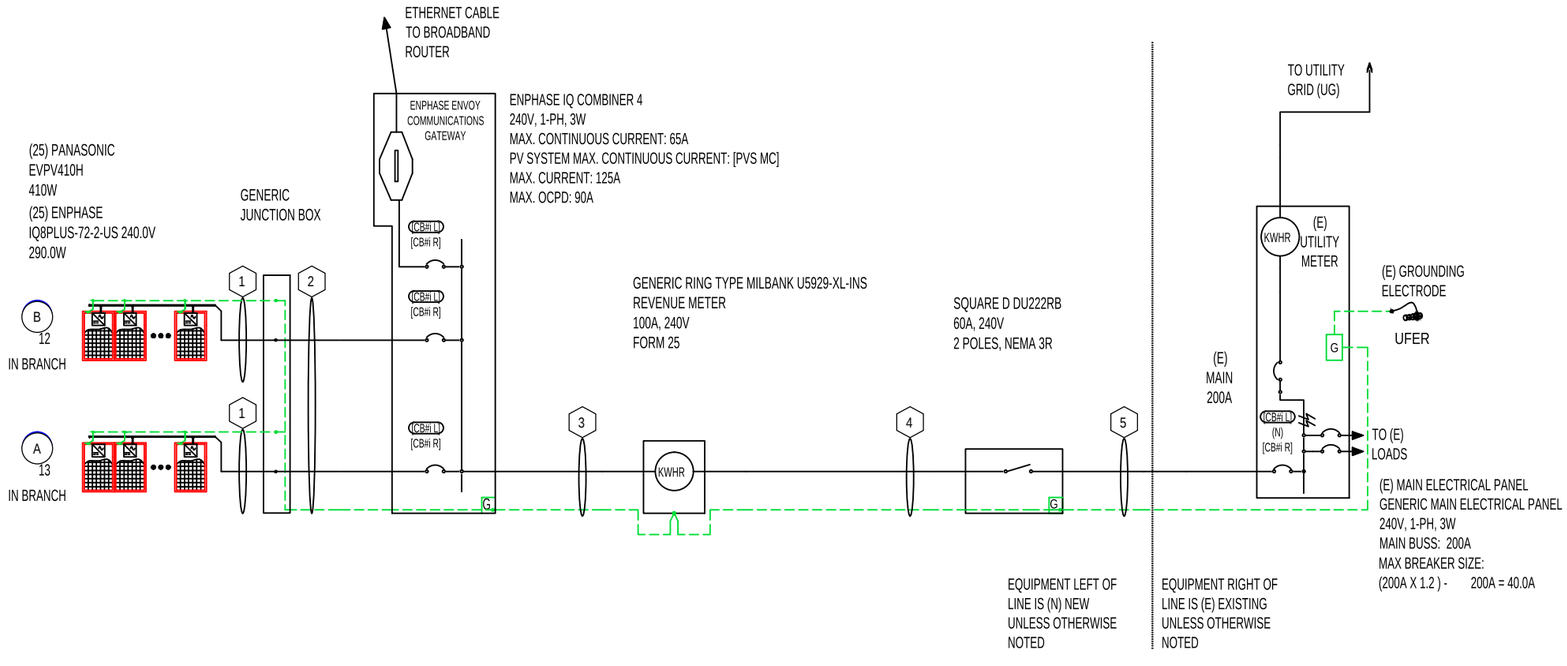
CONDUCTOR AND CONDUIT SCHEDULE W/ELECTRICAL CALCULATIONS														
ID	TYPICAL	CONDUCTOR	CONDUIT	CURRENT-CARRYING CONDUCTORS IN CONDUIT	OCPD	EGC	TEMP. CORR. FACTOR	CONDUIT FILL FACTOR	CONT CURRENT	MAX CURRENT (125%)	BASE AMP	DERATED AMP	TERM. TEMP. RATING	AMP TERMINAL
1	2	12 AWG THWN-2, COPPER, ENPHASE Q-CABLE	FREE AIR	N/A	N/A	6 AWG BARE, COPPER	0.87 (41.1ºC)	1	15.73A	19.66A	30A	26.1A	75ºC	25A
2	1	10 AWG THWN-2, COPPER	0.5" EMT	4	20A	10 AWG THWN-2, COPPER	0.87 (41.1ºC)	0.8	15.73A	19.66A	40A	27.84A	75ºC	35A
3	1	8 AWG THWN-2, COPPER	0.75" EMT	2	N/A	8 AWG THWN-2, COPPER	0.87 (41.1ºC)	1	30.25A	37.81A	55A	47.85A	75ºC	50A
4	1	8 AWG THWN-2, COPPER	0.75" EMT	2	N/A	8 AWG THWN-2, COPPER	0.87 (41.1ºC)	1	30.25A	37.81A	55A	47.85A	75ºC	50A
5	1	8 AWG THWN-2, COPPER	0.75" EMT	2	40A	8 AWG THWN-2, COPPER	0.87 (41.1ºC)	1	30.25A	37.81A	55A	47.85A	75ºC	50A

