

**SPRAGUE, ANA PV SYSTEM**  
**580 NEW CASTLE LANE .**  
**SPRING LAKE, NC, 28390**  
**APN: 01050402 0177 52**  
**JURISDICTION: HARNETT COUNTY (NC)**  
**GENERAL INFORMATION**

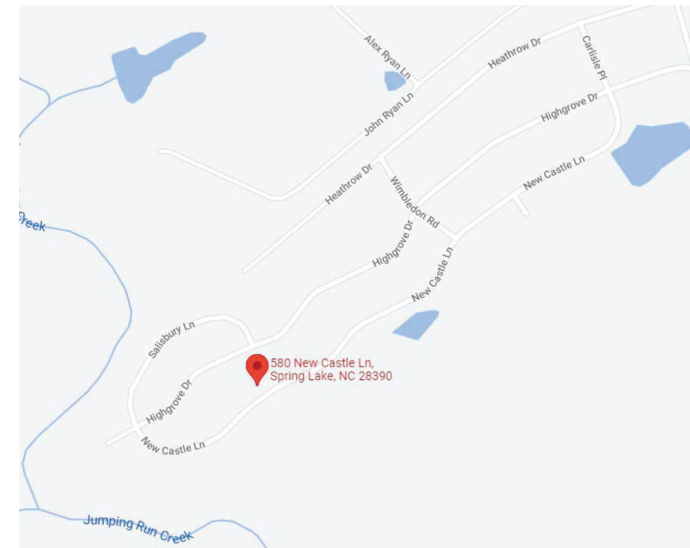
SYSTEM SIZE:	10.400 kW-DC-STC 7.540 kW-AC
ROOF PITCHED:	37 DEGREES
INVERTER:	(26) ENPHASE IQ8PLUS-72-2-US
MODULES:	(26) Q PEAK DUO BLK ML G10+ 400W
STRINGS:	INV 1: (2) x 13 PARALLEL MODULE STRINGS
ELECTRICAL SERVICE RATING:	200A
PV SYSTEM OVERCURRENT RATING:	40A
PV SYSTEM DISCONNECT SWITCH:	EATON DG222URB (60A / 2P)
ROOF TYPE:	COMP SHINGLE
ROOF FRAMING:	MANUFACTURED/ENGINEERED TRUSS
RACKING:	K2 SYSTEMS
ATTACHMENT METHOD:	MIN. 5/16" x 3 1/2 LAG SCREWS EA. STANDOFF

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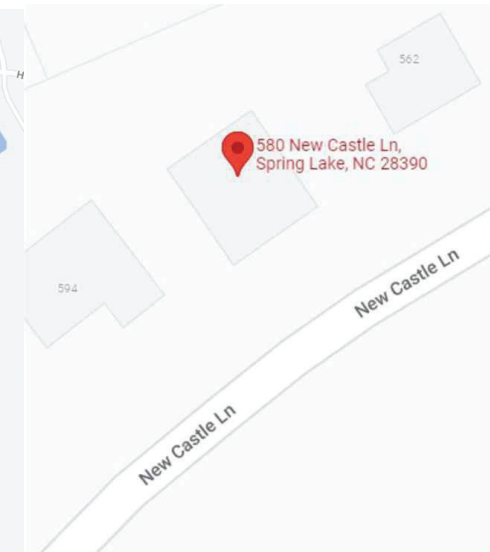
**VICINITY MAP**

SCALE: NTS



**AERIAL MAP**

SCALE: NTS



**NOTES**

**EQUIPMENT LOCATION**

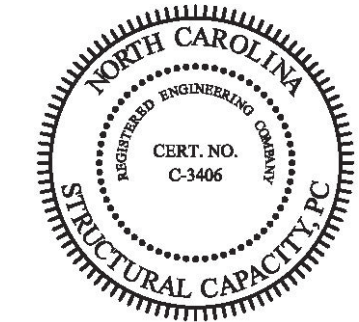
1. ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26.
2. WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31(A),(C) AND NEC TABLES 310.15(B)(2)(A) AND 310.15(B)(3)(C).
3. JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO NEC 690.34.
4. ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.
5. ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.
6. ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.

**WIRING & CONDUIT NOTES**

1. ALL CONDUITS AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
2. CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.
3. DC WIRING LIMITED TO MODULE FOOTPRINT. MICRO INVERTER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY WITH SUITABLE WIRING CLIPS.
4. AC CONDUCTORS COLORED OR MARKED AS FOLLOWS: PHASE A OR L1- BLACK, PHASE B OR L-2 RED, OR OTHER CONVENTION IF THREE PHASE, PHASE C OR L3-BLUE, YELLOW, ORANGE, OR OTHER CONVENTION NEUTRAL- WHITE OR GREY IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH THE HIGHER VOLTAGE TO BE MARKED ORANGE NEC 110.15.

**GENERAL NOTES**

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



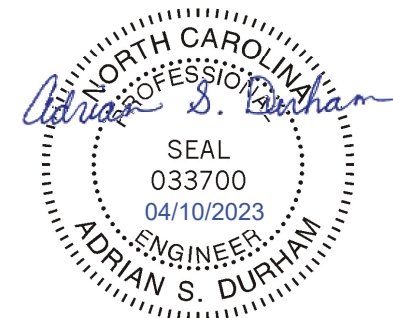
ENGINEER SEAL ARE FOR STRUCTURAL ITEMS ONLY





**PROJECT NOTES**

1. UTILITY SHALL HAVE 24HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC COMPONENTS LOCATED AT SES EQUIPMENT
2. NO LOCKED GATES, DOGS, ETC SHALL IMPEDE ACCESS TO SES EQUIPMENT
3. WORKSPACE IN FRONT OF AC ELECTRICAL SYSTEM COMPONENTS SHALL BE IN ACCORDANCE WITH SOUTH RIVER ELECTRIC MEMBERSHIP CORPORATION AND NEC REQUIREMENTS.



**TITAN**  
**SOLAR POWER**  
 525 W BASELINE RD., MESA AZ, 85210  
 CONTRACTOR LIC# U.34445

SPRAGUE, ANA RESIDENCE  
 580 NEW CASTLE LANE , SPRING LAKE, NC, 28390  
 LAT:35.234287, LON:-78.981030  
 TSP147051

(26) Q PEAK DUO BLK ML G10+ 400W  
 (26) ENPHASE IQ8PLUS-72-2-US  
 10.400 kW DC SYSTEM SIZE  
 7.540 kW AC SYSTEM SIZE

SCALE: 15/256" = 1'-0"  
 DATE: 4/5/2023  
 REV: A  
 DRAWN BY: JS

SEAL:

SITE PLAN  
**PV 2**

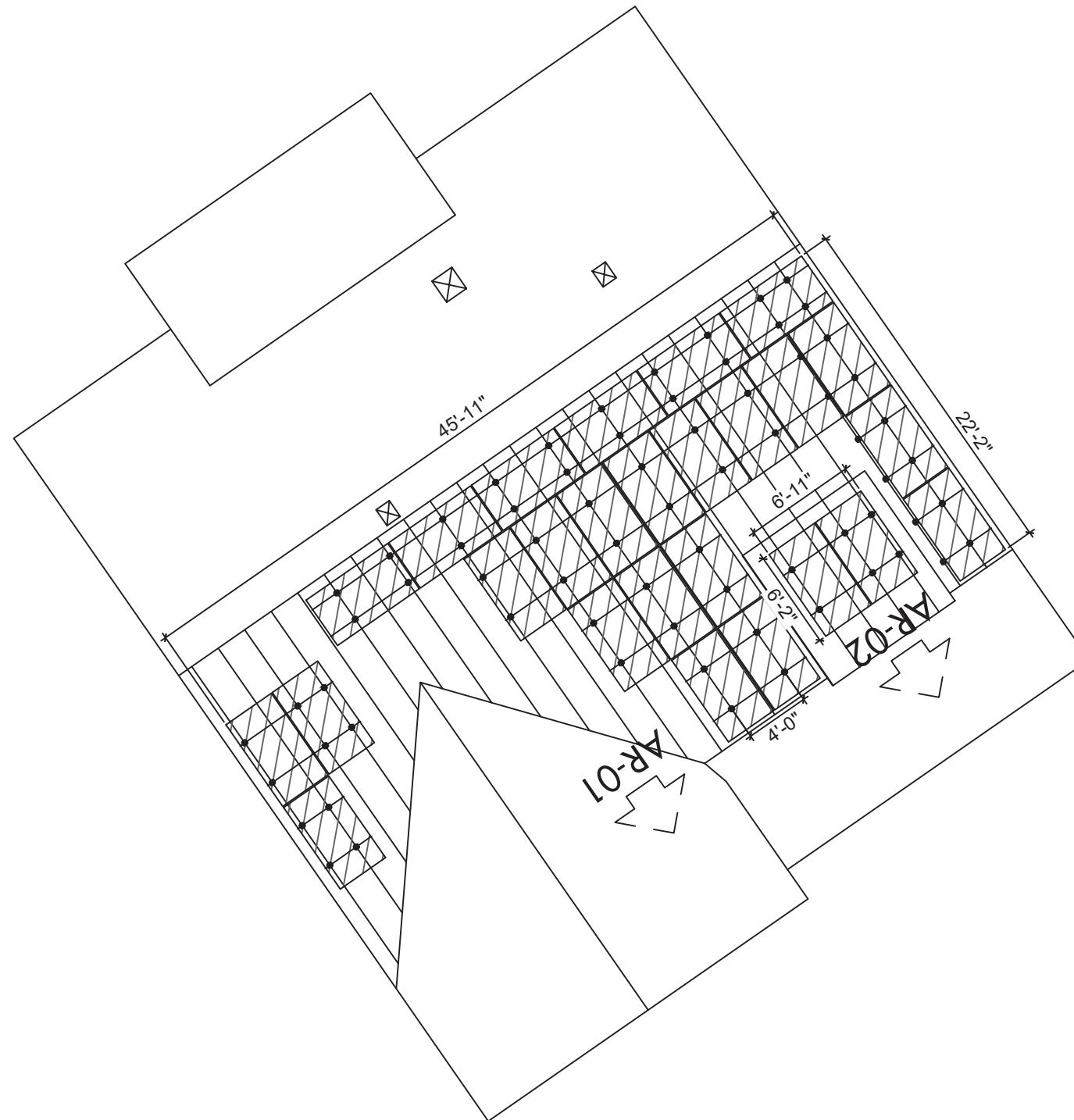
**ARRAY INFORMATION**

**AR-01**

QUANTITY: 24  
 MOUNTING TYPE: FLUSH  
 ARRAY TILT: 37°  
 AZIMUTH: 145°  
 ATTACHMENT SPACING: 4'  
 ROOF TYPE: COMP SHINGLE

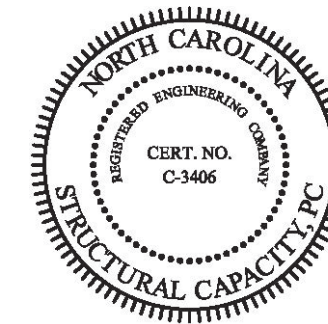
**AR-02**

QUANTITY: 2  
 MOUNTING TYPE: FLUSH  
 ARRAY TILT: 18°  
 AZIMUTH: 145°  
 ATTACHMENT SPACING: 4'  
 ROOF TYPE: COMP SHINGLE

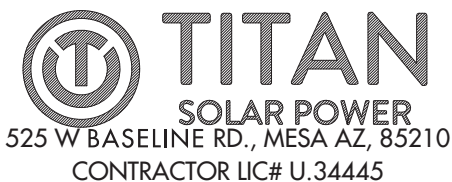
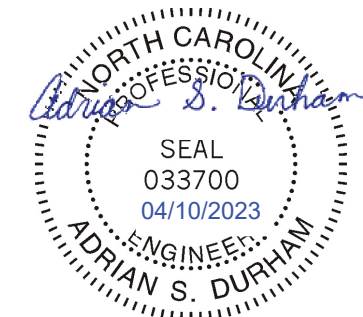


**NOTES**

- ROOF VENTS, SKYLIGHTS, WILL NOT BE COVERED UPON PV INSTALLATION
- TOTAL ROOF AREA = 3095 SQ-FT
- TOTAL ARRAY AREA = 549.14 SQ-FT
- ARRAY COVERAGE = 17.74%



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(26) Q PEAK DUO BLK ML G10+ 400W  
 (26) ENPHASE IQ8PLUS-72-2-US  
 10.400 kW DC SYSTEM SIZE  
 7.540 kW AC SYSTEM SIZE

SCALE: 7/64" = 1'-0"  
 DATE: 4/5/2023  
 REV:A  
 DRAWN BY: JS

SEAL:

PV LAYOUT  
**PV 3**

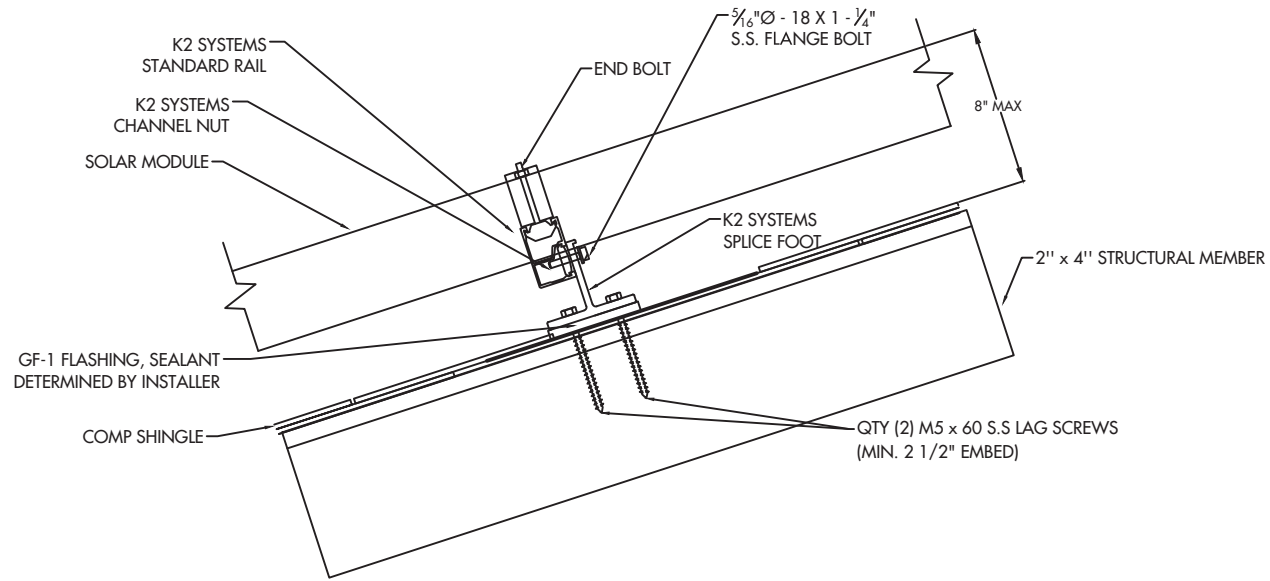


MODULE & RACKING INFORMATION

MODULE: Q PEAK DUO BLK ML G10+ 400W  
MODULE WEIGHT: 48.50 LBS  
MODULE DIMENSIONS: 74"x 41.1" x 1.5"  
RACKING/RAIL: K2 SYSTEMS / K2 SYSTEMS

ROOF & FRAMING INFORMATION

MATERIAL: COMP SHINGLE  
RAFTER/TRUSS SIZE: 2" x 4"  
RAFTER/TRUSS SPACING: 2'



