMOUNT HALO ULTRA GRIP
RAILS	11	IRONRIDGE XR-10-168 RAIL 168"
RAIL SPLICE	6	RAIL SPLICE
MID CLAMPS	30	MID CLAMPS
END CLAMPS	28	END CLAMPS
GROUNDING LUG	7	WEB LUG

ESS CLEARANCE NOTE :
Energy Storage Systems shall be installed not less than three (3) feet from doors and windows directly entering the dwelling unit in accordance with 2025 CFC §1207.11.3.

ESS DISCONNECT NOTE :
A lockable Energy Storage System disconnect shall be installed at a readily accessible exterior location within three (3) feet of the utility meter, in compliance with CEC 705.23 and 2025 CFC §1207.

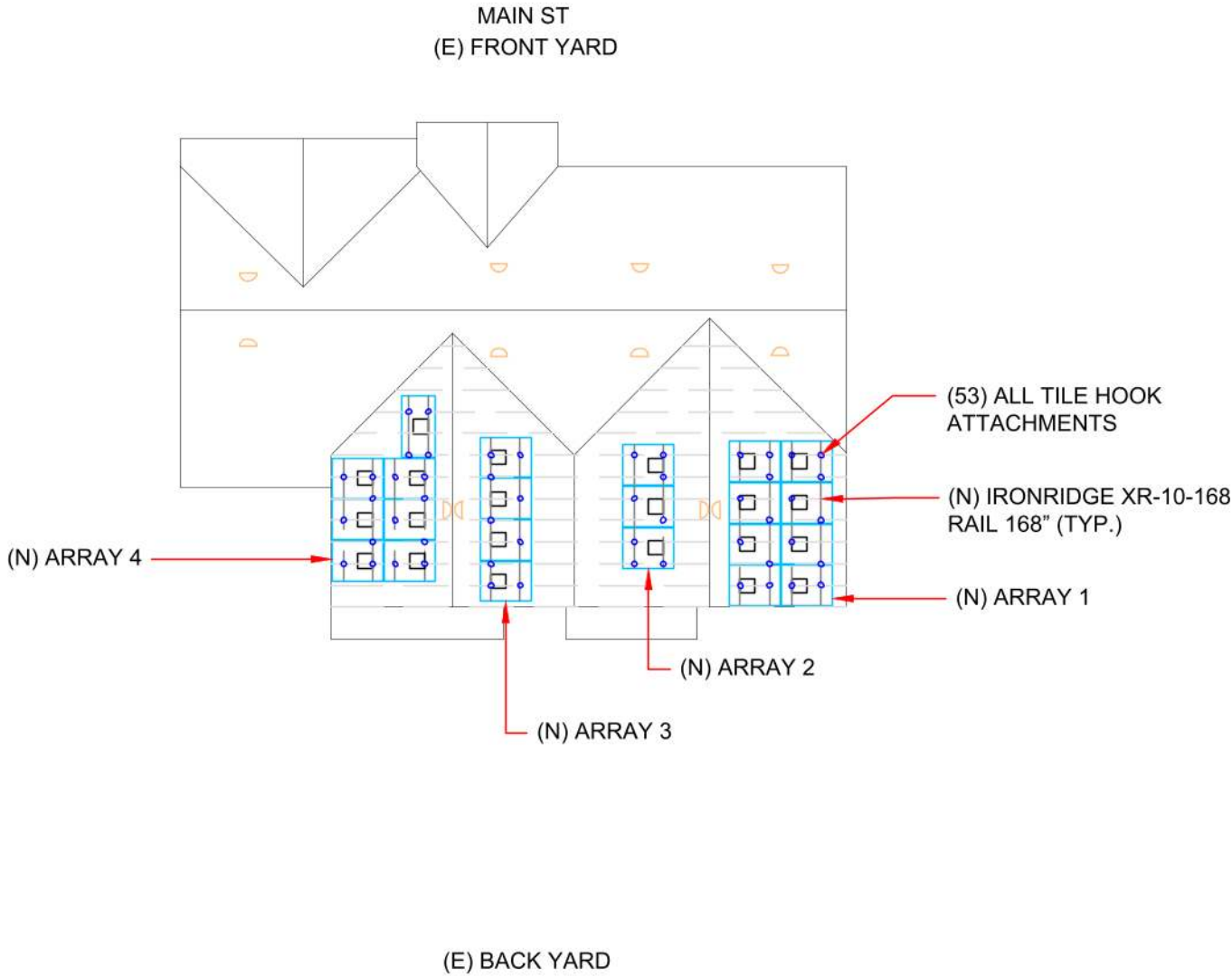
CONDUIT NOTES
CONDUIT TO BE RUN INSIDE ATTIC WHENEVER POSSIBLE AND UNDER EAVES; AND CLOSE TO RIDGELINES, LABELED AT MAX. 10' INTERVALS.
CONDUIT TO BE PAINTED TO MATCH EXTERIOR/EXISTING BACKGROUND COLOR OF ITS LOCATION

ENPHASE Q CABLE TO BE ATTACHED TO RAIL MIN. 3-1/2" ABOVE ROOF SURFACE

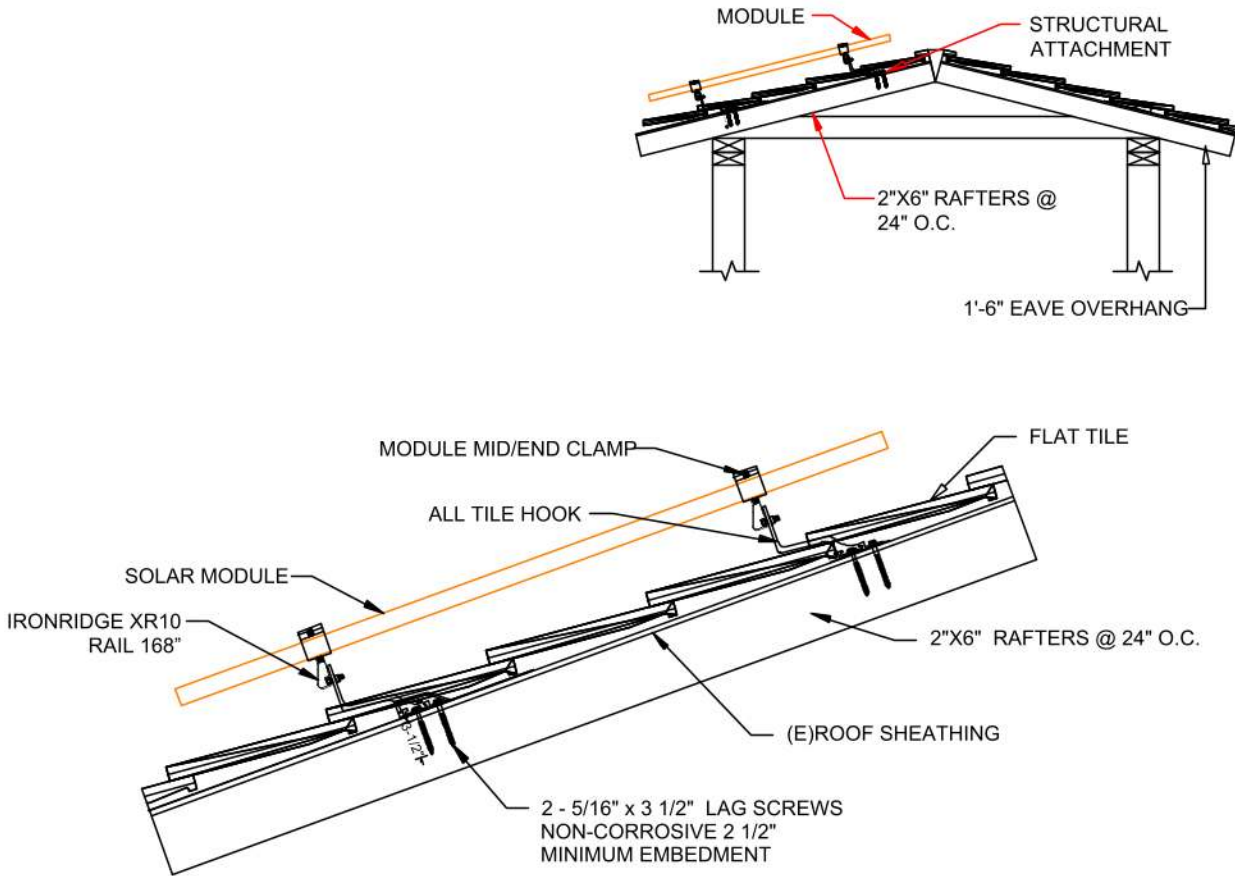
CONTRACTOR:	CLIENT:
	SITE PLAN
	REV: ---- 03/26/2026 PV-3

	ROOF PITCH (DEG)	AZIMUTH (DEG)	PV AREA (SQ. FT)	NO. OF MODS	ROOF TYPE	ROOF ATTACHMENT	ROOF HEIGHT	EXPOSURE	MATERIAL	CONSTRUCTION	RAFTER SIZE	RAFTER SPAN	RAIL ATTACHMENT SPACING	MAX CANTILEVER LENGTH
ARRAY 1	34°	123°	143.03	8	FLAT TILE	ALL TILE HOOK	2 - STORY	ATTIC	WOOD	RAFTER	2"X6"	24" O.C.	48" OC	1' - 8"
ARRAY 2	34°	303°	53.07	3	FLAT TILE	ALL TILE HOOK	2 - STORY	ATTIC	WOOD	RAFTER	2"X6"	24" O.C.	48" OC	1' - 8"
ARRAY 3	34°	123°	70.89	4	FLAT TILE	ALL TILE HOOK	2 - STORY	ATTIC	WOOD	RAFTER	2"X6"	24" O.C.	48" OC	1' - 8"
ARRAY 4	34°	303°	124.78	7	FLAT TILE	ALL TILE HOOK	2 - STORY	ATTIC	WOOD	RAFTER	2"X6"	24" O.C.	48" OC	1' - 8"

MODULE	ZN SHINE ZXM7 UHLDD108-440/N
MODULE DIMENSIONS	67.80" X 44.65" X 1.18"
MODULE WEIGHT	54.01 LBS (24.5 KG)
TOTAL ARRAY AREA	391.77 SQ. FT.
TOTAL ROOF AREA	3293.18 SQ. FT.
ROOF TYPE	FLAT TILE
MAX DISTRIBUTED LOAD	3 PSF
SNOW LOAD	0 PSF
WIND SPEED	95 MPH, 3 SEC GUST
WIND EXPOSURE	C



ROOF FRAMING DETAIL - SCALE: NTS



ROOF PLAN

SCALE: 1/16" = 1'-0"

PLUMBING AND OR MECHANICAL VENTS SHALL NOT BE COVERED, OBSTRUCTED OR RE-ROUTED AROUND SOLAR MODULES.