(A) String

(B) String



Sunblaze ENERGY

CONTRACTOR

SUNBLAZE ENERGY

PHONE: (520) 900-6110

ADDRESS: 1016 EAST PENNSYLVANIA STREET PIMA COUNTY TUCSON, AZ 85714

LIC.NO.: AZ ROC #331687

HIC.NO.:

ELE.NO.:

NEW PV SYSTEM: 10,250 KWP

EYLER RESIDENCE

14661 EAST CIRCLE H RANCH PLACE
CORONA DE TUCSON,
AZ 85641
APN: 205754170

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

LINE DIAGRAM

DATE: 2023-09-14

DESIGN BY: M. BABURIN

CHECKED BY: UKRDRAFTING

REVISIONS

E-601
(SHEET 1)

SYSTEM SUMMARY		
	BRANCH #1	BRANCH #2
INVERTERS PER BRANCH	13	12
MAX AC CURRENT	15.73A	14.52A
MAX AC OUTPUT POWER	3,900W	3,600W
ARRAY STC POWER	10,250W	
ARRAY PTC POWER	9,760W	
MAX AC CURRENT	30.25A	
MAX AC POWER	7,500W	
DERATED (CEC) AC POWER	7,500W	

MODULES										
REF.	QTY.	MAKE AND MODEL	PMAX	PTC	ISC	IMP	VOC	VMP	TEMP. COEFF. OF VOC	FUSE RATING
PM1-25	25	PANASONIC EVPV410H	410W	390.40W	10.35A	9.61A	49V	9.61V	-0.118V/°C (-0.24%/°C)	25A

INVERTERS										
REF.	QTY	MAKE AND MODEL	AC VOLTAGE	GROUND	OCPD RATING	RATED POWER	MAX OUTPUT CURRENT	MAX INPUT CURRENT	MAX INPUT VOLTAGE	CEC WEIGHTED EFFICIENCY
I1-25	25	ENPHASE IQ8PLUS-72-2-US	240A	FLOATING	20A	290W	1.21A	15A	60V	97.0%

DISCONNECTS				
REF.	QTY.	MAKE AND MODEL	RATED CURRENT	MAX RATED VOLTAGE
SW1	1	SQUARE D DU222RB	60A	240V

OCPDS			
REF.	QTY	RATED CURRENT	MAX VOLTAGE
CB1-2	2	20A	240V
CB3	1	15A	240V
CB4	1	40A	240V

ASHRAE EXTREME LOW	41.1°C (106°F), SOURCE: DAVIS MONTHAN AFB (-110.88°; 32.17°)
ASHRAE 2% HIGH	41.1°C (106°F), SOURCE: DAVIS MONTHAN AFB (-110.88°; 32.17°)