ARRAY 01: 24 MODULES

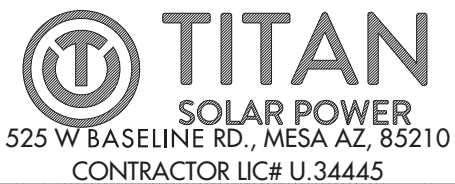
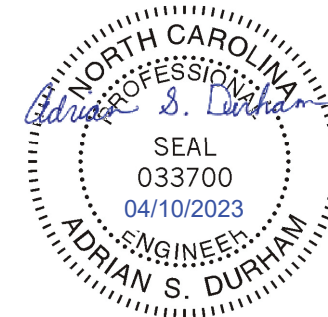
UPLIFT = 15207.00 LBS.  
POINT LOAD = 19.50 LBS. PER MOUNTING POINT  
PULLOUT STRENGTH = 33600.00 LBS.  
DISTRIBUTED LOAD = 2.46 PSF  
MODULE & RACKING WEIGHT = 1248.00 LBS

ARRAY 02: 2 MODULES

UPLIFT = 1267.25 LBS.  
POINT LOAD = 17.33 LBS. PER MOUNTING POINT  
PULLOUT STRENGTH = 3150.00 LBS.  
DISTRIBUTED LOAD = 2.46 PSF  
MODULE & RACKING WEIGHT = 104.00 LBS



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(26) Q PEAK DUO BLK ML G10+ 400W  
(26) ENPHASE IQ8PLUS-72-2-US  
10.400 kW DC SYSTEM SIZE  
7.540 kW AC SYSTEM SIZE

DATE: 4/5/2023  
REV:A  
DRAWN BY: JS

SEAL:

DETAILS  
PV 4



**PV MODULE**

Q PEAK DUO BLK ML G10+ 400W  
 W = 400 W  
 ISC = 11.14 ADC  
 VOC = 45.30 VDC  
 IMP = 10.77 ADC  
 VMP = 37.13 VDC  
 TVOC = -0.270% / °C

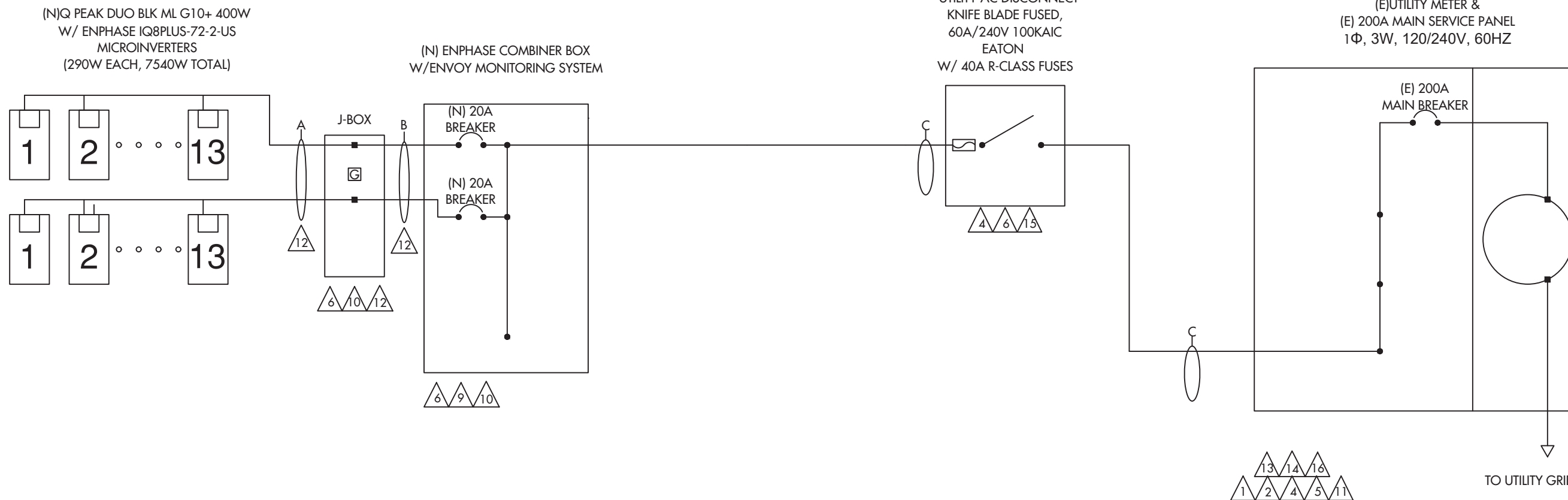
**WIRE SCHEDULE**

A - (4) #12 AWG-CU ENPHASE Q-CABLE (HR)  
 (1) #10 AWG-CU BARE COPPER WIRE (GND)  
 IN FREE AIR  
 B - (4) #10 AWG-CU THWN-2 WIRE (HR)  
 (1) #10 AWG-CU THWN-2 WIRE (GND)  
 3/4" EMT

C - (3) #8 AWG-CU THWN-2 WIRE (HR)  
 (1) #8 AWG-CU THWN-2 WIRE (GND)  
 3/4" EMT

**MAIN SERVICE PANEL**

BUS RATING = 200A  
 MAX. CURRENT RATING = 240A (200A X 1.2)  
 SOLAR BACKFEED = 39A  
 MAIN BREAKER = 200A  
 TOTAL = 239A

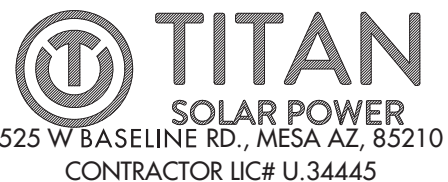


**WIRE SIZE CALCULATIONS**

TEMP CORRECTION FACTOR: 0.87 (43° AMBIENT)  
 ROOFTOP TEMP CORRECTION FACTOR: 1.00 (43° ADJUSTED)  
 (2" ABOVE ROOFTOP / 0° TEMP ADDERS - AS OCCURS)  
 (TEMP DATA TAKEN FROM ASHRAE 2% AVG HIGH TEMP)

DC WIRING  
 CONDUIT FILL FACTOR = 0.80  
 OPTIMIZER MAX. CURRENT = 18.75A DC (15.00A X 1 X 1.25)  
 #10- AWG CU. AMPACITY = 47.85A (55A X 0.87)  
 FREE AIR  
 #10 - AWG CU. AMPACITY = 27.84A (40A X 0.87 X 0.80)  
 ROOFTOP CONDUIT

AC WIRING  
 CONDUIT FILL FACTOR = 1 (3) CONDUCTORS  
 MAX. INVERTER CURRENT = 31.46A (PER INVERTER SPECS)  
 MIN. INVERTER OCP = 39.325A (31.46A X 1.25)  
 INVERTER OCP = 40A  
 #8 - AWG CU AMPACITY = 47.85A (55A X 1 X 0.87)



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(26) Q PEAK DUO BLK ML G10+ 400W  
 (26) ENPHASE IQ8PLUS-72-2-US  
 10.400 kW DC SYSTEM SIZE  
 7.540 kW AC SYSTEM SIZE

DATE: 4/5/2023  
 REV:A  
 DRAWN BY: JS

SEAL:

ONE LINE  
**PV 5**

**PV MODULE**

Q PEAK DUO BLK ML G10+ 400W  
 W = 400 W  
 ISC = 11.14 ADC  
 VOC = 45.30 VDC  
 IMP = 10.77 ADC  
 VMP = 37.13 VDC  
 TVOC = -0.270% / °C

