

Historic Preservation Division,

Positive Energy Solar is proposing a 7.83kW Roof Mounted Solar Array at 912 Don Gaspar Ave Santa Fe NM 87505. The Proposal includes the following perimeters and materials 18 - Mission Solar Energy MSX10-435HNOB Solar Modules and System Racking -UNIRAC NXT UMount. With 380 sq footage.

This property falls into the Historic Zone. Attached is the permit package intended for submission with the City of Santa Fe Land Use Department. The combined plans outline the installation design and materials planned to be used. The PV100 Site Map provides the dimension and aerial view of the proposed work.

If there are any questions or concerns regarding this proposal, please contact the Project Manager: David Herbertson - Phone: (505) 630-8043

Thank you for your time,



Elizabeth DeAguero Permitting specialist

Cell: (503) 670-7163

Email: [elizabeth.deaguero@positiveenergysolar.com](mailto:elizabeth.deaguero@positiveenergysolar.com)

Historic Districts and Historic Landmarks  
Design Standards and Signage Exception Criteria

(i) Do not damage the character of the district

**Response:**

The proposed rooftop solar installation will not negatively impact the historic character of the district. The solar panels will not be visible from the public right-of-way or street view and will not alter the architectural style, appearance, or overall aesthetic of the residence. The south-facing array will visually blend with the existing dark grey roofing material, minimizing any visual contrast. The west-facing array is positioned toward the rear of the home and will be further screened from public view by existing mature trees. Additionally, the south roof plane faces away from the one-way street, ensuring the system remains unseen by passing vehicles. The proposed design maintains the integrity of the home and the surrounding district while remaining unobtrusive to the community.

(ii) Are required to prevent a hardship to the applicant or an injury to the public welfare

**Response:**

Approval of the installation is necessary for the homeowner to exercise their right to generate clean, renewable energy and meaningfully reduce energy costs. Without the ability to install solar, the homeowner would lose access to a legally protected opportunity to produce sustainable power for their household. The project also supports public welfare by contributing to reduced environmental impact through clean energy generation. The system has been deliberately designed to prevent any adverse effect on the district or public visibility, with all panels located on roof planes that are concealed from street view and surrounding sightlines.

(iii) Strengthen the unique heterogeneous character of the City by providing a full range of design options to ensure that residents can continue to reside within the historic districts

**Response:**

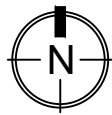
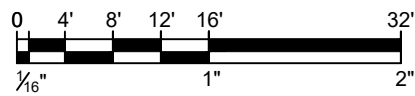
Multiple design alternatives were evaluated to identify a solution that meets both the standards of the Historic District and the energy needs of the homeowner. Installing the array on any other roof plane would increase visibility from public streets, conflicting with district guidelines. A ground-mounted system was also considered; however, the rear yard does not have sufficient space, and solar access would be significantly obstructed by surrounding trees and adjacent structures, resulting in inadequate energy production.

The option to reduce the number of modules was also explored, but because the proposed layout utilizes the least visible roof surfaces—while also having less optimal sun orientation—reducing the system size would prevent the array from meeting the guaranteed energy production required to serve the homeowner's electrical needs.