ALL CONDUITS AND EQUIPMENT SHALL BE PAINTED TO MATCH THE EXISTING BACKGROUND MATERIAL COLOR OF THEIR LOCATION.

NOTE:
CONTRACTOR/INSTALLER TO VERIFY COMPATIBILITY OF ANY BRANDS OR PRODUCTS SUBSTITUTED OR USED AS ALTERNATES WITHIN ANY BRAND-SPECIFIC SYSTEMS. CONTRACTOR SHALL SUPPLY AND PRESENT CERTIFICATES OF COMPATIBILITY TO THE BUILDING OFFICIAL UPON INSPECTION.

CONTRACTOR:

CLIENT:

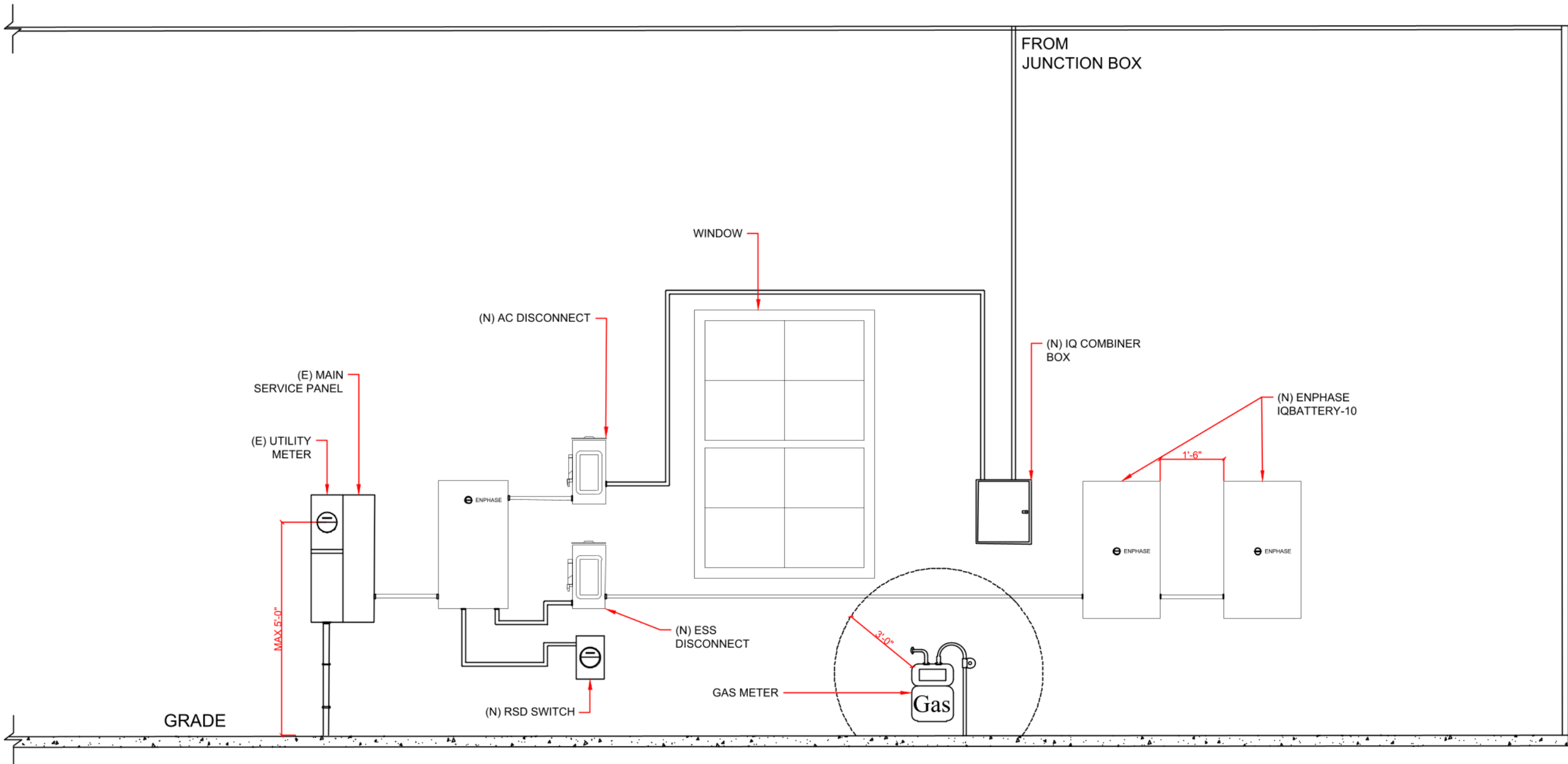
ROOF PLAN

REV: ---- 03/26/2026

PV-4

ESS DISCONNECT NOTE :
A lockable Energy Storage System disconnect shall be installed at a readily accessible exterior location within three (3) feet of the utility meter, in compliance with CEC 705.23 and 2025 CFC §1207.

ESS CLEARANCE NOTE :
Energy Storage Systems shall be installed not less than three (3) feet from doors and windows directly entering the dwelling unit in accordance with 2025 CFC §1207.11.3.



EQUIPMENT ELEVATION
SCALE: NTS

CONTRACTOR:

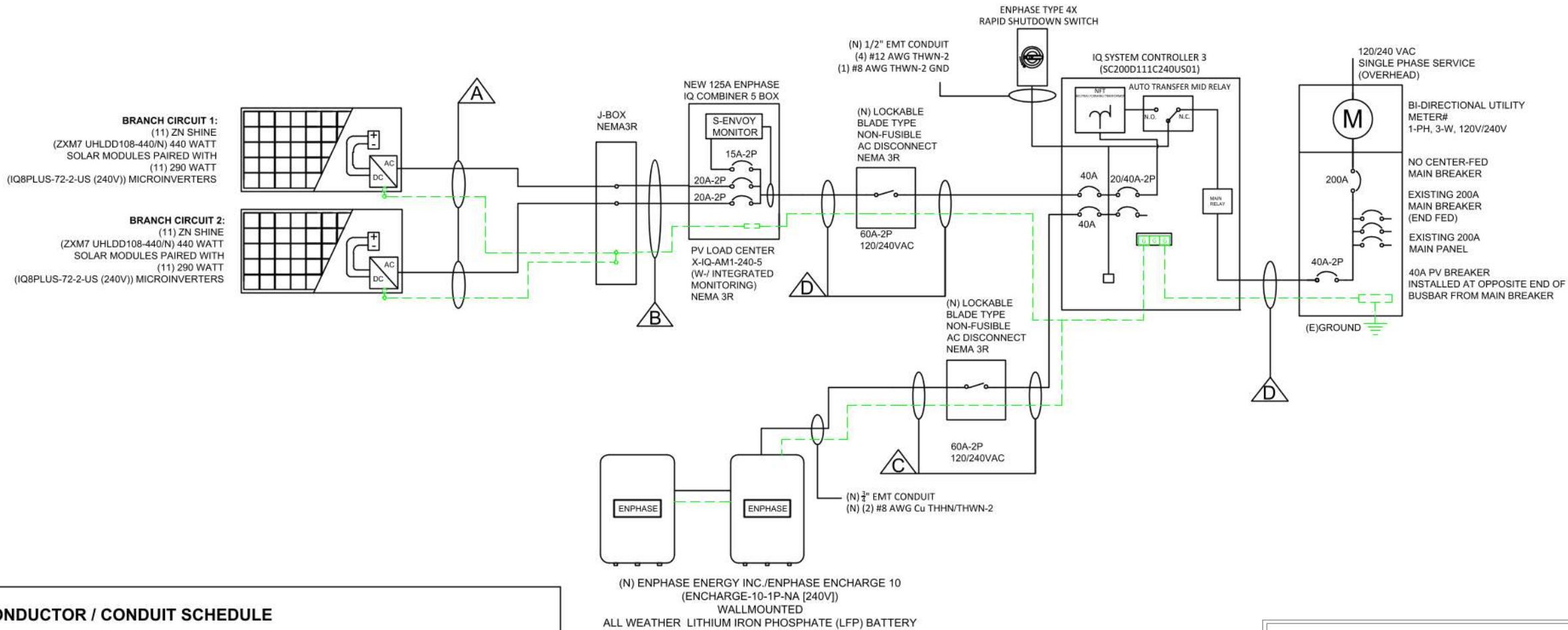
CLIENT:

EQUIPMENT ELEVATION

REV: ---- 03/26/2026

PV-5

ELECTRICAL

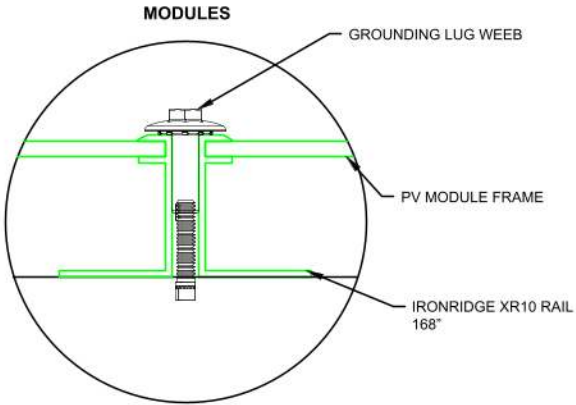


CONDUCTOR / CONDUIT SCHEDULE

Δ TAG	CONDUCTOR	CONDUCTOR SIZE	NUMBER OF CONDUCTORS	CONDUIT/CABLE TYPE	CONDUIT SIZE
A	ENPHASE Q CABLE	12 AWG	4	FREE AIR	N/A
	EGC/GEC: BARE COPPER	6 AWG	1		
B	LINE: THHN/THWN-2	10 AWG	4	EMT	3/4"
	EGC/GEC: THHN/THWN-2	8 AWG	1		
C	LINE: THHN/THWN-2	8 AWG	2	EMT	3/4"
	NEUTRAL: THHN/THWN-2	8 AWG	1		
	EGC/GEC: THHN/THWN-2	8 AWG	1		
D	LINE: THHN/THWN-2	8 AWG	2	EMT	3/4"
	NEUTRAL: THHN/THWN-2	8 AWG	1		
	EGC/GEC: THHN/THWN-2	8 AWG	1		

GROUNDING DETAIL

SCALE: NTS



ENPHASE Q CABLE TO BE ATTACHED TO RAIL MIN. 3-1/2" ABOVE ROOF SURFACE

SYSTEM NOTES:

- ENPHASE IQ 8 / 8PLUS/ IQ8A 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.
- ENPHASE Q CABLE HAS NO NEUTRAL WIRE - (2 WIRE DOUBLE INSULATED CABLING)
- MODULES ARE BONDED TO RAIL.
- RAILS ARE BONDED WITH UL 2703 RATED LAY-IN LUGS
- BARE COPPER IS TRANSITIONED TO THHN/THWN-2 VIA IRREVERSIBLE CRIMP; GEC TO BE CONTINUOUS PER CEC 250.64(C)
- SUB-BRANCHES ARE CENTER-FED AT JBOX TO MAKE ONE TOTAL BRANCH CIRCUIT.
- ENPHASE IQ ENVOY INSIDE IQ COMBINER REQUIRES A NEUTRAL TO BE LANDED AT THE NEUTRAL BUSS AT MAIN PANEL PER ENPHASE INSTALLATION INSTRUCTIONS.
- ENPHASE MICROINVERTERS ARE ALL RAPID SHUTDOWN READY PER CEC 690.12**

CONTRACTOR:

CLIENT:

ELECTRICAL

REV: ---- 03/26/2026

PV-6

MODULE CHARACTERISTICS - ZN SHINE ZXM7 UHLDD108-440/N		
MAX POWER (PMAX) @ STC	440	W
OPEN CIRCUIT VOLTAGE (VOC)	38.90	V
SHORT CIRCUIT CURRENT (ISC)	14.39	A
MAX POWER VOLTAGE (VMP)	32.30	V
MAX POWER CURRENT (IMP)	13.63	A
SERIES FUSE RATING	25	A

INVERTER CHARACTERISTICS - ENPHASE IQ8PLUS-72-2-US (240V)		
MAX OUTPUT POWER	290	W
SYSTEM OPERATING VOLTAGE	16-58	V
MAX CONTINOUS OUTPUT CURRENT	1.21	A
MAX INPUT VOLTAGE	60	V
SYSTEM SHORT CIRCUIT CURRENT	25	A
CEC MAX EFFICIENCY	97	%

BATTERY SPECIFICATION	
MODEL	ENPHASE ENERGY INC./ENPHASE ENCHARGE 5P (ENCHARGE-5P-1-P-NA [240V] [S11-SB])
AMBIENT TEMPERATURE RANGE	-15°C TO 55°C
RATED OUTPUT CURRENT	16 A
NOMINAL VOLTAGE	240 V
USABLE CAPACITY	5 kWh
INTERCONNECTION	SINGLE-PHASE
CHEMISTRY	LITHIUM IRON PHOSPHATE (LFP)

AC WIRE SIZING CALCULATIONS			
AT ARRAY	Enphase QCable = 12 AWG, 30 A @90°C		
BRANCH CIRCUITS	(Max Micro Inverter Output) x (Continuous Load)[210.19(A)(1)] x (# Micros In Branch Circuit)=	1.21 A X1.25 X 11	16.64 A
TOTAL AMPACITY	(High Temp)[Table 310(B)(2)(A) x (Conductor Ampacity)[Table 310.15(B)(16)] x (Conduit Fill)[Table 310.15(B)(3)(a)]	0.71 X 30 A X 1.0	21.30 A
16.64 A < 21.30 A Therefore 12 AWG/ Q CABLE is sufficient			
AFTER JBOX	Wire = 10 AWG, 40 A @ 90°C		
BRANCH CIRCUITS	(Max Micro Inverter Output) x (Continuous Load)[210.19(A)(1)] x (# Micros In Branch Circuit)=	1.21 A X 1.25 X11	16.64 A
TOTAL AMPACITY	(High Temp)[Table 310(B)(2)(A) x (Conductor Ampacity)[Table 310.15(B)(16)] x (Conduit Fill)[Table 310.15(B)(3)(a)]	1.00 X 40 A X 0.8	32.00 A
16.64 A < 32.00 A Therefore 10 AWG is sufficient			
AC WIRE SIZING CALCULATIONS			
AFTER COMBINER BOX	Wire = 8 AWG, 55 A @ 90°C		
MAX AC OUTPUT CURRENT	(Σ of Micros in Branch Circuits) x (Max Micro Inverter Output Current) x (Continuous Load)[210.19(A)(1)]	22 X 1.21 A X 1.25	33.28 A
TOTAL AMPACITY	(High Temp)[Table 310(B)(2)(A) x (Conductor Ampacity)[Table 310.15(B)(16)] x (Conduit Fill)[Table 310.15(B)(3)(a)]	1.00 X 55 A X 1	55.00 A
33.28 A < 55.00 A Therefore 8 AWG is sufficient			
OCPD CALCULATIONS			
MAX AC OUTPUT CURRENT	(Σ of Micros in Branch Circuits) x (Max Micro Inverter Output Current) x (Continuous Load)[210.19(A)(1)]	22 X 1.21 A X 1.25	33.28 A
33.28 A ---> 40 A Overcurrent Protection			

TEMPERATURE ADDERS		
CONDUIT TO BE INSTALLED MIN. OF 7⁄8" ABOVE ROOF		
HIGH TEMPERATURE	60	°C
LOW TEMPERATURE	-6	°C
TEMP ADDER FOR ROOF RUN	0	°C
TEMP ADDER FOR ATTIC RUN	7	°C

	CONTRACTOR:	CLIENT:
		CALCS
		REV: ---- 03/26/2026 PV-7



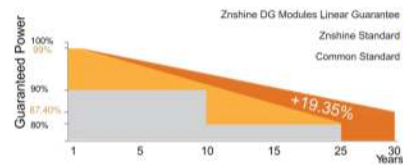
ZXM7-UHLD108 Series

16BB HALF-CELL N-Type TOPCon
Double Glass Monocrystalline PV Module

425-440W **22.53%** **0.40%**
POWER RANGE MAXIMUM EFFICIENCY YEARLY DEGRADATION

12 YEARS PRODUCT WARRANTY **30 YEARS OUTPUT GUARANTEE**

12 years product warranty for general application
15 years product warranty for Rooftop PV system
30 years output warranty / 0.40% Annual Degradation over 30 years



IEC 61215/IEC 61730
ISO 14001: Environmental Management System
ISO 9001: Quality Management System
ISO45001: Occupational Health and Safety Management System

*As there are different certification requirements in different markets, please contact your local znshine sales representative for the specific certificates applicable to the products in the region in which the products are to be used.

KEY FEATURES



Excellent Cells Efficiency

SMBB technology reduce the distance between busbars and finger grid line which is benefit to power increase.



Better Weak Illumination Response

More power output in weak light condition, such as haze, cloudy, and early morning.



TIER 1

Global, Tier 1 bankable brand, with independently certified advanced automated manufacturing.



Excellent Quality Management System

Warranted reliability and stringent quality assurances well beyond certified requirements.

Founded in 1988, Znshine solar is a world's leading high-tech PV module manufacturer. With the advanced production lines, the company boasts module capacity of 10 GW. Bloomberg has listed Znshine as a global Tier 1 PV module maker. Today Znshine has distributed its sales to more than 60 countries around the globe.