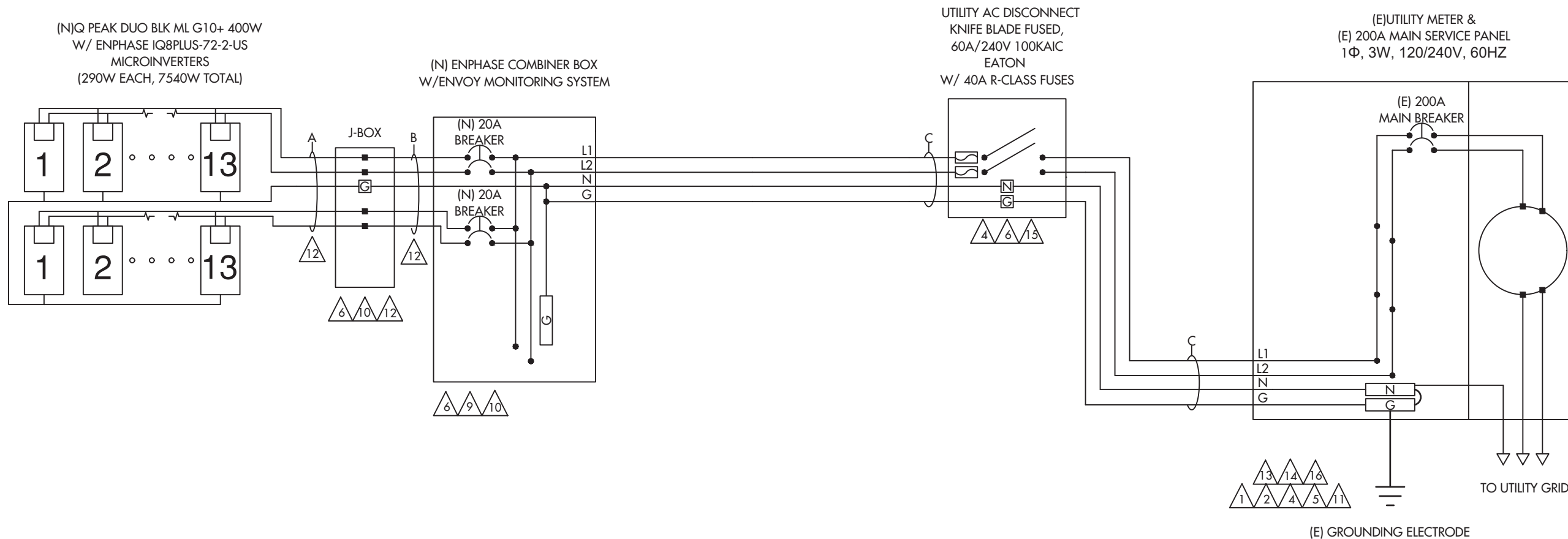
**WIRE SCHEDULE**

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 (1) #10 AWG-CU BARE COPPER WIRE (GND)  
 IN FREE AIR  
 B - (4) #10 AWG-CU THWN-2 WIRE (HR)  
 (1) #10 AWG-CU THWN-2 WIRE (GND)  
 3/4" EMT

C - (3) #8 AWG-CU THWN-2 WIRE (HR)  
 (1) #8 AWG-CU THWN-2 WIRE (GND)  
 3/4" EMT

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 MAX. CURRENT RATING = 240A (200A X 1.2)  
 SOLAR BACKFEED = 39A  
 MAIN BREAKER = 200A  
 TOTAL = 239A

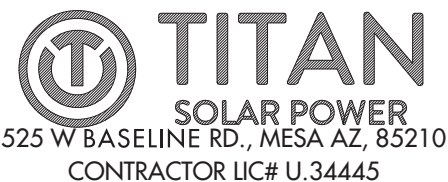


**WIRE SIZE CALCULATIONS**

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 ROOFTOP TEMP CORRECTION FACTOR: 1.00 (43° ADJUSTED)  
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 (TEMP DATA TAKEN FROM ASHRAE 2% AVG HIGH TEMP)

DC WIRING  
 CONDUIT FILL FACTOR = 0.80  
 OPTIMIZER MAX. CURRENT = 18.75A DC (15.00A X 1 X 1.25)  
 #10- AWG CU. AMPACITY = 47.85A (55A X 0.87)  
 FREE AIR  
 #10 - AWG CU. AMPACITY = 27.84A (40A X 0.87 X 0.80)  
 ROOFTOP CONDUIT

AC WIRING  
 CONDUIT FILL FACTOR = 1 (3) CONDUCTORS  
 MAX. INVERTER CURRENT = 31.46A (PER INVERTER SPECS)  
 MIN. INVERTER OCP = 39.325A (31.46A X 1.25)  
 INVERTER OCP = 40A  
 #8 - AWG CU AMPACITY = 47.85A (55A X 1 X 0.87)



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(26) Q PEAK DUO BLK ML G10+ 400W  
 (26) ENPHASE IQ8PLUS-72-2-US  
 10.400 kW DC SYSTEM SIZE  
 7.540 kW AC SYSTEM SIZE

DATE: 4/5/2023  
 REV:A  
 DRAWN BY: JS

SEAL:

THREE LINE  
**PV 6**

1

**CAUTION**  
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LOCATION: BACKFED BREAKER  
CODE REF: NEC 705.12(4)

2

**WARNING**  
INVERTER OUTPUT CONNECTION:  
DO NOT RELOCATE THIS  
OVERCURRENT DEVICE

LOCATION: BACKFED BREAKER  
CODE REF: 2017 NEC 705.12(2)(3)(b)

3

**WARNING**  
A GENERATION SOURCE IS CONNECTED TO THE SUPPLY  
(UTILITY) SIDE OF THE MAIN SERVICE DISCONNECT. FOLLOW  
THE PROPER LOCK-OUT/TAG-OUT PROCEDURES TO ENSURE  
THE PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH IS  
OPENED PRIOR TO PERFORMING WORK ON THIS DEVICE

LOCATION: (IF APPLICABLE)  
SUPPLY SIDE TAP  
LOAD PANEL  
CODE REF: UTILITY

4

**PHOTOVOLTAIC AC DISCONNECT**  
RATED AC OPERATING CURRENT: 31.46A  
NOMINAL OPERATING AC VOLTAGE: 240VAC

LOCATION: MAIN PANEL  
AC DISCONNECT(S)  
CODE REF: NEC 690.54

5

**RAPID SHUTDOWN  
SWITCH FOR  
SOLAR PV SYSTEM**

LOCATION: MAIN PANEL (EXTERIOR)  
PV BREAKER (INTERIOR)  
CODE REF: NEC 690.56(C)(3)

6

**WARNING**  
ELECTRICAL SHOCK HAZARD  
TERMINALS ON BOTH LINE AND  
LOAD SIDES MAY BE ENERGIZED  
IN THE OPEN POSITION

LOCATION: COMBINER PANEL  
AC DISCONNECT  
JUNCTION BOX  
INVERTER(S)  
CODE REF: NEC 690.13(B)

7

**PHOTOVOLTAIC  
SYSTEM METER**

LOCATION: DEDICATED KWH METER  
CODE REF: NEC 690.4(B) UTILITY

8

**WARNING**  
PHOTOVOLTAIC SYSTEM  
COMBINER PANEL  
DO NOT ADD LOADS

LOCATION: AC COMBINER PANEL  
CODE REF: NEC 690.13(B)

9

**PHOTOVOLTAIC SYSTEM DC DISCONNECT**  
MAXIMUM VOLTAGE: 480VDC  
MAXIMUM CIRCUIT CURRENT: 15.0ADC  
MAX. RATED OUTPUT CURRENT OF  
THE CHARGE CONTROLLER OR DC-  
TO-DC- CONVERTER (IF INSTALLED) 15.0ADC

LOCATION: DC DISCONNECT  
INVERTER  
CODE REF: UTILITY

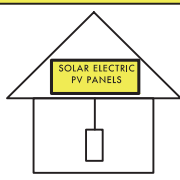
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**WARNING**  
ELECTRICAL SHOCK HAZARD  
TERMINALS ON BOTH LINE AND  
LOAD SIDES MAY BE ENERGIZED  
IN THE OPEN POSITION  
DC VOLTAGE IS ALWAYS PRESENT  
WHEN SOLAR MODULES ARE  
EXPOSED TO SUNLIGHT

LOCATION: DC DISCONNECT, COMBINE BOX  
CODE REF: NEC 690.13(B)

11

**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.



LOCATION: MAIN SERVICE (OUTSIDE COVER)  
CODE REF: NEC 690.12  
NEC 690.56(C)(1)(a)  
YELLOW STICKER

12

**WARNING PHOTOVOLTAIC POWER SOURCE**

LOCATION: DC CONDUIT  
JUNCTION BOX  
NO MORE THAN 10FT  
CODE REF: NEC 690.31(G)(3)  
NEC 690.31(G)(4)  
REFLECTIVE AND WEATHER RESISTANT

LABEL REQUIRES CAPITALIZED LETTERS WITH A MINIMUM HEIGHT OF 3/8 INCH, WHITE LETTERS ON RED BACKGROUND  
LABELS SHALL BE PLACED ON INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES, AND CABLE ASSEMBLIES  
EVERY 10 FEET, WITHIN 1 FOOT OF TURNS OR BENDS AND WITHIN 1 FOOT ABOVE AND BELOW PENETRATIONS OF  
ROOF/CEILING ASSEMBLIES, WALLS OR BARRIERS.