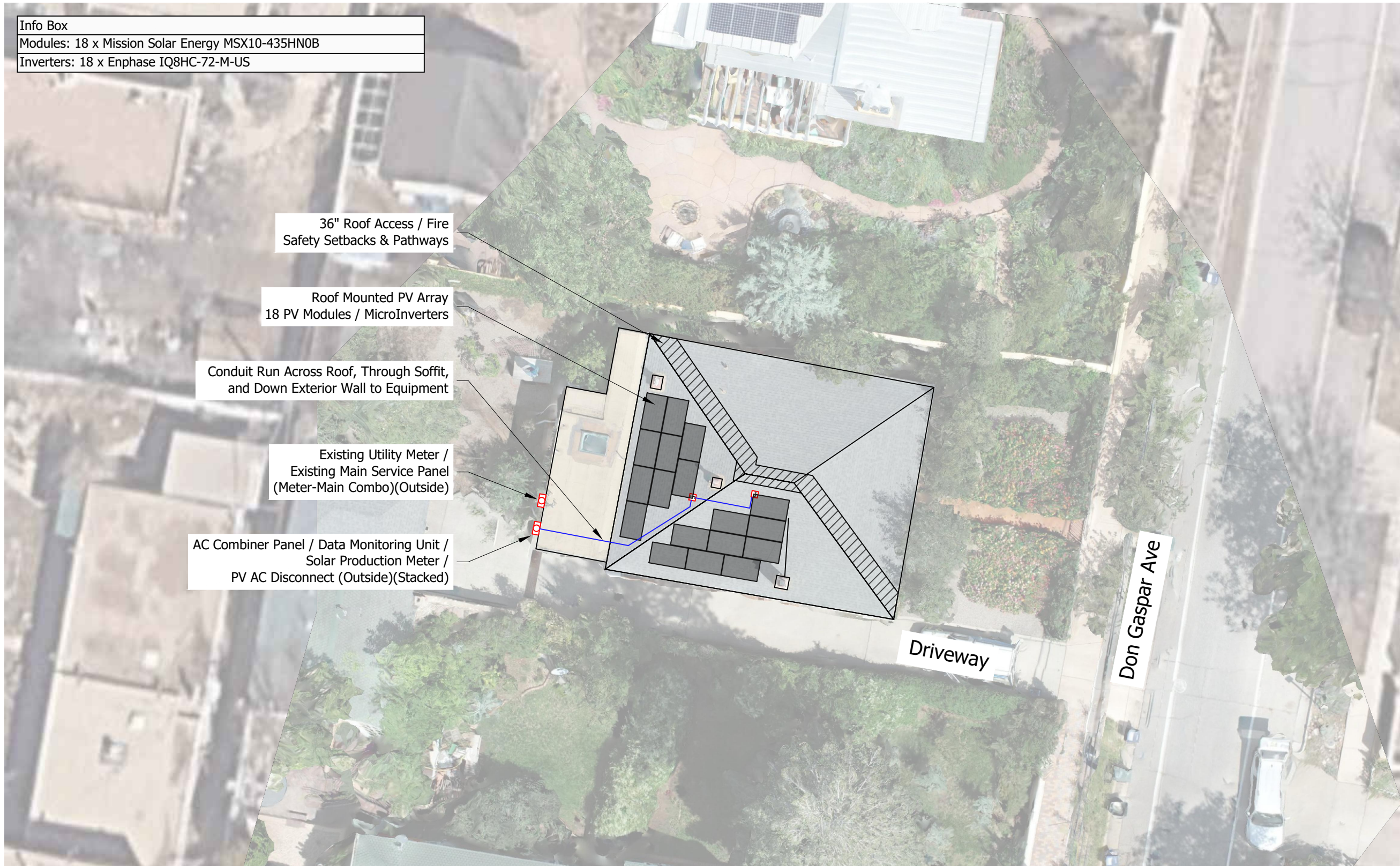
The proposed design represents the most balanced solution, preserving the historic character of the district, minimizing visibility from public view, and ensuring the homeowner can meet essential energy needs through clean, renewable power.

1

Site Plan  
1" = 16'



Info Box
Modules: 18 x Mission Solar Energy MSX10-435HN0B
Inverters: 18 x Enphase IQ8HC-72-M-US



1235 Siler Road  
Santa Fe, NM 87507  
(505) 424-1112  
NM Electrical Contractor's  
License #82573

JOB7578  
**Moises Zamora  
Residence**  
Utility-Interactive Photovoltaic System  
Total System Size = 7.830 kWdc  
912 Don Gaspar Ave  
Santa Fe, NM 87505