BILL OF MATERIAL

CATEGORY	MAKE	MODEL NUMBER	REF	QTY	UNIT	QTY/UNIT	DESCRIPTION
PV MODULE	PANASONIC	EVPV410H	PM1-25	25	PIECE	1	PANASONIC EVPV410H 410W, MONOCRYSTALLINE SILICON
INVERTER	ENPHASE	IQ8PLUS-72-2-US	I1-25	25	PIECE	1	ENPHASE IQ8PLUS-72-2-US 290W MICROINVERTER
DISCONNECT	SQUARE D	DU222RB	SW1	1	PIECE	1	SQUARE D DU222RB, NON-FUSED, 2-POLE, 60A, 240VAC, NEMA 3R OR EQUIVALENT
AC COMBINER PANEL	ENPHASE	IQ COMBINER 4	EP1	1	PIECE	1	ENPHASE IQ COMBINER 4 125A COMBINER PANEL
PRODUCTION METER	GENERIC	GENERIC PV METER	PVM1	1	PIECE	1	GENERIC PV METER
MONITORING	ENPHASE	ENPHASE-ENVOY	ENV1	1	PIECE	1	ENPHASE ENVOY
WIRING	GENERIC	Q-12-10-240	WR1	106	FEET	1	ENPHASE Q-CABLE
WIRING	GENERIC	GEN-6-AWG-BARE-CU	WR1	106	FEET	1	6 AWG BARE, COPPER (GROUND)
WIRING	GENERIC	GEN-10-AWG-THWN-2-CU-RD	WR2	10	FEET	1	10 AWG THWN-2, COPPER, RED (LINE 1)
WIRING	GENERIC	GEN-10-AWG-THWN-2-CU-BLK	WR2	10	FEET	1	10 AWG THWN-2, COPPER, BLACK (LINE 2)
WIRING	GENERIC	GEN-10-AWG-THWN-2-CU-GR	WR2	10	FEET	1	10 AWG THWN-2, COPPER, GREEN (GROUND)
WIRING	GENERIC	GEN-8-AWG-THWN-2-CU-RD	WR3-5	30	FEET	1	8 AWG THWN-2, COPPER, RED (LINE 1)
WIRING	GENERIC	GEN-8-AWG-THWN-2-CU-BLK	WR3-5	30	FEET	1	8 AWG THWN-2, COPPER, BLACK (LINE 2)
WIRING	GENERIC	GEN-8-AWG-THWN-2-CU-GR	WR3-5	30	FEET	1	8 AWG THWN-2, COPPER, GREEN (GROUND)
WIRING	GENERIC	GEN-8-AWG-THWN-2-CU-WH	WR3-5	30	FEET	1	8 AWG THWN-2, COPPER, WHITE (NEUTRAL)
WIREWAY	GENERIC	GEN-EMT-0.5"-DIA	WW2	10	FEET	1	EMT CONDUIT 0.5" DIA
WIREWAY	GENERIC	GEN-EMT-0.75"-DIA	WW3-5	30	FEET	1	EMT CONDUIT 0.75" DIA
OCPD	GENERIC	GEN-CB-20A-240VAC	CB1-2	2	PIECES	1	CIRCUIT BREAKER, 20A, 240VAC
OCPD	GENERIC	GEN-CB-15A-240VAC	CB3	1	PIECE	1	CIRCUIT BREAKER, 15A, 240VAC
OCPD	GENERIC	GEN-CB-40A-240VAC	CB4	1	PIECE	1	CIRCUIT BREAKER, 40A, 240VAC
TRANSITION ENCLOSURE	GENERIC	GEN-AWB-TB-4-4X	JB1	1	PIECE	1	TRANSITION/PASS-THROUGH BOX, WITH 4 TERMINAL BLOCKS

Sunblaze ENERGY

CONTRACTOR

SUNBLAZE ENERGY

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ENGINEER OF RECORD

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ELECTRICAL PLAN

DATE: 2023-09-14

DESIGN BY: M. BABURIN

CHECKED BY: UKRDRAFTING

REVISIONS

E-602
(SHEET 2)

EverVolt™ | EVERVOLT™ SOLAR MODULE SERIES

Panasonic

410W/400W

PRELIMINARY

The Panasonic Advantage

Higher Module Efficiency
Superior module efficiency of 22.2% and 21.6%, respectively, allows maximum power production with less roof space. With one of the industry's lowest annual degradation rates, power output of at least 92% is guaranteed after 25 years.

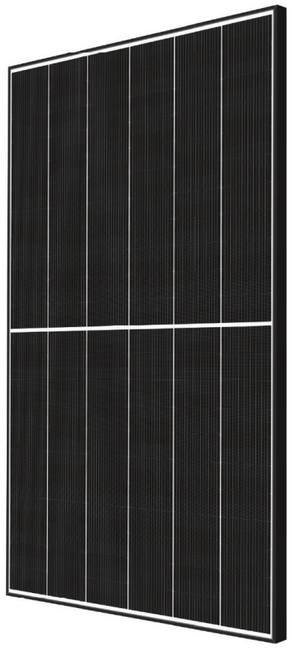
AllGuard and TripleGuard 25-Year Warranty[1]
A long-term warranty is only as reliable as the company behind it. AllGuard and TripleGuard 25-year warranties cover EverVolt panels for performance, product, parts and labor for 25 years. Whether in year three or year 25, your Panasonic warranty will be there when you need it.

High Efficiency in High Temperatures
Produce more energy throughout the day even on the hottest days in the warmest climates. EverVolt solar panels outperform others when temperatures rise due to our industry-leading 0.26%/°C temperature coefficient.