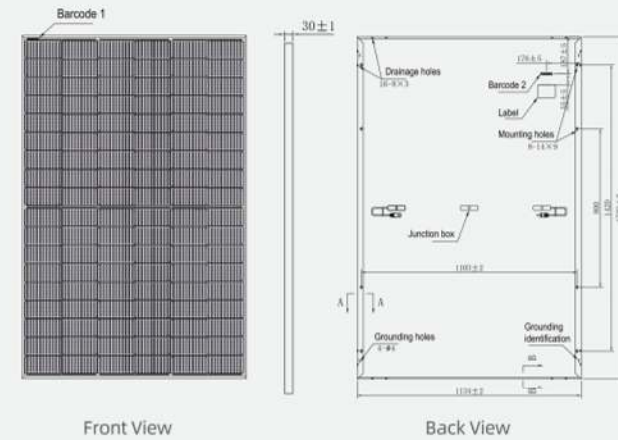
www.znshinesolar.com

ZXM7-UHLD108 Series

Znshinesolar 16BB HALF-CELL N-Type TOPCon
Double Glass Monocrystalline PV Module

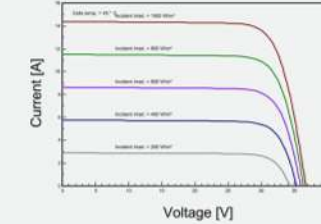


DIMENSIONS OF PV MODULE(mm)

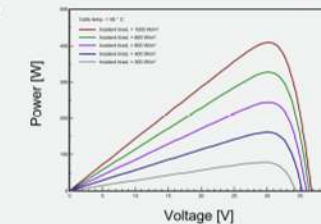


*Remark: customized frame color and cable length available upon request.

I-V CURVES OF PV MODULE(435W)



P-V CURVES OF PV MODULE(435W)



ELECTRICAL CHARACTERISTICS | STC*

Module Type	ZXM7 UHLD108-425/N	ZXM7 UHLD108-435/N	ZXM7 UHLD108-435/N	ZXM7 UHLD108-440/N
Nominal Power Watt Pmax(W)*	425±5	430±5	435±5	440±5
Maximum Power Voltage Vmp(V)	31.70	31.90	32.10	32.30
Maximum Power Current Imp(A)	13.41	13.47	13.56	13.63
Open Circuit Voltage Voc(V)	38.30	38.50	38.70	38.90
Short Circuit Current Isc(A)	14.12	14.19	14.26	14.39
Module Efficiency (%)	21.76	22.02	22.28	22.53

*The data above is for reference only and the actual data is in accordance with the practical testing

*STC (Standard Test Condition): Irradiance 1000W/m², Module Temperature 25±2°C, AM 1.5

*Measuring uncertainty: ±3%, all the electrical characteristics such as Power, Im, Vm and FF are within ±3% tolerance.

MECHANICAL DATA

Solar cells	N-type Monocrystalline
Cells orientation	108 (6×18)
Module dimension	1722×1134×30 mm (With Frame)
Weight	24.5±1.0 kg
Glass	2.0 mm+2.0mm, High Transmission, AR Coated Heat Strengthened Glass
Junction box	PV-XT1609Nxyz, IP 68, 3 diodes
Cables	H1Z2Z2-K 1×4,0mm²
Connectors*	PV-XT101.1 Suzhou Xiong Photovoltaic Technologies Co., Ltd. PV Modules manufactured in china

*Please refer to regional datasheet for specified connector

ELECTRICAL CHARACTERISTICS | NMOT

Maximum Power Pmax(Wp)	320.90	324.30	328.60	332.3
Maximum Power Voltage Vmp(V)	29.90	30.10	30.30	30.40
Maximum Power Current Imp(A)	10.73	10.78	10.84	10.93
Open Circuit Voltage Voc(V)	36.10	36.30	36.50	36.70
Short Circuit Current Isc(A)	11.39	11.45	11.51	11.61

*NMOT: Irradiance 800W/m², Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s

PACKAGING CONFIGURATION*

Piece/Box	36
Piece/Container(40'HQ)	936

*Customized packaging is available upon request.

TEMPERATURE RATINGS

NMOT	44°C ±2°C	Maximum system voltage	1500 V DC
Temperature coefficient of Pmax	(-0.30±0.03)/°C	Operating temperature	-40°C~+85°C
Temperature coefficient of Voc	-0.25%/°C	Maximum series fuse	25 A
Temperature coefficient of Isc	0.046%/°C	Maximum load front/back	3600/1600 with safety factor 1.5

Fire safety class Class A

*Remark: Do not connect Fuse in Combiner Box with two or more strings in parallel connection.

*Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer.

*They only serve for comparison among different module types.

*Caution: Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

Add : 1#, Zhixi Industrial Zone, Jintanjiangsu 213251, P.R. China Tel: +86 519 6822 0233 E-mail: info@znshinesolar.com

Note: Specifications included in this datasheet are subject to change without notice. ZNSHINE reserves the right of final interpretation © ZNSHINE SOLAR 2023 | Version: ZXM7-UHLD108 2307.E

No special undertaking or warranty for the suitability of special purpose or being installed in extraordinary surroundings is granted unless as otherwise specifically committed by manufacturer in contract document

CONTRACTOR:

CLIENT:

SPEC. SHEETS

REV: ---- 03/26/2026

PV-8



DATA SHEET



IQ8 and IQ8+ 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 using advanced 55 nm technology with high-speed digital logic and has superfast 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 IQ Battery, IQ Gateway, and the Enphase App monitoring and analysis software.



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



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



IQ8 Series Microinverters are UL listed as PV rapid shutdown equipment and conform with various regulations, when installed according to manufacturer's instructions.

*Meets UL 1741 only when installed with IQ System Controller 2.

**IQ8 and IQ8+ support split-phase, 240 V installations only.

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IQ8SP-12A-D5H-00207-10-EN-US-2023-09-07

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)	UNITS	IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings ¹	W	235–350	235–440
Module compatibility		To meet compatibility, PV modules must be within maximum input DC voltage and maximum module I_{sc} listed below. Module compatibility can be checked at https://enphase.com/installers/microinverters/calculator	
MPPT voltage range	V	27–37	27–45
Operating range	V	16–48	16–58
Minimum/Maximum start voltage	V	22/48	22/58
Maximum input DC voltage	V	50	60
Maximum continuous input DC current	A	10	12
Maximum input DC short-circuit current	A	25	
Maximum module I_{sc}	A	20	
Overvoltage class DC port		II	
DC port backfeed current	mA	0	
PV array configuration		1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max. 20 A per branch circuit	
OUTPUT DATA (AC)	UNITS	IQ8-60-2-US	IQ8PLUS-72-2-US
Peak output power	VA	245	300
Maximum continuous output power	VA	240	290
Nominal grid voltage (L-L)	V	240, split-phase (L-L), 180°	
Minimum and Maximum grid voltage ²	V	211–264	
Maximum continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	47–68	
AC short circuit fault current over three cycles	A _{max}	2	
Max. units per 20 A (L-L) branch circuit ³		16	13
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	%	97.7	
CEC weighted efficiency	%	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 (H x W x D)		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	
Environmental category/UV exposure rating		NEMA Type 6/outdoor	

¹ Pairing PV modules with wattage above the limit may result in additional clipping losses.

² Nominal voltage range can be extended beyond nominal if required by the utility.

³ Units may vary. Refer to local requirements to define the number of microinverters per branch in your area.

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IQ8 and IQ8+ Microinverters

COMPLIANCE	
Certifications	CA Rule 21 (UL 1741-SA), UL 62109-1, IEEE 1547:2018 (UL 1741-SB 3 rd Ed.), 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 shutdown 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.

CONTRACTOR:

CLIENT:

SPEC. SHEETS

REV: ---- 03/26/2026

PV-9



DATA SHEET



X-IQ-AMI-240-5-HDK
X-IQ-AMI-240-5C-HDK
X-IQ-AMI-240-5
X-IQ-AMI-240-5C

IQ Combiner 5/5C

The IQ Combiner 5/5C consolidates interconnection equipment into a single enclosure and streamlines IQ Series Microinverters and IQ Gateway installation by providing a consistent, pre-wired solution for residential applications. IQ Combiner 5/5C uses wired control communication and is compatible with IQ System Controller 3/3G and IQ Battery 5P.

The IQ Combiner 5/5C, IQ Series Microinverters, IQ System Controller 3/3G, and IQ Battery 5P provide a complete grid-agnostic Enphase Energy System.



IQ Series Microinverters
The high-powered smart grid-ready IQ Series Microinverters (IQ6, IQ7, and IQ8 Series) simplify the installation process.



IQ Battery 5P
Fully integrated AC battery system. Includes six field-replaceable IQ8D-BAT Microinverters.



IQ System Controller 3/3G
Provides microgrid interconnection device (MID) functionality by automatically detecting grid failures and seamlessly transitioning the home energy system from grid power to backup power.



IQ Load Controller
Helps prioritize essential appliances during a grid outage to optimize energy consumption and prolong battery life.



5-year limited warranty

*For country-specific warranty information, see the <https://enphase.com/installers/resources/warranty> page.

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IQC-5-5C-DSH-00007-8.0-EN-US-2025-12-29

IQ Combiner 5/5C

MODEL NUMBER	
IQ Combiner 5 (X-IQ-AMI-240-5/X-IQ-AMI-240-5-HDK)	IQ Combiner 5 with IQ Gateway printed circuit board for integrated revenue-grade PV production metering (ANSI C12.20 ±0.5%), consumption monitoring (±2.5%), and IQ Battery monitoring (±2.5%). Includes a silver solar shield to deflect heat. IQ-AMI-240-5-HDK includes a factory-installed hold-down kit compatible with all the circuit breakers mentioned in the Accessories and Replacement Parts section.
IQ Combiner 5C (X-IQ-AMI-240-5C/X-IQ-AMI-240-5C-HDK)	IQ Combiner 5C with IQ Gateway printed circuit board for integrated revenue-grade PV production metering (ANSI C12.20 ±0.5%), consumption monitoring (±2.5%), and IQ Battery monitoring (±2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-07-NA-05) ¹ . Includes a silver solar shield to deflect heat. IQ-AMI-240-5C-HDK includes a factory-installed hold-down kit compatible with all the circuit breakers mentioned in the Accessories and Replacement Parts section.