13

**CAUTION**  
DUAL POWER SOURCE  
SECOND SOURCE IS  
PHOTOVOLTAIC

LOCATION: SERVICE METER  
MAIN PANEL

14

**WARNING**  
INVERTER OUTPUT CONNECTION  
DO NOT RELOCATE THIS  
OVERCURRENT DEVICE

LOCATION: (IF APPLICABLE)  
SERVICE PANEL  
CODE REF: NEC 705.12(7)

15

**PHOTOVOLTAIC SYSTEM  
UTILITY DISCONNECT SYSTEM**

LOCATION: AC DISCONNECT  
CODE REF: UTILITY

16

**PV SOLAR BREAKER**  
DO NOT RELOCATE THIS  
OVERCURRENT DEVICE

LOCATION: MAIN PANEL (EXTERIOR)  
PV BREAKER: (INTERIOR)  
CODE REF: NEC 705.12(B)(2)(3)(B)



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10.400 kW DC SYSTEM SIZE  
7.540 kW AC SYSTEM SIZE

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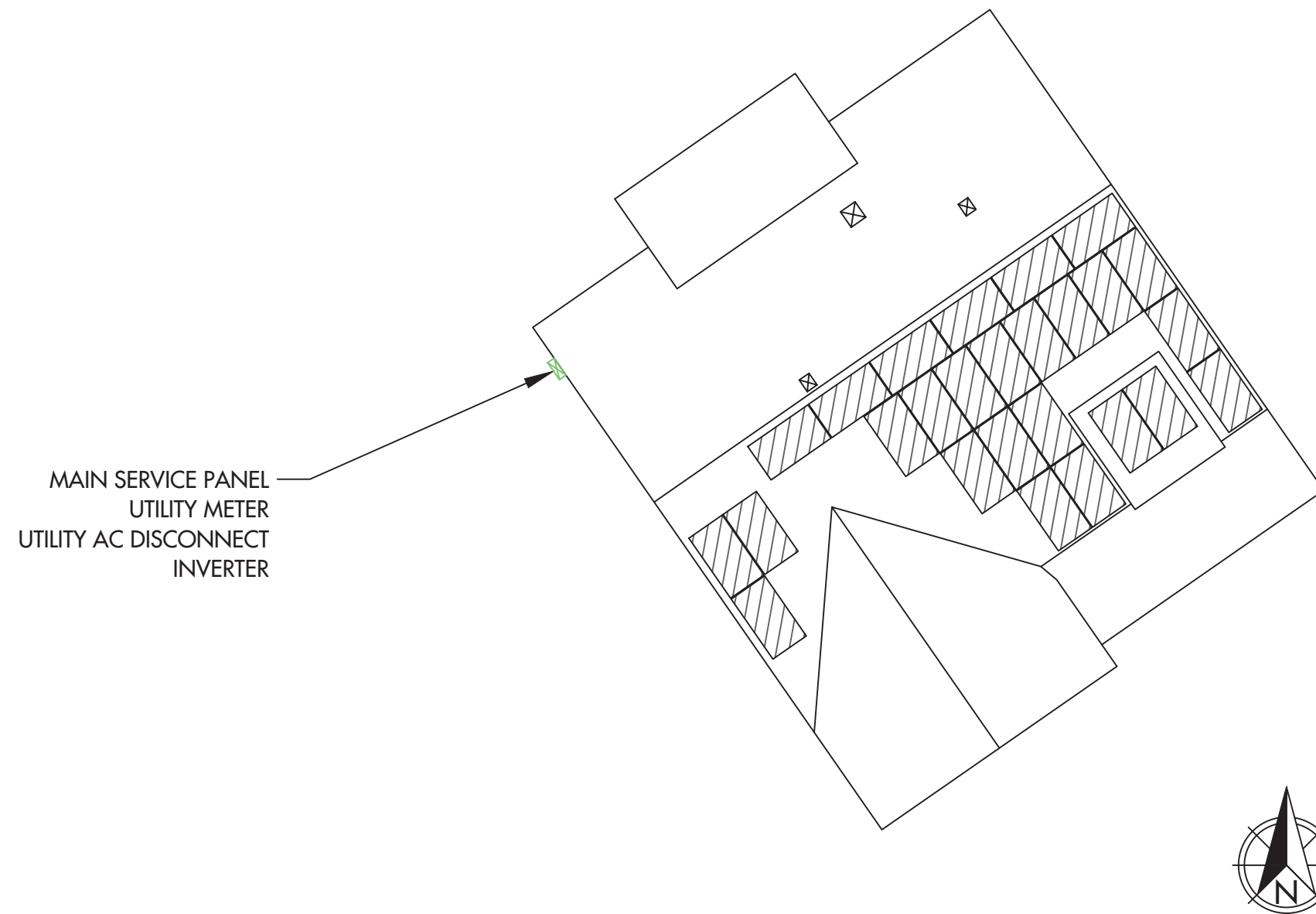
SEAL:

LABELS  
PV 7

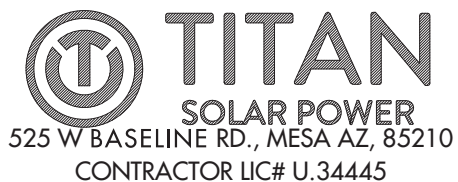


# CAUTION

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



DIRECTORY PLAQUE IN  
ACCORDANCE WITH  
NEC690.56(A)(B), 705.10



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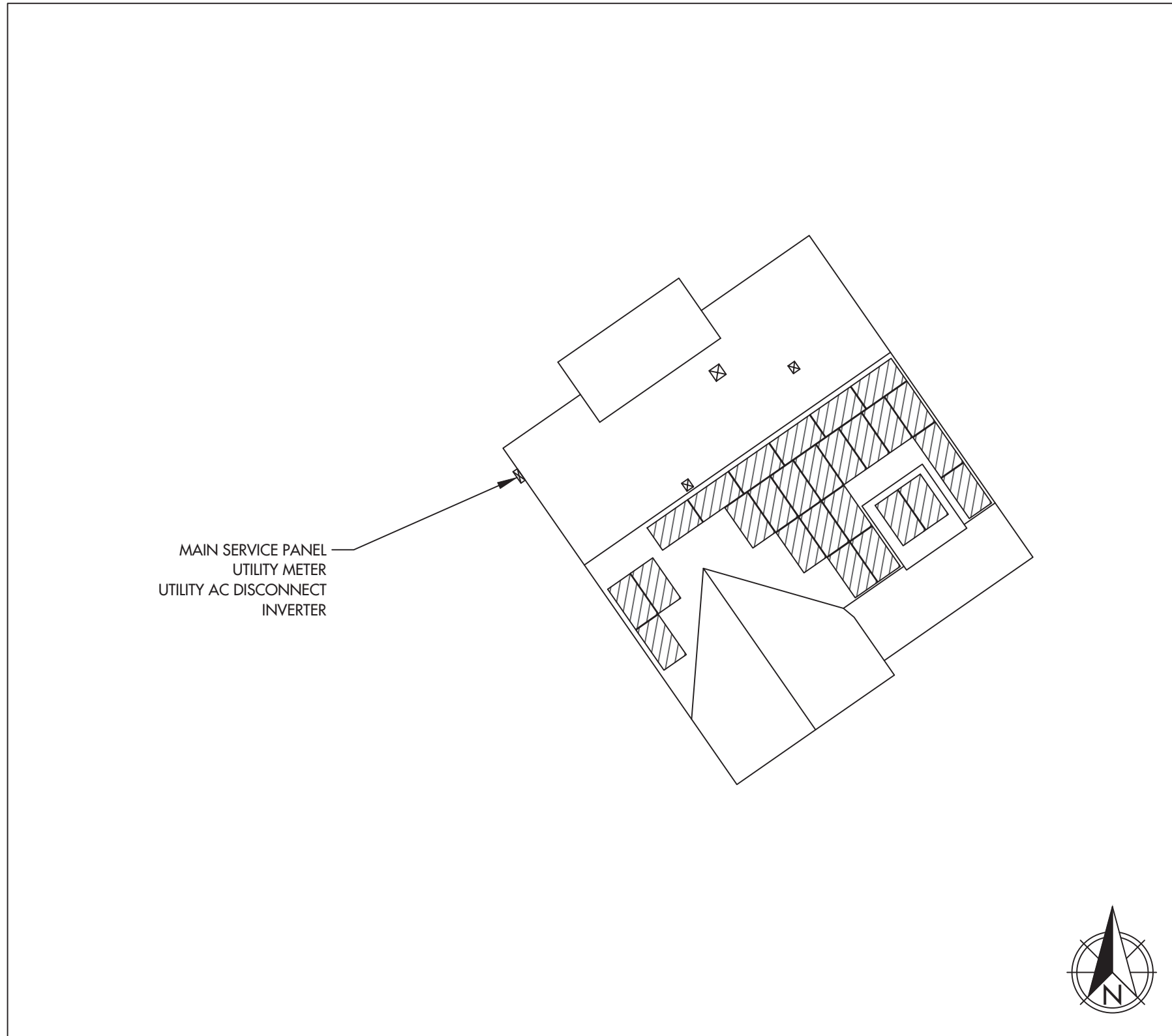


DATE: 4/5/2023  
REV: A  
DRAWN BY: JS

SEAL:

PLACARD  
PV 8

# JOB SAFETY PLAN



LOCATION OF NEAREST URGENT CARE FACILITY

NAME:

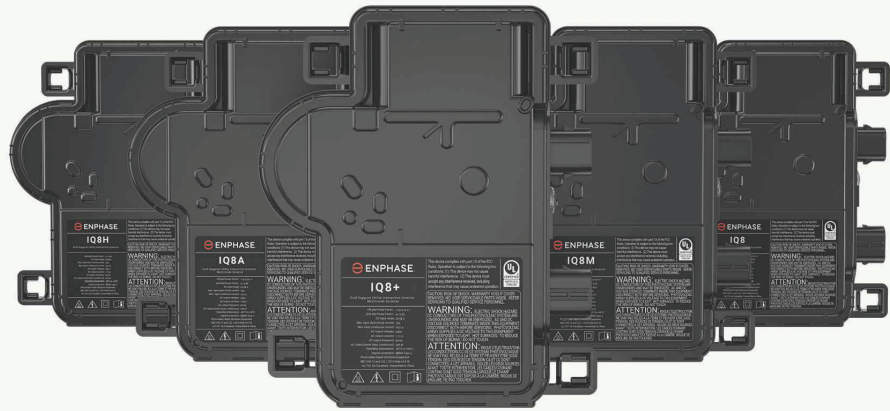
ADDRESS:

PHONE NUMBER:

NOTES:

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

PRINT NAME	INITIAL	YES	NO



## 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.



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.



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

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

### Easy to install

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

### High productivity and reliability

- Produce power even when the grid is down\*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest 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 [DC]		IQ8-60-2-US	IQ8PLUS-72-2-US	IQ8H-72-2-US	IQ8A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-US <sup>1</sup>
Commonly used module pairings <sup>2</sup>	W	235 – 350	235 – 440	260 – 460	295 – 500	320 – 540+	295 – 500+
Module compatibility		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 <sup>3</sup> [module Isc]	A	15					
Overvoltage class DC port		II					
DC port backfeed current	mA	0					
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit					
OUTPUT DATA [AC]		IQ8-60-2-US	IQ8PLUS-72-2-US	IQ8H-72-2-US	IQ8A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-US <sup>1</sup>
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 <sup>4</sup>	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	Amps	2					4.4
Max units per 20 A (L-L) branch circuit <sup>5</sup>		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/IEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 1071-01					

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

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



## 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



To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)

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

### Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ 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



## 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	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is 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

To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)

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## Enphase Q Cable and Accessories

The **Enphase Q Cable™** and accessories are part of the sixth generation Enphase IQ System™. These products provide simplicity, reliability, and faster installation times.



### Enphase Q Cable

- Two-wire, double-insulated Enphase Q Cable is 50% lighter than the previous generation Enphase cable
- Four-wire (three-phase) option also available
- New cable numbering and plug and play connectors speed up installation and simplify wire management
- Link connectors eliminate cable waste



### Field-Wireable Connectors




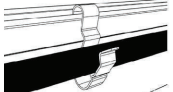
- Easily connect Q cables on the roof without complex wiring
- Make connections from any open connector and center feed any section of cable within branch limits
- Available in male and female connector types

## Enphase Q Cable Accessories

Q CABLE SPECIFICATIONS	
Voltage rating	600V (connector rating up to 250 V)
Cable temperature rating	90° C wet/dry
UV exposure rating	EN ISO 492-2
Environmental protection rating	IEC 60529 IP67
Compliance	RoHS, OIL RES I, CE, UV resistant
Cable insulator rating	H07BQ-F
Flame rating	IEC 60332-1-2

Q CABLE TYPES / ORDERING OPTIONS					
Model Number	Max Nominal Voltage	Ampacity Rating	Connector Spacing	PV Module Orientation	Connector Count per Box
Q-25-10-240 (single-phase)	250 VAC	25 A	1.3 m	Portrait	240
Q-25-17-240 (single-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	240
Q-25-20-200 (single-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	200
Q-25-10-3P-200 (three-phase)	250 VAC	25 A	1.3 m	Portrait	200
Q-25-17-3P-160 (three-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	160
Q-25-20-3P-160 (three-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	160

ENPHASE Q CABLE ACCESSORIES		
Name	Model Number	Description
Raw Q Cable (single-phase)	Q-25-RAW-300	300 meters cable with no connectors
Raw Q Cable (three-phase)	Q-25-RAW-3P-300	300 meters cable with no connectors
Field-wireable connector (male)	Q-CONN-R-10M	Make connections using single-phase cable
Field-wireable connector (male)	Q-CONN-3P-10M	Make connections using three-phase cable
Field-wireable connector (female)	Q-CONN-R-10F	Make connections from any Q Cable (single-phase) open connector
Field-wireable connector (female)	Q-CONN-3P-10F	Make connections from any Q Cable (three-phase) open connector
Cable Clip	ET-CLIP-100	Used to fasten cabling to the racking or to secure looped cabling
Disconnect tool	Q-DISC-10	Disconnect tool for Q Cable connectors, DC connectors, and AC module mount
Disconnect tool	Q-DISC-3P-10	Disconnect tool for three-phase Field wireable connectors
Q Cable sealing caps (female)	Q-SEAL-10	One needed to cover each unused connector on the cabling
Terminator (single-phase)	Q-TERM-R-10	Terminator cap for unused single-phase cable ends
Terminator (three-phase)	Q-TERM-3P-10	Terminator cap for unused three-phase cable ends
Replacement DC Adaptor (MC4)	Q-DCC-2-INT	DC adaptor to MC4 (max voltage 100 VDC)