NEW DESIGN SUMMARY	
Number of Modules	18
Module Tilt Angle	18°
Module Azimuth	180°, 270°
Annual Shading	18.2%
Production Estimate	11123 kWh

**DESIGN APPROVAL**  
I approve of this design showing all equipment and locations, and estimated production. Any change to this design may result in delays and additional costs.  
Signature:  
Date:

DESIGNER:  
**Reme**

REV	DESCRIPTION	DATE
0	Initial Release	9/11/25

1	Special Access Instructions: NO ACCESS ISSUES
2	Exact location of equipment and conduit is subject to minor variations during installation.
3	Estimated annual energy production is based on existing site conditions and this array layout. Annual variations in weather and module degradation will affect production.
4	Governing Codes: IRC 2021, IBC 2021, IFC 2021, NMEC 2020

PV Inverter AC Capacity: 18 x 380 W = 6.84 kWac  
PV STC Power: 18 x 435 W = 7.830 kWdc  
Combined Fault Current: 216 Apk, 48.6 Arms; 50 ms

**SITE PLAN  
PV100**



1235 Siler Road  
Santa Fe, NM 87507  
(505) 424-1112

NM Electrical Contractor's  
License #82573

JOB7578

**Moises Zamora  
Residence**

Utility-Interactive Photovoltaic System  
Total System Size = 7.830 kWdc  
912 Don Gaspar Ave  
Santa Fe, NM 87505

**NEW DESIGN SUMMARY**

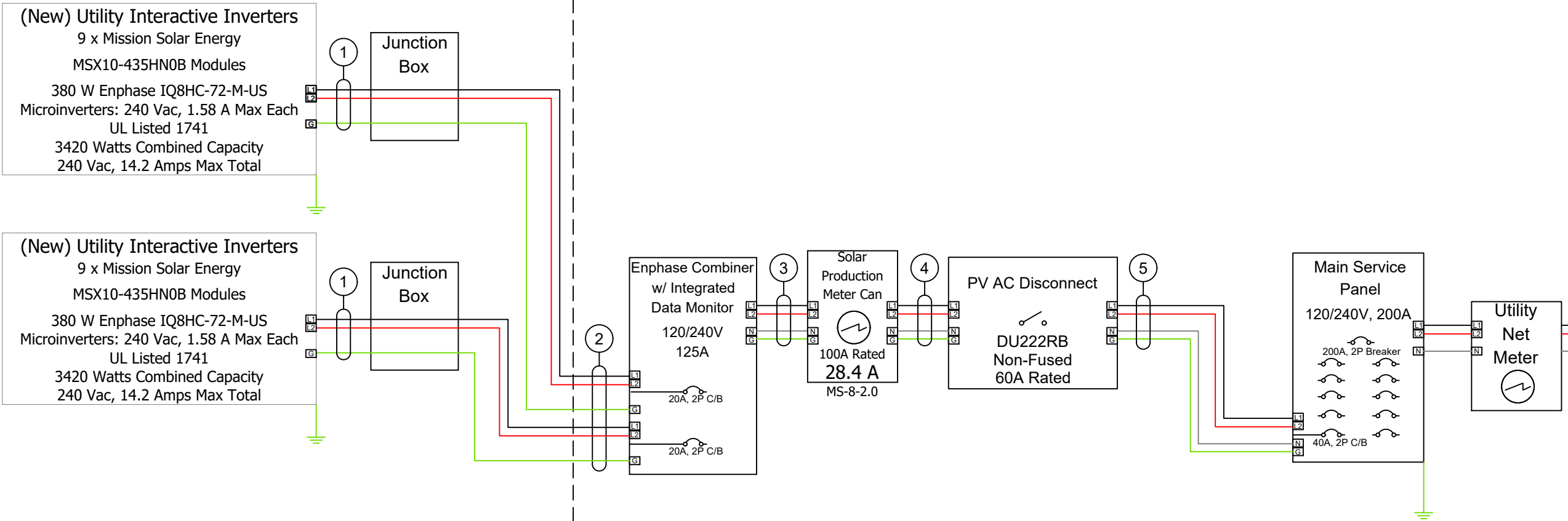
Number of Modules	18
Module Tilt Angle	18°
Module Azimuth	180°, 270°
Annual Shading	18.2%
Production Estimate	11123 kWh