WHAT'S IN THE BOX	
IQ Gateway printed circuit board	IQ Gateway is the platform for total energy management for comprehensive, remote maintenance, and management of the Enphase Energy System
Busbar	80 A busbar with support for one IQ Gateway breaker and four 20 A breakers for installing IQ Series Microinverters and IQ Battery 5P
IQ Gateway breaker	Circuit breaker, 2-pole, 10 A/15 A
Production CT	Pre-wired revenue-grade solid-core CT, accurate up to ±0.5%
Consumption CT	Two consumption metering clamp CTs, shipped with the box, accurate up to ±2.5%
IQ Battery CT	One battery metering clamp CT, shipped with the box, accurate up to ±2.5%
CTRL board	Control board for wired communication with IQ System Controller 3/3G and the IQ Battery 5P
Enphase Mobile Connect (only with IQ Combiner 5C)	LTE CAT 4-based cellular modem with a 5-year data plan (CELLMODEM-07-NA-05 for AT&T, T-Mobile).
Accessories kit	Spare control headers for the COMMS-KIT-2 board

ACCESSORIES AND REPLACEMENT PARTS (NOT INCLUDED, ORDER SEPARATELY)	
CELLMODEM-07-NA-05	LTE CAT 4-based cellular modem with a 5-year data plan (for AT&T, T-Mobile)
CELLMODEM-M1-06-SP-05	4G-based LTE-M1 cellular modem with a 5-year T-Mobile data plan
CELLMODEM-M1-06-AT-05	4G-based LTE-M1 cellular modem with a 5-year AT&T data plan
Circuit breakers (off-the-shelf)	Supports Eaton BR2XX, Siemens Q2XX, and GE/ABB THQL21XX Series circuit breakers (XX represents 10, 15, 20, 30, 40, 50, or 60). Also supports Eaton BR220B, BR230B, and BR240B circuit breakers compatible with the hold-down kit.
Circuit breakers (provided by Enphase)	BRK-10A-2-240V, BRK-15A-2-240V, BRK-20A-2P-240V, BRK-15A-2P-240V-B, and BRK-20A-2P-240V-B (more details in the "Accessories" section)
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 5/5C
XA-ENV2-PCBA-5	IQ Gateway replacement printed circuit board (PCB) for IQ Combiner 5/5C
X-IQ-NA-HD-125A	Hold-down kit compatible with Eaton BR-B Series circuit breakers (with screws). Not required for X-IQ-AMI-240-5-HDK/X-IQ-AMI-240-5C-HDK.
XA-COMMS2-PCBA-5	Replacement COMMS-KIT-2 printed circuit board (PCB) for IQ Combiner 5/5C

ELECTRICAL SPECIFICATIONS	
Rating	80 A
System voltage and frequency	120/240 VAC or 120/208 VAC, 60 Hz
Busbar rating	125 A
Fault current rating	10 kAIC
Maximum continuous current rating (input from PV/storage)	64 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR, Siemens Q, or GE/ABB THQL Series distributed generation (DG) breakers only (not included)
Maximum total branch circuit breaker rating (input)	80 A of distributed generation/95 A with IQ Gateway breaker included
IQ Gateway breaker	10 A or 15 A rating GE/Siemens/Eaton included

¹ A plug-and-play industrial-grade cell modem for systems of up to 60 microinverters. Available in the United States, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.

IQC-5-5C-DSH-00007-8.0-EN-US-2025-12-29

ACCESSORIES AND REPLACEMENT PARTS (NOT INCLUDED, ORDER SEPARATELY)	
Production metering CT	200 A solid-core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-CLAMP)	A pair of 200 A clamp-style current transformers is included with the box
IQ Battery metering CT	200 A clamp-style current transformer for IQ Battery metering, included with the box

MECHANICAL DATA	
Dimensions (W × H × D)	37.5 cm × 49.5 cm × 16.8 cm (14.75" × 19.5" × 6.63"). Height is 53.5 cm (21.06") with mounting brackets.
Weight	7.5 kg (16.5 lb)
Ambient temperature range	-40°C to 46°C (-40°F 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

Communication (in-premise connectivity)	Built-in CTRL board for wired communication with the IQ Battery 5P and the IQ System Controller 3/3G. Integrated power line communication for IQ Series Microinverters.
Altitude	Up to 2600 meters (8530 feet)

COMMUNICATION INTERFACES	
Integrated Wi-Fi	802.11b/g/n (dual band 2.4 GHz/5 GHz) for connecting to the Enphase Cloud through the internet
Wi-Fi range (recommended)	10 m (32.8 feet)
Bluetooth	BLE4.2, 10 m range to configure Wi-Fi SSID
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included) for connecting to the Enphase Cloud through the internet.
Cellular/Mobile Connect	CELLMODEM-07-NA-05; CELLMODEM-M1-06-SP-05 or CELLMODEM-M1-06-AT-05 ² (included with the IQ Combiner 5C)
Digital I/O	Digital input/output for grid operator control
USB 2.0	Mobile Connect, COMMS-KIT-01 for IQ Battery 3/3T/10/10T, COMMS-KIT-02 for IQ Battery 5P
Access point (AP) mode	For connection between the IQ Gateway and a mobile device running the Enphase Installer App
Metering ports	Up to two Consumption CTs, one IQ Battery CT, and one Production CT
Power line communication	90–110 kHz
Web API	See https://developer-v4.enphase.com
Local API	See Guide for local API

COMPLIANCE	
IQ Combiner with IQ Gateway	UL 1741, CAN/CSA C22.2 No. 107.1, Title 47 CFR, Part 15, Class B, ICES 003, NOM-208-SCFI-2016, UL 61010-1, CAN/CSA 22.2 No. 61010-1, IEEE 1547: 2018 (UL 1741-SB, 3rd Ed.), IEEE 2030.5/CSIP Compliant, Production metering: ANSI C12.20 accuracy class 0.5 (PV production)

COMPATIBILITY		
PV	Microinverters	IQ6, IQ7, and IQ8 Series Microinverters
	IQ System Controller	EP200G101-M240US00
COMMS-KIT-01 ³	IQ System Controller 2	EP200G101-M240US01
	IQ Battery	ENCHARGE-3-1P-NA, ENCHARGE-10-1P-NA, ENCHARGE-3T-1P-NA, ENCHARGE-10T-1P-NA
COMMS-KIT-02 ⁴	IQ System Controller 3	SC200D111C240US01, SC200G111C240US01
	IQ Battery	IQBATTERY-5P-1P-NA

³ Older IQ Combiner 5C units may have Cell Modem 06 as Enphase Mobile Connect.

² For information about IQ Combiner 5/5C compatibility with the 2nd-generation batteries, refer to the [compatibility matrix](#).

⁴ IQ Combiner 5/5C comes pre-equipped with COMMS-KIT-02.

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CONTRACTOR:

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SPEC. SHEETS

REV: ---- 03/26/2026

PV-10



DATASHEET

PRELIMINARY



IQ System Controller 3/3G

The Enphase IQ System Controller 3/3G connects the home to grid power, the IQ Battery system, and solar PV. It provides microgrid interconnect device (MID) functionality by automatically detecting and seamlessly transitioning the home energy system from grid power to backup power in the event of a grid failure. It consolidates interconnection equipment into a single enclosure and streamlines grid-independent capabilities of PV and storage installations by providing a consistent, pre-wired solution for residential applications.



IQ Series Microinverters

The high-powered smart grid-ready IQ Series Microinverters (M Series, IQ6, IQ7, and IQ8 Series) dramatically simplify the installation process



IQ Combiner 5/5C

Consolidates PV interconnection equipment into a single enclosure and streamlines IQ Series Microinverters and IQ Gateway installation by providing a consistent, pre-wired solution for residential applications



IQ Battery 5P

Fully integrated AC battery system. Includes six field-replaceable IQ8D-BAT microinverters



IQ Load Controller

Helps prioritize essential appliances during a grid outage to optimize energy consumption and prolong battery life

Easy to Install

- Connects to service entrance¹ or main load center
- Includes neutral-forming transformer
- Mounts on single stud with centered brackets
- Provides conduit entry from bottom, left, or right
- Includes color-coded wires for ease of wiring System Shutdown Switch
- Integrates hold-down functionality to eliminate the need for hold-down kits and special breakers

Flexible

- Can be used for Sunlight Backup, Home Essentials Backup, or Full Energy Independence
- IQ System Controller 3 integrates with IQ Battery 5P
- IQ System Controller 3G integrates with select AC standby generators. See [Generator Integration Tech Brief](#) for a list of generators
- Provides a seamless transition to backup

Safe and Reliable

- System Shutdown Switch can be used to disconnect PV, battery, and generator systems
- It acts as a rapid shutdown initiator of grid-forming IQ8 PV Microinverters for safety of maintenance technicians/first responders
- 10-year limited warranty

(1) IQ System Controller 3 is not suitable for use as service equipment in Canada.
IQSC-3-DSH-00021-10-EN-US-2023-05-22