	<b>TERMINATOR</b> Terminator cap for unused cable ends, sold in packs of ten (Q-TERM-R-10 / Q-TERM-3P-10)		<b>SEALING CAPS</b> Sealing caps for unused cable connections, sold in packs of ten (Q-SEAL-10)
	<b>DISCONNECT TOOL</b> Plan to use at least one per installation, sold in packs of ten (Q-DISC-10) Three-phase model (Q-DISC-3P-10)		<b>CABLE CLIP</b> Used to fasten cabling to the racking or to secure looped cabling, sold in packs of one hundred (ET-CLIP-100)

To learn more about Enphase offerings, visit [enphase.com/in](https://enphase.com/in)



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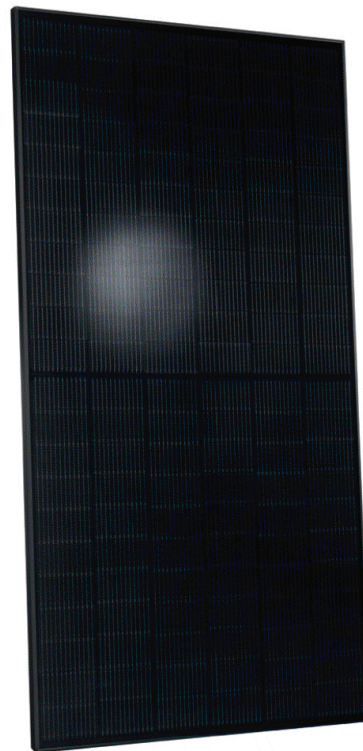
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# TITAN SOLAR PANEL



Q CELLS



**BREAKING THE 20% EFFICIENCY BARRIER**  
Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9 %.



**INDUSTRY'S MOST THOROUGH TESTING**  
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.



**ENDURING HIGH PERFORMANCE**  
Long-term yield security with Anti LID Technology, Anti PID Technology<sup>1</sup>, 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<sup>2</sup>.



**INNOVATIVE ALL-WEATHER TECHNOLOGY**  
Optimal yields, whatever the weather with excellent low-light and temperature behavior.

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

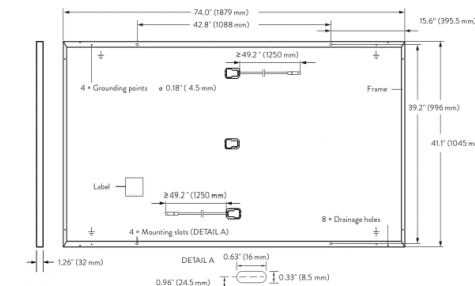
## Q PEAK DUO BLK ML-G10+ 395-400

ENDURING HIGH PERFORMANCE

THE IDEAL SOLUTION FOR:  
Rooftop arrays on residential buildings

### 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	4mm <sup>2</sup> Solar cable; (+) ≥ 49.2 in (1250 mm), (-) ≥ 49.2 in (1250 mm)
CONNECTOR	Stäubli MC4; IP68

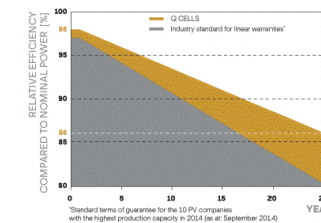


### ELECTRICAL CHARACTERISTICS

POWER CLASS		385	390	395	400	405
<b>MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC</b> <sup>1</sup> (POWER TOLERANCE +5 W / -0 W)						
POWER AT MPP	P <sub>MPP</sub> [W]	385	390	395	400	405
SHORT CIRCUIT CURRENT	I <sub>SC</sub> [A]	11.04	11.07	11.10	11.14	11.17
OPEN CIRCUIT VOLTAGE	V <sub>OC</sub> [V]	45.19	45.23	45.27	45.30	45.34
CURRENT AT MPP	I <sub>MPP</sub> [A]	10.59	10.65	10.71	10.77	10.83
VOLTAGE AT MPP	V <sub>MPP</sub> [V]	36.36	36.62	36.88	37.13	37.39
<b>EFFICIENCY</b>	η [%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
<b>MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT</b> <sup>2</sup>						
POWER AT MPP	P <sub>MPP</sub> [W]	288.8	292.6	296.3	300.1	303.8
SHORT CIRCUIT CURRENT	I <sub>SC</sub> [A]	8.90	8.92	8.95	8.97	9.00
OPEN CIRCUIT VOLTAGE	V <sub>OC</sub> [V]	42.62	42.65	42.69	42.72	42.76
CURRENT AT MPP	I <sub>MPP</sub> [A]	8.35	8.41	8.46	8.51	8.57
VOLTAGE AT MPP	V <sub>MPP</sub> [V]	34.59	34.81	35.03	35.25	35.46

<sup>1</sup> Measurement tolerances P<sub>MPP</sub> ±3%; I<sub>SC</sub>, V<sub>OC</sub> ±5% at STC: 1000 W/m<sup>2</sup>, 25 ±2 °C, AM 1.5 according to IEC 60904-3 • 7800 W/m<sup>2</sup>, NMOT, spectrum AM 1.5

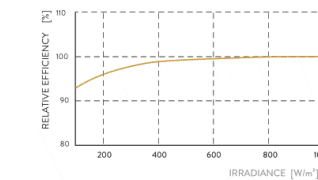
### Q CELLS PERFORMANCE WARRANTY



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/m<sup>2</sup>)

### TEMPERATURE COEFFICIENTS

TEMPERATURE COEFFICIENT OF I <sub>SC</sub>	α [%/K]	+0.04	TEMPERATURE COEFFICIENT OF V <sub>OC</sub>	β [%/K]	-0.27
TEMPERATURE COEFFICIENT OF P <sub>MPP</sub>	γ [%/K]	-0.34	NOMINAL MODULE OPERATING TEMPERATURE	NMOT [°F]	109 ± 5.4 (43 ± 3 °C)

### PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V <sub>sys</sub> [V]	1000 (IEC)/1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating [A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull <sup>3</sup> [lbs/ft <sup>2</sup> ]	75 (3600 Pa) / 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull <sup>3</sup> [lbs/ft <sup>2</sup> ]	113 (5400 Pa) / 84 (4000 Pa)		

<sup>3</sup> 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.



### PACKAGING INFORMATION

Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	48.0 in 1220 mm	1656 lbs 751 kg	24 pallets	24 pallets	32 modules
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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.



400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA  
TEL: +1 949 748 5996  
EMAIL: sales@q-cells.com.



525 W Baseline Rd., Mesa, AZ, 85210  
TEL: 855.SAY.SOLAR  
EMAIL: info@titansolarpower.com



TITAN SOLAR POWER  
525 W BASELINE RD., MESA AZ, 85210  
CONTRACTOR LIC# U.34445

SPRAGUE, ANA RESIDENCE  
580 NEW CASTLE LANE, SPRING LAKE, NC, 28390  
LAT:35.234287, LON:-78.981030  
TSP147051

(26) Q PEAK DUO BLK ML G10+ 400W  
(26) ENPHASE IQ8PLUS-72-2-US  
10.400 kW DC SYSTEM SIZE  
7.540 kW AC SYSTEM SIZE

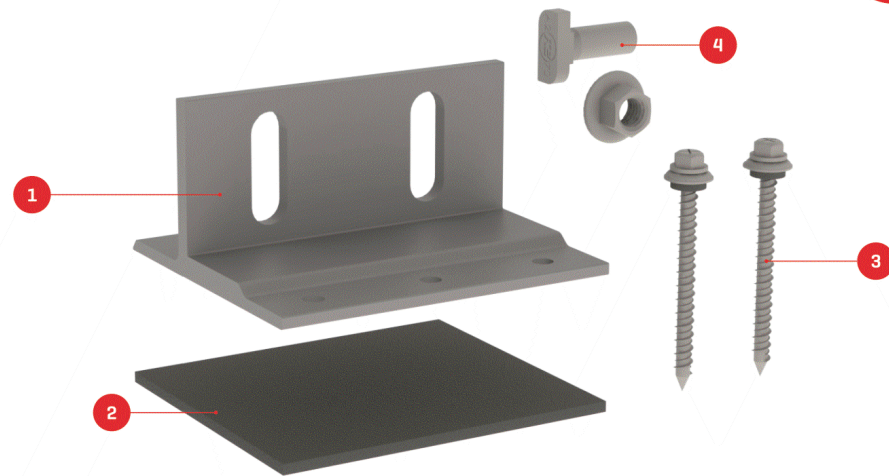
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EQUIPMENT SPECIFICATIONS  
PV 13