Heterojunction Cell Technology with Gapless Connections
Half-cut cells with heterojunction technology with gapcell connections minimizes electron loss, maximizes conversion efficiency, and produces considerably higher power output over conventional panels.

Durability & Quality Assurance
N-type cells result in minimal Low Induced degradation (LID) and Potential Induced degradation (PID), which supports reliability and longevity. As a solar pioneer for over 40 years, Panasonic EverVolt solar panels are backed by innovation, experience and a brand you can trust.

Improved Performance When Shaded
Continuous power production in shaded areas for greater energy yields and output. More sunlight absorption means more clean power to your home.



ALLGUARD WARRANTY 25 YEARS

TRIPLE GUARD WARRANTY 25 YEARS
★ PRODUCT
★ PERFORMANCE
★ LABOR

Panasonic
Panasonic Life Solutions Company of America
Two Riverfront Plaza, Newark, NJ 07102
panasonicHIT@us.panasonic.com
na.panasonic.com/us/solar

RS21449DS-r5

EverVolt™ | EVERVOLT™ SOLAR MODULE SERIES

Panasonic

410W/400W

PRELIMINARY

ELECTRICAL SPECIFICATIONS

Model	EVPV410H	EVPV400H
Rated Power (Pmax)[1]	410W	400W
Maximum Power Voltage (Vpm)	42.7V	42.1V
Maximum Power Current (Ipm)	9.61A	9.51A
Open Circuit Voltage (Voc)	49.0V	48.8V
Short Circuit Current (Isc)	10.35A	10.25A
Temperature Coefficient (Pmax)	-0.26 %/°C	
Temperature Coefficient (Voc)	-0.24 %/°C	
Temperature Coefficient (Isc)	0.04 %/°C	
NOCT	44°C (±2°C)	
CEC PTC Rating	390.4W	381.0W
Module Efficiency	22.2%	21.6%
Power Density	21.9 W/ft²	20.6 W/ft²
Maximum System Voltage	1000V	
Maximum Series Fuse	25 A	
Watt Class Sorting	-0/+10W	

MECHANICAL SPECIFICATIONS

Junction Box	3-part, 3 bypass diodes, IP68 rated in accordance with IEC 62790
Connector Type	Stäubli MC4 PV-KBT4/KST4 (4 mm²) in accordance with IEC 62852 only when connected
Cable Size / Type	12AWG(4mm2) PV Wire, 43in + 47in in accordance with EN 50618
Max Snow Load (+)[2]	146 psf (7000 Pa)*
Max Wind Load (-)[2]	83.5 psf (4000 Pa)*
Dimensions LxWxH	71.7 x 40.0 x 1.2 in (1821 x 1016 x 30 mm)
Weight	45.0 lbs (20.5kg)
Pallet Dimensions LxWxH	74 x 41.5 x 47.5 in
Quantity per Pallet / Pallet Weight	33 pcs/ 1620 lbs.(735kg)
Quantity per 40' Container	792 pcs

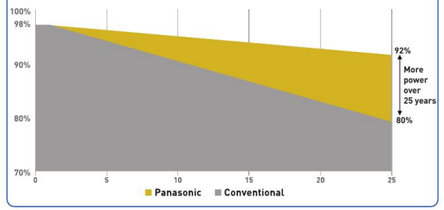
*Test Load. Design Load should be multiplied by two thirds.

OPERATING CONDITIONS AND SAFETY RATINGS

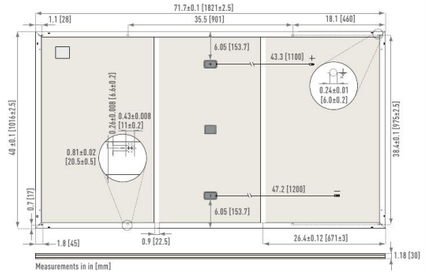
Certifications	IEC61215-2:2016 (Hailstone 35mm)
	Fire Type 2 (UL 61730)
	Salt Mist (IEC 61701)
	PID (IEC 62804)
	Ammonia Resistance (IEC 62716)
	Lead-free acc. to RoHS EU 863/2015 (IEC 62321)
Operating Temperature	-40°F to 185°F (-40°C to 85°C)
Limited Warranty	25' Yrs Workmanship and Power Output (Linear)***
Power Output in Year 1	98%
Annual Degradation	0.25%
Power Output in Year 25	92%

NOTE: Values at standard test conditions(STC: air mass AM1.5 irradiance 1000W/m2, temperature 25°C).
* Maximum power at delivery. For guarantee conditions, please check our guarantee document.
** Installation need to be registered through our website www.panasonicusahitwarranty.com within 60 days in order to receive twenty-five (25) year Product workmanship. Otherwise, Product Workmanship will be only fifteen (15) years.
[1]Equipment must be installed by a Panasonic Authorized, Premium, or Elite installer and registered at www.panasonicusahitwarranty.com within 60 days in order to receive twenty-five (25) year AllGuard and TripleGuard warranty.
[2] Refer to installation manual for detailed mechanical loading information
*** 1st year 98%, after 2nd year 0.25% annual degradation to year 25.