IQ System Controller 3/3G

DATASHEET

MODEL NUMBER	DESCRIPTION
SC200D111C240US01	IQ System Controller 3 streamlines grid-independent capabilities of PV and storage installations. Integrates hold-down capability. Supports up to 40 kWh (without PCS*) and 80 kWh (with PCS*) IQ Battery 5P. Does not support generator integration
SC200G111C240US01	IQ System Controller 3G streamlines grid-independent capabilities of PV and storage installations. Integrates hold-down capability. Supports up to 20 kWh (without PCS*) and 40 kWh (with PCS*) IQ Battery 5P. Supports generator integration
WHAT'S IN THE BOX	
IQ System Controller 3/3G	Includes neutral-forming transformer (NFT) and microgrid interconnect device (MID)
System Shutdown Switch	Includes pre-wired red, black, orange and purple 12 AWG wire (EP200G-NA-Q2-RSD)
Wall-mounting bracket	Screws provided in the accessories kit for mounting
4-pole circuit breaker	Pre installed Quad breaker (BRK-20A40A-4P-240V), 20 A-40 A, 10 kAIC, Eaton BQC220240 ²
Accessories Kit	IQ System Controller 3/3G literature kit, including labels, CTRL headers, screws, filler plates, and QIG (EP200G-LITKIT)
OPTIONAL ACCESSORIES AND REPLACEMENT PARTS	
CT-200-SPLIT	200 A split core current transformers for metering (accuracy: ±2.5%) ³
CT-200-CLAMP	200 A clamp-type current transformers for metering (accuracy: ±2.5%) ³
Circuit breakers (order separately, as needed) ⁴ :	Circuit breakers (order separately, as needed) ⁵ :
• BRK-100A-2P-240V: Main breaker, 2-pole, 100A, 25kAIC, CSR2100N or CSR2100	• BRK-20A-2P-240V-B: Circuit breaker, 2-pole, 20 A, 10 kAIC, BR220B/BR220
• BRK-125A-2P-240V: Main breaker, 2-pole, 125A, 25kAIC, CSR2125N	• BRK-30A-2P-240V-B: Circuit breaker, 2-pole, 30 A, 10 kAIC, BR230
• BRK-150A-2P-240V: Main breaker, 2-pole, 150A, 25kAIC, CSR2150N	• BRK-40A-2P-240V-B: Circuit breaker, 2-pole, 40 A, 10 kAIC, BR240B/BR240
• BRK-175A-2P-240V: Main breaker, 2-pole, 175A, 25kAIC, CSR2175N	• BRK-60A-2P-240V: Circuit breaker, 2-pole, 60 A, 10 kAIC, BR260
• BRK-200A-2P-240V: Main breaker, 2-pole, 200A, 25kAIC, CSR2200N	• BRK-80A-2P-240V: Circuit breaker, 2-pole, 80 A, 10 kAIC, BR280
EP200G-HNDL-R1	IQ System Controller 3/3G installation handle kit (order separately)
CTRL-SC3-NA-01	Control cable, 500 ft. spool (order separately)
ELECTRICAL SPECIFICATIONS	
Nominal voltage/Range (L-L)	240 V~ ¹ /±20%
Voltage measurement accuracy	±1% V nominal (±1.2V L-N and ±2.4V L-L)
Auxiliary (dry)contact for load control, excess PV control, and generator two-wire control	24 V, 1 A
Nominal frequency/Range	60 Hz/56–63 Hz
Frequency measurement accuracy	±0.1 Hz
Maximum continuous current rating	160 A
Maximum input overcurrent protection device	200 A
Maximum output overcurrent protection device	200 A
Maximum overcurrent protection device rating for generator circuit	80 A (IQ System Controller 3G only - SC200G111C240US01)
Maximum overcurrent protection device rating for storage circuit	2x 80 A (IQ System Controller 3 - SC200D111C240US01), 1x 80 A (IQ System Controller 3G - SC200G111C240US01)
Maximum overcurrent protection device rating for PV combiner unit	80 A
Internal busbar rating	200 A
Neutral-forming transformer (NFT)	• Maximum continuous unbalance current: 30 A @ 120 V • Peak rated power: 8,800 VA for 30 seconds • Peak unbalanced current: 80 A @ 120 V for 2 seconds
• Breaker rating (pre-installed): 40A between L1 and Neutral; 40A between L2 and Neutral	
• Continuous rated power: 3,600 VA	

(2) Factory installed quad breaker (Siemens or Eaton). NFT pre-wired to 40 A terminal of the quad breaker.

(3) Two unit of CT-200-SPLIT or CT-200-CLAMP to be bought separately for generator integration

(4) The IQ System Controller 3 is rated at 22 kAIC.

(5) Integrated hold down kit also support breakers (BR220/BR230/BR240) without predrilled hole.

(6) ~ indicates alternating current (AC) supply.

(*) Power Control System

IQSC-3-DSH-00021-10-EN-US-2023-05-22

DATASHEET

MECHANICAL DATA		
Dimensions (WxHxD)	50 cm x 91.6 cm x 24.6 cm (19.7 in x 36 in x 9.7 in)	
Weight	39.4 kg (87 lbs)	
Ambient temperature range	-40°C to 50°C (-40°F to 122°F)	
Cooling	Natural convection, plus heat shield	
Enclosure environmental rating	Outdoor, NEMA type 3R, polycarbonate construction	
Maximum altitude	2,500 meters (8,200 feet)	
WIRE SIZES		
Connections (All lugs are rated to 90°C)	Main lugs and backup load lugs CSR breaker bottom wiring lugs AC combiner lugs, IQ Battery lugs, and generator lugs Neutral (large lugs)	Cu/Al: 6 AWG–300 kcmil Cu/Al: 2 AWG–300 kcmil 14 AWG–2 AWG Cu/Al: 6 AWG–300 kcmil
Neutral and ground bars	Large holes (5/16–24 UNF) Small holes (10–32 UNF)	14 AWG–1/0 AWG 14 AWG–6 AWG
COMPLIANCE		
Compliance (under progress)	UL 1741, UL 1741 SA, IEEE 1547:2018 (UL 1741-SB, 3rd Ed.), UL 1741 PCS CRD, UL 1998, UL 869A, UL 675, UL 508 ⁷ , UL 50E ⁸ CSA 22.2 No. 107.1, 47 CFR Part 15 Class B, ICES 003, ICC ES AC156. The IQ System Controller 3/3G is approved for use as service equipment in the United States	
WARRANTY		
Limited warranty (restrictions apply)	Up to 10 years (EP200G-NA-Q2-RSD is warrantied for 5 years)	
COMPATIBILITY		
IQ Battery 5P	IQBATTERY-5P-1P-NA	
Microinverters	IQ6, IQ7, IQ8, and M ⁹ Series Microinverters ⁹	
IQ Combiner 5/5C	X-IQ-AMI-240-5C, X-IQ-AMI-240-5	
Communications Kit 2	COMMS-KIT-02	

(7) Sections from these standards were used during the safety evaluation and included in the UL 1741 listing.

(8) M Series microinverters can only be supported in states that have not yet adopted IEEE 1547:2018.

(9) Enphase does not support mixing IQ8 Series Microinverters with other Series on the same IQ Gateway.

IQSC-3-DSH-00021-10-EN-US-2023-05-22

CONTRACTOR:

CLIENT:

SPEC. SHEETS

REV: ---- 03/26/2026

PV-11

IQ Battery 10

The **IQ Battery 10** all-in-one AC-coupled storage system is reliable, smart, simple, and safe. It is comprised of three base IQ Battery 3 units, has a total usable energy capacity of 10.08 kWh and twelve embedded grid-forming microinverters with 3.84 kW power rating. It provides backup capability, and installers can quickly design the right system size to meet the needs of both new and retrofit solar customers.



Reliable

- Proven high-reliability IQ Series Microinverters
- 10-year limited warranty
- Three independent IQ Battery base units
- Twelve embedded IQ8X-BAT Microinverters
- Passive cooling (no moving parts/fans)
- UL Listed
- Meets CA Rule 21 (UL 1741-SA) and IEEE 1547:2018 (UL 1741-SB, 3rd Ed.)

Smart

- Grid-forming capability for backup operation
- Remote software and firmware upgrade
- Mobile app-based monitoring and control
- Support for self-consumption
- Utility time of use (TOU) optimization

Simple

- Fully integrated AC battery system
- Quick and easy plug-and-play installation
- Interconnects with standard household AC wiring

Safe

- Cells safety tested
- Lithium iron phosphate (LFP) chemistry for maximum safety and longevity