DESIGNER:  
**Reme**

REV	DESCRIPTION	DATE
0	Initial Release	9/15/25

**LINE DRAWING  
PV300**

ROOF MOUNT ARRAY | HOUSE EXTERIOR WALL



Electrical System Notes

1. All electrical components are UL listed where warranted.
2. PV system shall be installed in accordance with the 2020 National Electric Code and Rapid Shutdown shall be provided.
3. Concentric and eccentric metal knockouts shall be bonded per the 2020 National Electric Code.
4. The listed inverter shall be transformerless, and deliver a balanced output. The neutral shall only serve to reference phase voltage or loss and listed functions other than carry power. The neutral shall be sized per NEC Section 705.28(C), or larger if required by equipment lugs.
5. Wire and conduit sizing is subject to lug requirements, material availability, and installation convenience and may be larger than noted on the diagram. Conduit and wire size listed in the Wire Schedule represent the minimum required size.

Grounding Notes

1. All grounds shall be connected to the main service ground in the existing Main Service.
2. When the new work on this drawing is remote from the main service ground, an auxiliary ground per NMEC section 250 inclusive will be connected at the remote work.

<b>PV Inverter AC Capacity: 18 x 380 W = 6.84 kWac</b>
<b>PV STC Power: 18 x 435 W = 7.830 kWdc</b>
<b>Combined Fault Current: 216 Apk, 48.6 Arms; 50 ms</b>

<b>Info Box</b>
Modules: 18 x Mission Solar Energy MSX10-435HN0B
Inverters: 18 x Enphase IQ8HC-72-M-US

**WIRE SCHEDULE**

1	Microinverter Conductors, DG Cable 90°C Cable, 2 x #12 AWG, 1 x #8 AWG Solid CU GEC per rack
2	(3/4" EMT), 4 x #10 AWG THWN-2 90°C conductors (Cir 1, Cir 2), 1 x #10 AWG GND, ~10' run
3	(3/4" EMT), 2 x #8 AWG THWN-2 90°C conductors, 1 x #10 AWG Ntrl, 1 x #10 AWG GND, ~5' run
4	(3/4" EMT), 2 x #8 AWG THWN-2 90°C conductors, 1 x #10 AWG Ntrl, 1 x #10 AWG GND, ~5' run
5	(3/4" EMT), 2 x #8 AWG THWN-2 90°C conductors, 1 x #10 AWG Ntrl, 1 x #10 AWG GND, ~5' run

