SOLAR POWER SYSTEM INSTALLATION FOR _____ RESIDENCE

PROJECT DATA

PROJECT DATA:
MODULE: (32) HANWHA Q.CELL Q.PEAK DUO BLK-G8+340, 340 Wp
OPTIMIZER:(32) SOLAREDGE P401 , 405 W
INVERTER: (1) SOLAREDGE SE7600H-US[240V][SI1], 7.600 kW
RACKING: IRONRIDGE
SYSTEM CAPACITY: 10.880 kW-DC
7.600 kW-AC (NAME PLATE)

BUILDING DATA:

CLASSIFICATION OCCUPANCY:	R-3
WIND SPEED:	100 mph
WIND EXPOSURE:	C
SNOW LOAD:	0 psf
FIRE SPRINKLER SYSTEM:	NO

SHEET INDEX

ELECTRICAL

APPENDIX

SCOPE OF WORK

1. INSTALLATION OF SOLAR PHOTOVOLTAIC SYSTEM

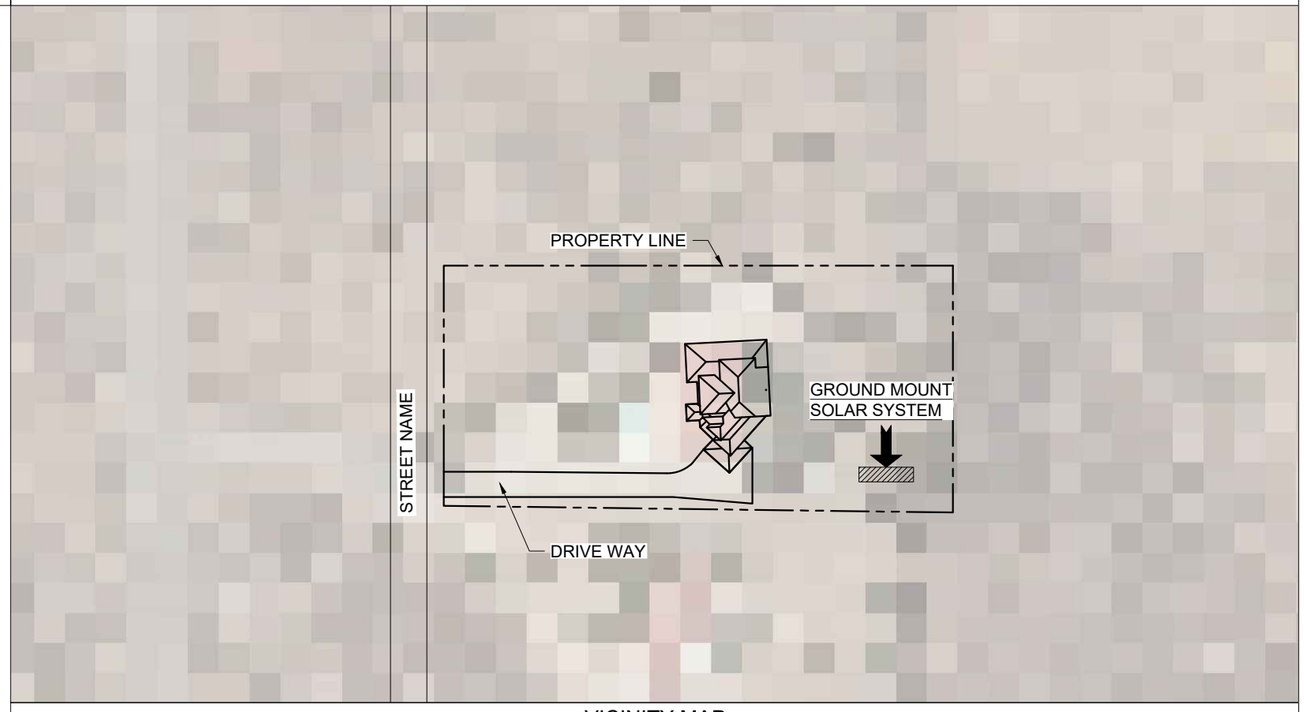
GOVERNING CODES

1. ALL WORKS TO COMPLY WITH 2019 CALIFORNIA RESIDENTIAL CODE (CRC), 2019 CALIFORNIA BUILDING CODE (CBC), 2019 CALIFORNIA FIRE CODE (CFC), 2019 CALIFORNIA ELECTRICAL CODE (CEC), 2019 CALIFORNIA MECHANICAL CODE (CMC), 2019 CALIFORNIA PLUMPING CODE (CPC), 2019 CALIFORNIA GREEN CODE (CGC), 2019 CALIFORNIA ENERGY CODE (CEnC), 2019 CALIFORNIA GREEN BUILDING STANDERS CODE (CGC)