To learn more about Enphase offerings, visit enphase.com

IQB-10-DSH-00250-2.0-EN-US-2024-03-21

IQ Battery 10

MODEL NUMBER	
ENCHARGE-10-1P-NA	IQ Battery 10 system with integrated IQ Microinverters and battery management unit (BMU). Includes: - Three IQ Battery 3.36 kWh base units (B03-A01-US00-1-3) - One IQ Battery 10 cover kit with cover, wall-mounting bracket, watertight conduit hubs, and interconnect kit for wiring between batteries (B10-C-1050-0)
ACCESSORIES	
ENCHARGE-HNDL-R1	One set of IQ Battery base unit installation handles
OUTPUT (AC)	
@ 240 VAC ¹	
Rated (continuous) output power	3.84 kVA
Peak output power	5.7 kVA (10 seconds)
Nominal voltage/Range	240/211–264 VAC
Nominal frequency/Range	60/57–61 Hz
Rated output current	16 A
Peak output current	24.6 A (10 seconds)
Power factor (adjustable)	0.85 leading ... 0.85 lagging
Maximum units per 20 A branch circuit	1 unit (single-phase)
Interconnection	Single-phase
Maximum AC short-circuit fault current over three cycles	14.4 Arms
Round trip efficiency ²	89%
BATTERY	
Total capacity	10.5 kWh
Usable capacity	10.08 kWh
Round trip efficiency	96%
Nominal DC voltage	67.2 V
Maximum DC voltage	73.5 V
Ambient operating temperature range	-15°C to 55°C (5°F to 131°F) non-condensing
Optimum operating temperature range	0°C to 30°C (32°F to 86°F)
Chemistry	Lithium iron phosphate (LFP)
MECHANICAL DATA	
Dimensions (W x H x D)	1070 mm x 664 mm x 319 mm (42.13 in x 26.14 in x 12.56 in)
Weight	Three individual 44.2 kg (97.4 lb) base units plus 21.1 kg (48.7 lb) cover and mounting bracket; total 154.7 kg (341 lb)
Enclosure	Outdoor – NEMA type 3R
IQ8X-BAT Microinverter enclosure	NEMA type 6
Cooling	Natural convection – No fans
Altitude	Up to 2,500 meters (8,200 feet)
Mounting	Wall mount
FEATURES AND COMPLIANCE	
Compatibility	Compatible with grid-tied PV systems. Compatible with M215/M250 and IQ Series Microinverters, IQ System Controller, and IQ Gateway for backup operation.
Communication	Wireless 2.4 GHz
Services	Backup, self-consumption, TOU, Demand Charge, NEM Integrity
Monitoring	Enphase Installer Platform and Enphase App monitoring options; API integration
Compliance	CA Rule 21 (UL 1741-SA), IEEE 1547:2018 (UL 1741-SB, 3 rd Ed.) UL 9540, UN 38.3, UL 9540A, UL 1998, UL 991, NEMA Type 3R, AC156 CAN/CSA C22.2 No. 107.1-16 EMI: 47 CFR, Part 15, Class B, ICES 003 Cell Module: UL 1973, UN 38.3 Inverters: UL 62109-1, IEC 62109-2

1. Supported in backup/off-grid operations.
2. AC to Battery to AC at 50% power rating.

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FIELD REPLACEMENT PARTS³

B03-A01-US00-1-3-BC	IQ Battery 3/10 battery controller board for field replacement
B03A-BMU-0205-0	IQ Battery 3/10 battery management unit board for field replacement
B03C-ACIR-0175-0	IQ Battery 3/10/3T/10T AC filter board (red connector) for field replacement
B03A-RWSK-0214-0	IQ Battery 3/10 rework spare kit for field repairs

LIMITED WARRANTY

Limited warranty ⁴	>70% capacity, up to 10 years or 4,000 cycles
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3. To be replaced by qualified Enphase field service technicians only.
4. Whichever occurs first. Restrictions apply.

IQB-10-DSH-00250-2.0-EN-US-2024-03-21

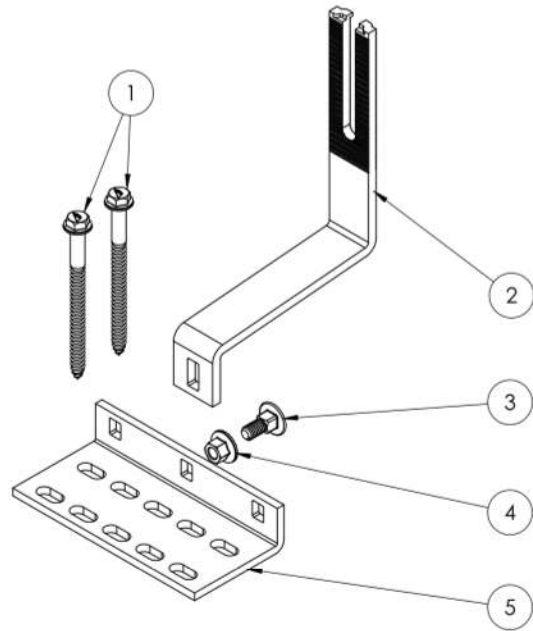
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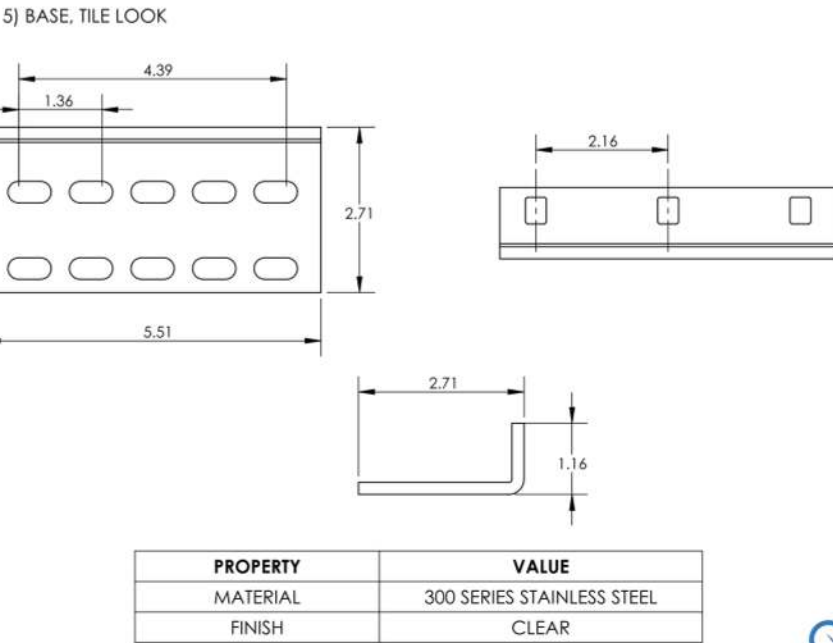
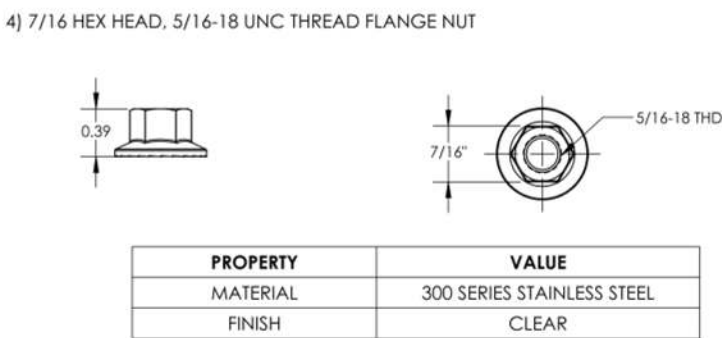
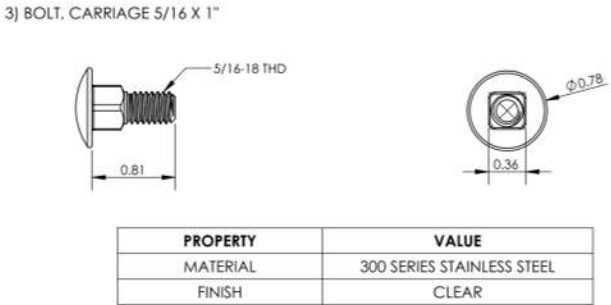
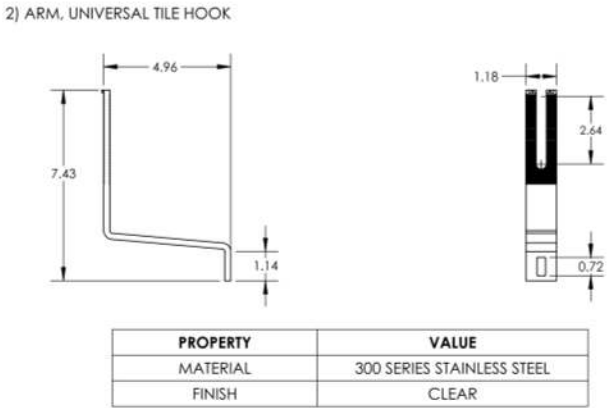
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PV-12



ITEM NO.	DESCRIPTION	QTY.
1	SCREW, LAG, 1/2" HEX, W/FLANGE, 5/16-9 4"	2
2	ARM, UNIVERSAL TILE HOOK	1
3	BOLT, CARRIAGE 5/16 X 1"	1
4	7/16 HEX HEAD, 5/16-18 UNC THREAD FLANGE NUT	1
5	BASE, TILE HOOK	1

PART NUMBER	DESCRIPTION
QM-ATH-02-M1	ALL TILE HOOK (INCL. 2 LAGS)