# MSX N-Type 108HC

Mono-facial High Efficiency N-type

MISSION SOLAR  
ENERGY

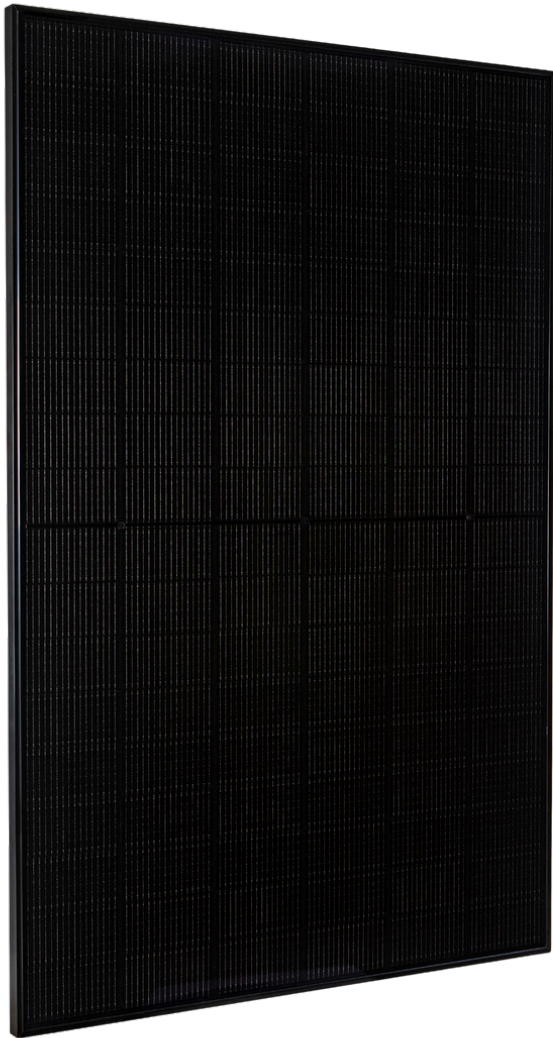


# 435W

Class leading power output

Positive  
Power  
Tolerance

0 to +3%



## American Solar Built for the Long Haul

Mission Solar Energy, headquartered in San Antonio, Texas, offers high-quality, American-made solar modules designed specifically for residential and commercial rooftops. Engineered for maximum efficiency and durability in real-world conditions, our modules combine sleek aesthetics with best-in-class performance to power homes and businesses for decades to come.

### America's Module Company®



#### High Power Output

- Achieves 22.3% efficiency with advanced high-density interconnect technology
- Multi-busbar design improves current flow and reduces resistance for better energy



#### Built for Tough Conditions

- Enhanced cell processing and material control for long-term durability
- Resists corrosion and degradation in harsh environments –salt spray, ammonia, sand, humidity, and high heat
- Certified for 5400 Pa front load and 5400 Pa back load for mechanical strength



#### More Energy, More of the Time

- Proven performance in low light and at challenging angles, verified by third-party testing
- Specialized glass design maintains output even in cloudy or shifting weather
- Low temperature coefficient (-0.29%)

### BEST-IN-CLASS WARRANTY

Degradation guaranteed not to exceed 1% in year 1 and 0.45% annually from years 2 to 30 with 86.0% capacity guaranteed in year 30. For more information, visit [www.missionsolar.com/warranty](http://www.missionsolar.com/warranty)



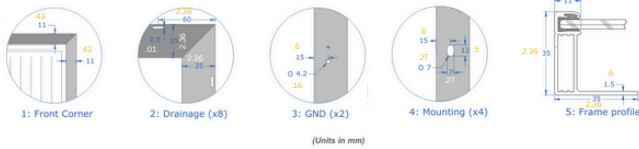
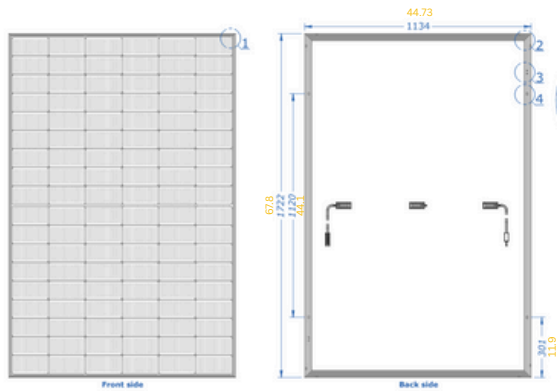
### CERTIFICATIONS



If you have questions or concerns about certification of our products in your area, please contact Mission Solar Energy.