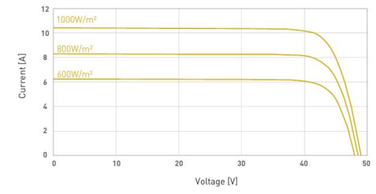
PERFORMANCE WARRANTY



DIMENSIONS



DEPENDENCE ON IRRADIANCE



Reference data for model : EVPV410H
Cell temperature : 77°F (25°C)

NOTE: Specifications and information above may change without notice.

⚠CAUTION! Please read the installation manual carefully before using the products.

Used electrical and electronic products must not be mixed with general household waste. For proper treatment, recovery and recycling of old products, please take them to applicable collection points in accordance with your national legislation.

Panasonic
Panasonic Life Solutions Company of America
Two Riverfront Plaza, Newark, NJ 07102
panasonicHIT@us.panasonic.com
na.panasonic.com/us/solar

RS21449DS-r5

Sunblaze ENERGY

CONTRACTOR

SUNBLAZE ENERGY

PHONE: (520) 900-6110

ADDRESS: 1016 EAST PENNSYLVANIA STREET PIMA COUNTY TUCSON, AZ 85714

LIC.NO.: AZ ROC #331687

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NEW PV SYSTEM: 10,250 KWP

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AZ 85641
APN: 205754170

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

RESOURCE DOCUMENT

DATE: 2023-09-14

DESIGN BY: M. BABURIN

CHECKED BY: UKRDRAFTING

REVISIONS

R-001
(SHEET 3)

ENPHASE.

DATA SHEET

IQ8 Series Microinverters

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

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

Enphase 25 year limited warranty

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

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

UL CERTIFIED SAFETY

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

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	IQ8M-72-2-US	IQ8A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-US[1]
Commonly used module pairings[2]	W	235 – 350	235 – 440	260 – 460	295 – 500	320 – 540+	295 – 500+
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell				
MPPT voltage range	V	27 – 37	29 – 45	33 – 45	36 – 45	38 – 45	38 – 45
Operating range	V	25 – 48	25 – 58				
Min/max start voltage	V	30 / 48	30 / 58				
Max input DC voltage	V	50	60				
Max DC current[3] [module Isc]	A	15					
Overvoltage class DC port		II					
DC port backfeed current	mA	0					
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit					
OUTPUT DATA (AC)		**IQ8-60-2-US**	**IQ8PLUS-72-2-US**	**IQ8M-72-2-US**	**IQ8A-72-2-US**	**IQ8H-240-72-2-US**	**IQ8H-208-72-2-US[1]**
Peak output power	VA	245	300	330	366	384	366
Max continuous output power	VA	240	290	325	349	380	360
Nominal (L-L) voltage/range[4]	V	240 / 211 – 264					208 / 183 – 250
Max continuous output current	A	1.0	1.21	1.35	1.45	1.58	1.73
Nominal frequency	Hz	60					
Extended frequency range	Hz	50 – 68					
AC short circuit fault current over 3 cycles	Arms	2					4.4
Max units per 20 A (L-L) branch circuit[5]		16	13	11	11	10	9
Total harmonic distortion		<5%					
Overvoltage class AC port		III					
AC port backfeed current	mA	30					
Power factor setting		1.0					
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging					
Peak efficiency	%	97.5	97.6	97.6	97.6	97.6	97.4
CEC weighted efficiency	%	97	97	97	97.5	97	97
Night-time power consumption	mW	60					
MECHANICAL DATA							
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)					
Relative humidity range		4% to 100% (condensing)					
DC Connector type		MC4					
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")					
Weight		1.08 kg (2.38 lbs)					
Cooling		Natural convection – no fans					
Approved for wet locations		Yes					
Pollution degree		PD3					
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure					
Environ. category / UV exposure rating		NEMA Type 6 / outdoor					
COMPLIANCE							
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.					

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

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

Sunblaze ENERGY

CONTRACTOR

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REVISIONS

R-002
(SHEET 4)