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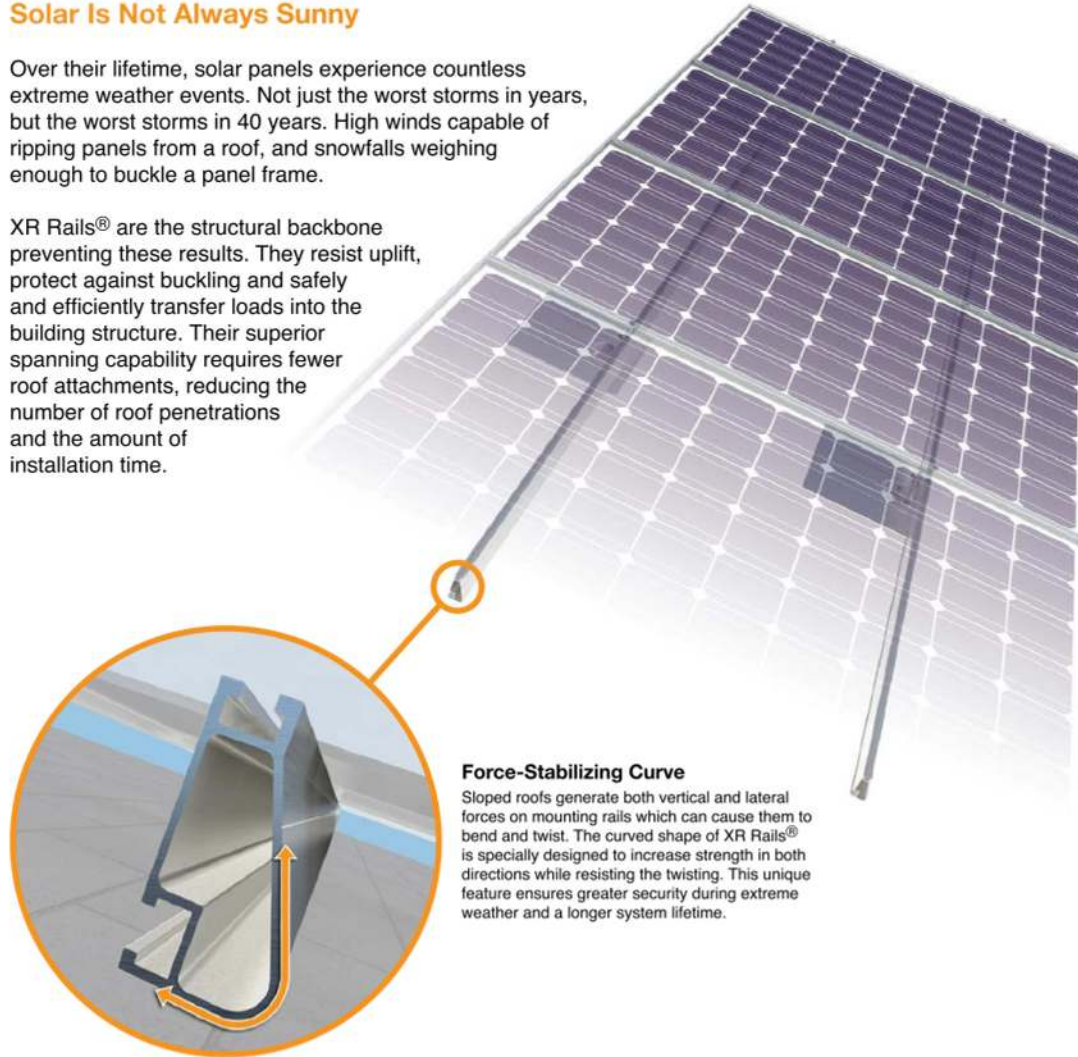


XR Rail® Family

Solar Is Not Always Sunny

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

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



Force-Stabilizing Curve

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

Compatible with Flat & Pitched Roofs



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



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

6000-Series Aluminum

All XR Rails® are made of 6000-series aluminum alloy, with anodized options. Anodizing prevents corrosion, while also providing a more attractive appearance. Available in mill and black-anodized finish.



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
- Mill & black-anodized finish
- Internal splices available



XR100

XR100 is a residential and commercial 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
- Mill & 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
- Mill, non-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](https://www.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.

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UFO® Family of Components

Tech Brief

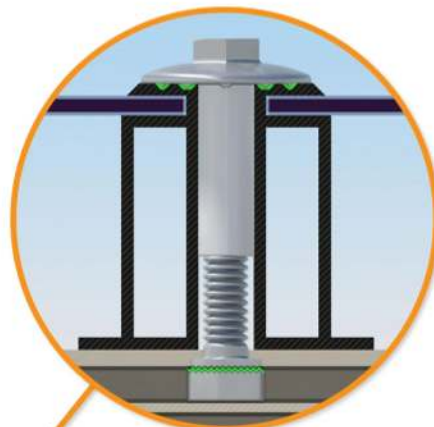
Simplified Grounding for Every Application

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.

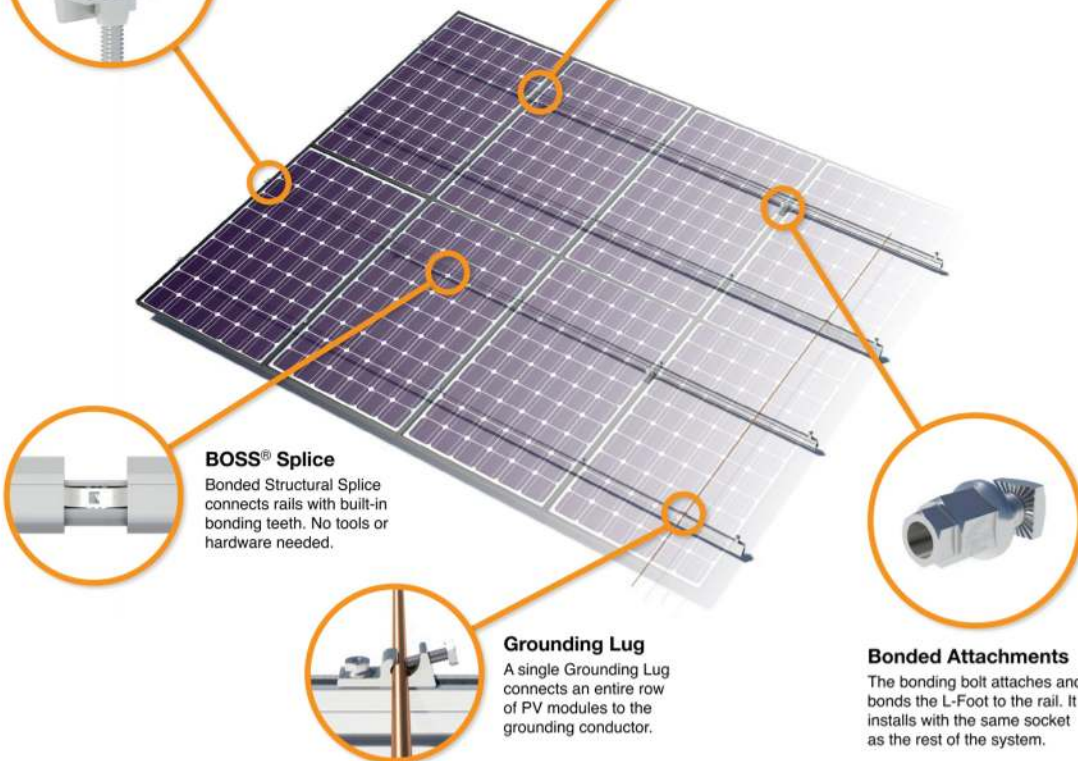
UFO® hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



EFO™
The End Fastening Object secures XR Rail® ends, fitting 30-40mm module heights.



Universal Fastening Object (UFO®)
The UFO® securely bonds solar modules to XR Rails® as a mid clamp. It comes assembled and lubricated, fitting a wide range of module heights.



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

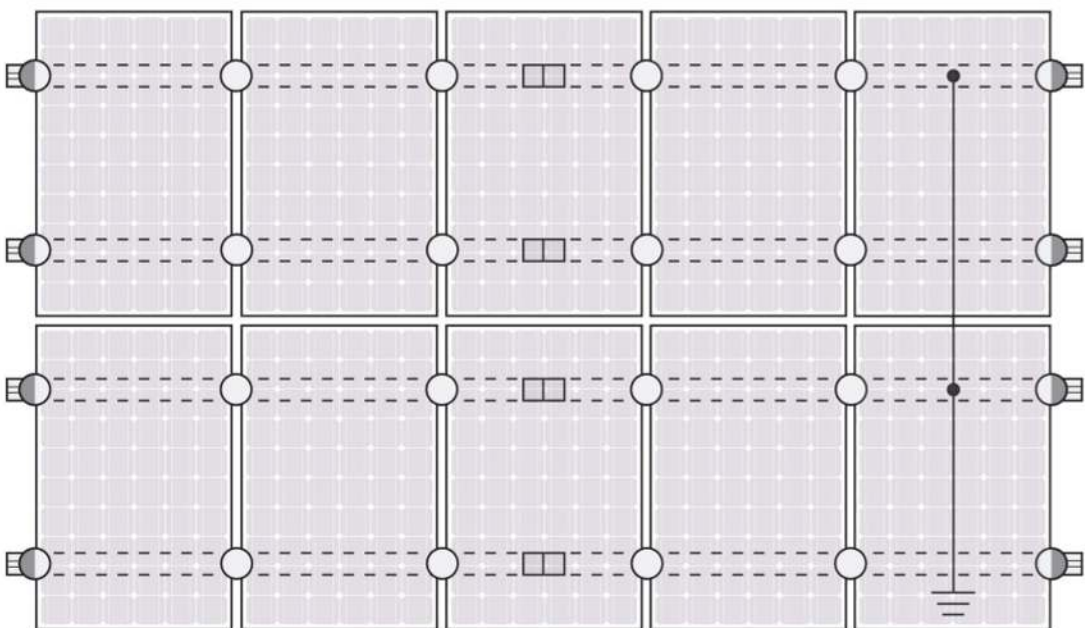


Grounding Lug
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.



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

System Diagram



○ UFO ● EFO ● Grounding Lug □ BOSS Splice — Ground Wire

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](https://www.ironridge.com/UFO)

Cross-System Compatibility

Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails®	✓	✓	XR100 & XR1000
UFO®/Stopper	✓	✓	✓
BOSS® Splice	✓	✓	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Compatible with most MLPE manufacturers. Refer to system installation manual.		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules. Refer to installation manuals for a detailed list.		

UFO® components are only for installation and use with IronRidge® products in accord with written instructions. Visit [IronRidge.com/UFO](https://www.ironridge.com/UFO) for more information.

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