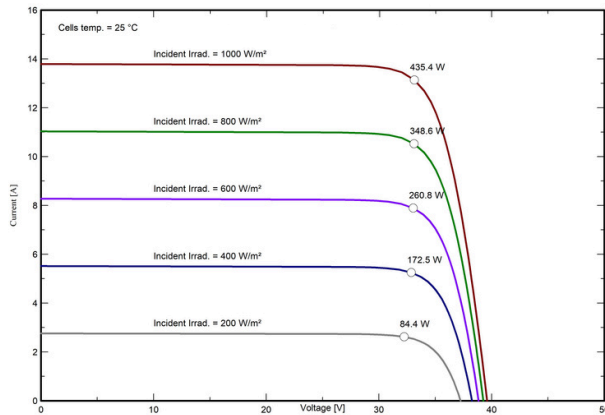
## BASIC DIMENSIONS

[UNITS: MM/IN]



## CURRENT-VOLTAGE CURVE

MSX10-xxxHN0B: 435W, 108 CELL SOLAR MODULE



## WARRANTY INFORMATION

Module product workmanship warranty	25 years
Linear power performance warranty	30 years
	≥99% end 1 <sup>st</sup> year ≥94.05% end of 12 <sup>th</sup> year ≥88.2% end of 25 <sup>th</sup> year ≥86% end of 30 <sup>th</sup> year

## CERTIFICATIONS AND TESTS

IEC	61215, 61730, 61701
UL	61730



## Mission Solar Energy

8303 S. New Braunfels Ave., San Antonio, Texas  
78235 www.missionsolar.com | info@missionsolar.com

Mission Solar Energy reserves the right to make specification changes without notice.

C-MKTG-0050 VERSION: 2 VERSION DATE: 06/10/2025

## ELECTRICAL SPECIFICATION

PRODUCT TYPE	MSX10-xxxHN0B (xxx = P <sub>max</sub> )			
Power Output	P <sub>max</sub> Wp	435	440	445
Module Efficiency	%	22.3	22.5	22.8
Tolerance	%	0/+3	0/+3	0/+3
Short Circuit Current	I <sub>sc</sub> A	13.79	13.9	14.02
Open Circuit Voltage	V <sub>oc</sub> V	39.56	39.62	39.69
Rated Current	I <sub>mp</sub> A	13.07	13.19	13.31
Rated Voltage	V <sub>mp</sub> V	33.31	33.37	33.44
Fuse Rating	A	30	30	30
System Voltage	V	1,500	1,500	1,500

## TEMPERATURE COEFFICIENTS

Normal Operating Cell Temperature (NOCT)	45°C
Temperature Coefficient of P <sub>max</sub>	-0.29%/°C
Temperature Coefficient of V <sub>oc</sub>	-0.25%/°C
Temperature Coefficient of I <sub>sc</sub>	0.05%/°C

## OPERATING CONDITIONS

Maximum System Voltage	1,500 Vdc
Operating Temperature Range	-40°F to 185°F (-40°C to +85°C)
Maximum Series Fuse Rating	30A
Fire Safety Classification	Type 1
Front & Back Load (UL Standard)	Up to 5,400 Pa front and 5,400 Pa back load. Tested to UL 61730

\*Mission Solar Energy uses quality sourced materials that result in a Type 1 fire rating. Please note, the 'Fire Class' Rating is designated for the fully-installed PV system, which includes, but is not limited to, the module, the type of mounting used, pitch and roof composition.

## MECHANICAL DATA

Solar Cells	N-type i-TOPCon Monocrystalline
Cell Orientation	108 cells
Module Dimension	1722 mm x 1134 mm x 35 mm
Weight	46.96 lbs. (21.3 kg)
Front Glass	3.2 mm AR Coating Tempered Glass
Frame	35 mm Anodized Aluminum, Black
Encapsulant	Polyolefin Elastomer (POE)
Junction Box	IP 68 Rated
Cable	1.2 m, Wire 4 mm <sup>2</sup> (12AWG)
Connector	MC4 EV02 / Staubli EVO-2A

## SHIPPING INFORMATION

Truck Load	Ship To	Pallets	Modules	435W Bin
53'	Most States	28	840	365.4 kW

Double Stack: (Horizontal Orientation): 30 modules per pallet

## PALLET [30 MODULES]

Weight	Height	Width	Length
1,360 lbs. (617 kg)	44.25 in (112.4 cm)	47.25 in (120 cm)	70 in (177.8 cm)



# IQ8HC Microinverter

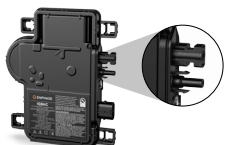
Our newest IQ8 Series Microinverters are the industry's first microgrid-forming\*, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC), which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 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 the IQ8 Series Microinverters that have integrated MC4 connectors.