We support PV systems  
Formerly Everest Solar Systems



# Splice Foot X

Patent Pending

## TECHNICAL SHEET

Item Number	Description	Part Number
1	Splice Foot X	4000113   Splice Foot X Kit, Mill
2	K2 FlexFlash Butyl	
3	M5 x 60 lag screws	
4	T-Bolt & Hex Nut Set	

### Technical Data

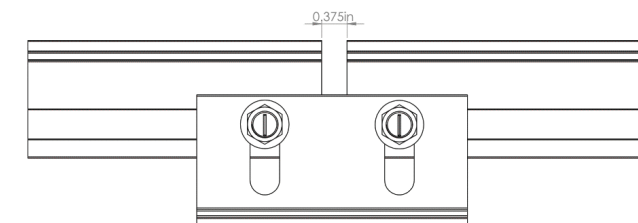
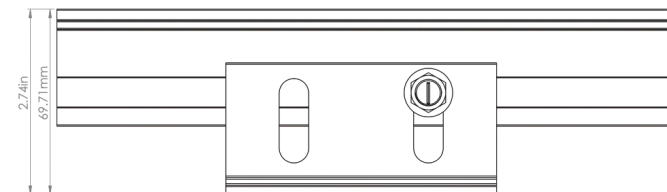
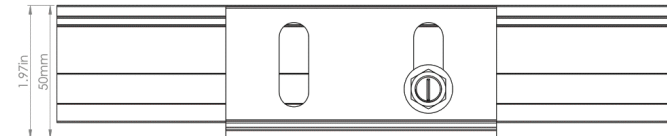
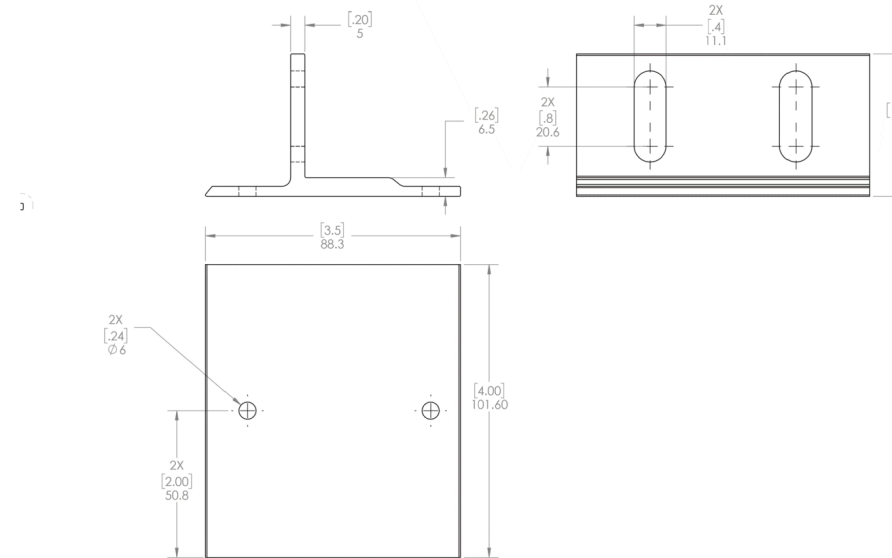
Splice Foot X	
Roof Type	Composition shingle
Material	Aluminum with stainless steel hardware
Finish	Mill
Roof Connection	M5 x 60 lag screws
Code Compliance	UL 2703
Compatibility	CrossRail 44-X, 48-X, 48-XL, 80

k2-systems.com

We support PV systems  
Formerly Everest Solar Systems



Units: [in] mm

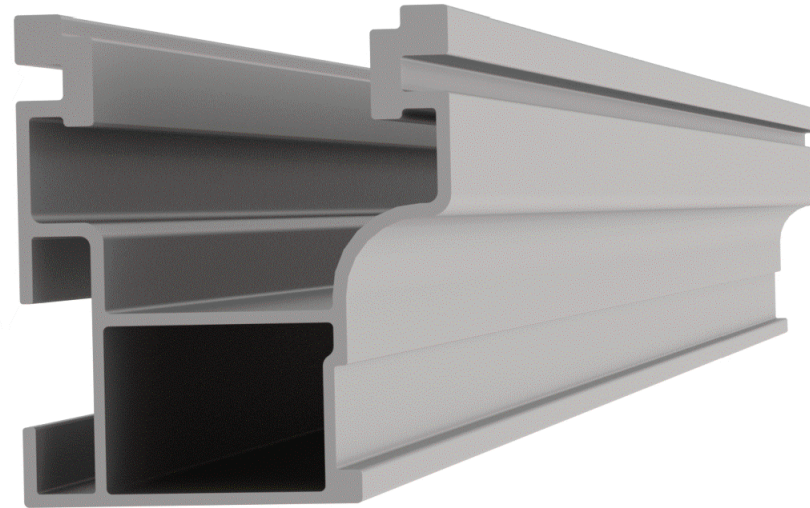


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Mounting systems for solar technology



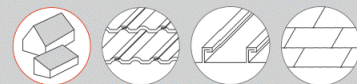
**NEW!**



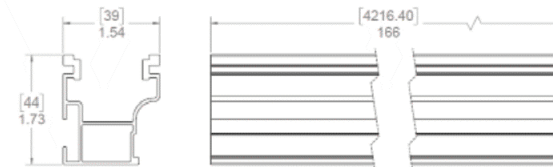
**NEW PRODUCT**

**CrossRail 44-X**

- ▶ Optimized rail profile
- ▶ One rail for all markets
- ▶ Built-in wire management
- ▶ Maintains same structural integrity as 48-X
- ▶ Tested up to 200 mph winds
- ▶ Tested up to 100 PSF snow loads



Part Number	Description
4000019	CrossRail 44-X 166", Mill
4000020	CrossRail 44-X 166", Dark
4000021	CrossRail 44-X 180", Mill
4000022	CrossRail 44-X 180", Dark
4000051	RailConn Set, CR 44-X, Mill
4000052	RailConn Set, CR 44-X, Dark
4000067	End Cap, Black, CR 44-X



[www.everest-solarsystems.com](http://www.everest-solarsystems.com)  
 CrossRail 44-X Product Sheet US01 | 0520 · Subject to change · Product illustrations are exemplary and may differ from the original.

**TITAN**  
 SOLAR POWER  
 525 W BASELINE RD., MESA AZ, 85210  
 CONTRACTOR LIC# U.34445

SPRAGUE, ANA RESIDENCE  
 580 NEW CASTLE LANE , SPRING LAKE, NC, 28390  
 LAT:35.234287, LON:-78.981030  
 TSP147051

(26) Q PEAK DUO BLK ML G10+ 400W  
 (26) ENPHASE IQ8PLUS-72-2-US  
 10.400 kW DC SYSTEM SIZE  
 7.540 kW AC SYSTEM SIZE

DATE: 4/5/2023  
 REV: A  
 DRAWN BY: JS

SEAL:

EQUIPMENT  
 SPECIFICATIONS  
**PV 15**



### Recommended OCPD Size per Grid

Inverter	Maximum Output Current (A)	Minimum Fuse Rating (A)	Maximum Fuse Rating (A)
SE3000H-US	12.5	20	50
SE3800H-US	16	20	50
SE5000H-US	24 @ 208V 21 @ 240V	30	50
SE6000H-US	24 @ 208V 25 @ 240V	30 @ 208V 35 @ 240V	50
SE7600H-US	32	40	50
SE10000H-US	42	60	80
SE11400H-US	48.5 @ 208V 47.5 @ 240V	70 @ 208V 60 @ 240V	80

SolarEdge Single Phase Inverter with HD-Wave Technology Installation MAN-01-00541-1.1