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

\*Meets UL 1741 only when installed with IQ System Controller 2 and 3.

## Easy to install

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

## High productivity and reliability

- Produces 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) and IEEE 1547:2018 (UL 1741-SB)

## NOTE:

- IQ8 Series Microinverters cannot be mixed together with previous generations of Enphase microinverters (IQ7 Series, IQ6 Series, and so on) in the same system.
- IQ Gateway is required to change the default grid profile at the time of installation to meet local Authority Having Jurisdiction (AHJ) requirements.

# IQ8HC Microinverter

INPUT DATA (DC)		UNITS	IQ8HC-72-M-US			
Commonly used module pairings <sup>1</sup>		W	320–540			
Module compatibility	To meet compatibility, PV modules must be within the maximum input DC voltage and maximum module $I_{sc}$ listed below. Module compatibility can be checked at <a href="https://enphase.com/installers/microinverters/calculator">https://enphase.com/installers/microinverters/calculator</a> .					
MPPT voltage range		V	29.5–45			
Operating range		V	18–58			
Minimum/Maximum start voltage		V	22/58			
Max. input DC voltage		V	60			
Max. continuous operating DC current		A	14			
Max. input DC short-circuit current		A	25			
Max. module $I_{sc}$		A	20			
Overvoltage class DC port			II			
DC port backfeed current		mA	0			
PV array configuration	Ungrounded array; no additional DC side protection required; AC side protection requires max 20 A per branch circuit					
OUTPUT DATA (AC)		UNITS	IQ8HC-72-M-US @240 VAC		IQ8HC-72-M-US @208 VAC	
Peak output power		VA	384		366	
Max. continuous output power		VA	380		360	
Nominal grid voltage (L-L)		V	240, split-phase (L-L), 180°		208, single-phase (L-L), 120°	
Minimum and maximum grid voltage <sup>2</sup>		V	211-264		183-229	
Max. continuous output current		A	1.58		1.73	
Nominal frequency		Hz	60			
Extended frequency range		Hz	47-68			
AC short circuit fault current over three cycles $I_{rms}$			2.70			
Max. units per 20 A (L-L) branch circuit <sup>3</sup>			10		9	
Total harmonic distortion		%	< 5			
Overvoltage class AC port			III			
AC port backfeed current		mA	18			
Power factor setting			1.0			
Grid-tied power factor (adjustable)			0.85 leading ... 0.85 lagging			
Peak efficiency		%	97.3		97.2	
CEC weighted efficiency		%	97.0		96.5	
Nighttime power consumption		mW	22		26	
MECHANICAL DATA			UNITS			
Ambient temperature range			-40°C to 65°C (-40°F to 149°F)			
Relative humidity range			4% to 100% (condensing)			
DC connector type			Stäubli MC4			
Dimensions (H × W × D); Weight			212 mm (8.3") × 175 mm (6.9") × 30.2 mm (1.2"); 1.1 kg (2.43 lbs)			
Cooling			Natural convection – no fans			
Approved for wet locations; Pollution degree			Yes; 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, IEEE 1547:2018 (UL 1741-SB), 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, NEC 2020 and NEC 2023 section 690.12 and C22.1-2018 Rule 64-218 rapid shutdown of PV systems for AC and DC conductors when installed according to manufacturer's instructions.					

(1) No enforced DC/AC ratio.

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

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

# Revision history

REVISION	DATE	DESCRIPTION
DSH-00047-3.0	October 2023	Included NEC 2023 specification in the “Compliance” section.
DSH-00047-2.0	September 2023	Updated module compatibility information.
DSH-00047-1.0	May 2023	Preliminary release.