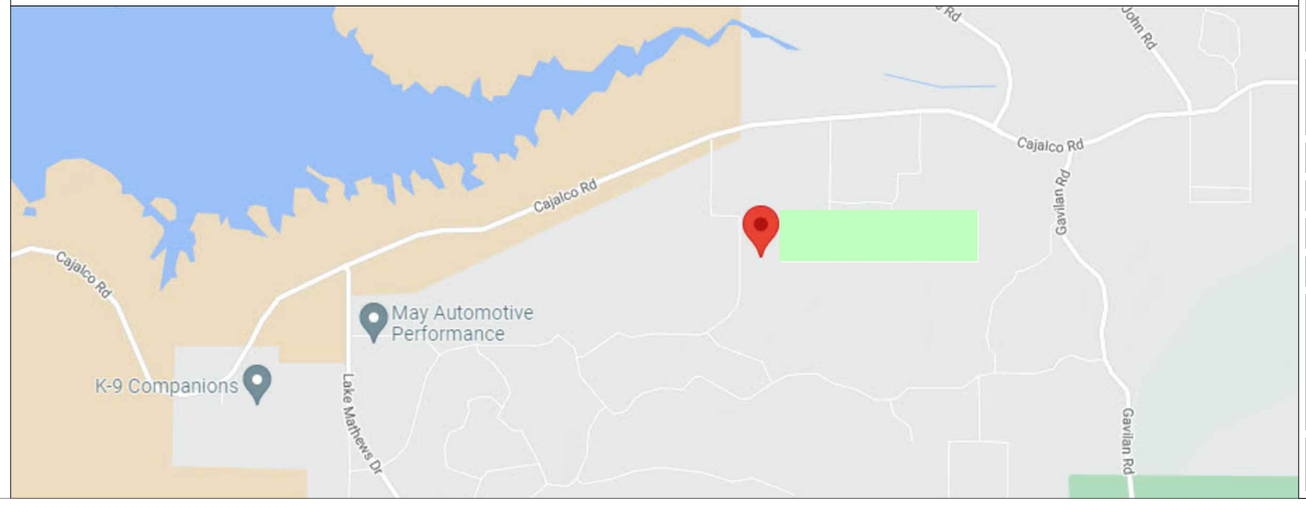
GENERAL NOTES

1. ALL EQUIPMENT SHALL BE LISTED AND LABELED BY A RECOGNIZED TESTING LABORATORY AND AND INSTALLED PER THE LISTING REQUIREMENT AND THE MANUFACTURER'S INSTRUCTIONS, CEC110.2, 110.3, 690.4(B) AND 390.12(5).
2. ALL PANELS, SWITCHES, ETC. SHALL HAVE SUFFICIENT GUTTER SPACE AND LUGS IN COMPLIANCE TO UL REQUIREMENTS TO ACCOMMODATE CONDUCTORS SHOWN.
3. ALL ELECTRICAL MATERIAL SHALL BE LISTED BY "UL" FOR THE TYPE OF APPLICATION AND "UL" LABEL SHALL APPEAR ON ALL ELECTRICAL EQUIPMENT.
4. ALL EXTERIOR ELECTRICAL DEVICES AND EQUIPMENT INCLUDING THOSE THAT ARE EXPOSED TO OUTSIDE ENVIRONMENT SHALL BE WEATHERPROOF TYPE NEMA 3R.
5. ALL CONDUCTORS EXPOSED TO WEATHER SHALL BE LISTED AND IDENTIFIED FOR USE IN DIRECT SUNLIGHT, CEC310.10(D) AND 69..31(C) THROUGH (G).
6. ALL GROUNDED, (NEUTRAL), CONDUCTOR'S INSULATION SHALL BE SOLID WHITE, GRAY, OR 3-WHITE STRIPES; AND ALL GROUNDING CONDUCTORS SHALL BE OF BARE WIRE WITHOUT COVERING, OR WITH INSULATION OF GREEN OR GREEN WITH YELLOW STRIPES. THE COLOR OF UNGROUNDED CONDUCTOR SHALL BE OTHER THAN FOR GROUNDED, (NEUTRAL), AND GROUNDING CONDUCTORS.
7. CONTRACTOR SHALL EXTEND WIRING FROM ALL JUNCTION BOXES, SWITCHES, ETC. AND MAKE FINAL CONNECTIONS AS REQUIRED TO ALL BUILDING EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS.
8. WHERE WIRE SIZES ARE INDICATED ON PLANS FOR INDIVIDUAL CIRCUITS, THE WIRE SIZE INDICATED SHALL APPLY TO THE COMPLETE CIRCUIT, UNLESS OTHERWISE NOTED.
9. DISCONNECT SWITCHES SHALL BE MOUNTED ON INDIVIDUAL SUPPORTS, OR OTHERWISE DIRECTLY ON EQUIPMENT, PROVIDED NO MODIFICATION TO EQUIPMENT IS NECESSARY.
10. WIRING METHOD SHALL BE EMT ABOVE GROUND MOUNTED IN CONCEALED SPACES (UNLESS APPROVED OTHERWISE) AND SCHEDULE- 40 PVC FOR BELOW GROUND INSTALLATION UNLESS NOTED OTHERWISE.
11. ALL CONDUIT TO USE WEATHER TIGHT EXPANSION FITTINGS.
12. ALL EXTERIOR CONDUITS SHALL BE PAINTED TO MATCH THE COLOR OF THE SURROUNDING AREA.
13. A LADDER WILL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
14. EXISTING PLUMPING VENTS, SKYLIGHTS, EXHAUST OUTLET, & VENTILATION INTAKE AIR OPENINGS SHALL NOT BE COVERED OR BLOCKED BY THE SOLAR PHOTOVOLTAIC SYSTEM
15. DUE TO THE FACT THAT PV MODULES ARE ENERGIZED WHENEVER EXPOSED TO LIGHT, PV CONTRACTOR SHALL DISABLE THE ARRAY DURING INSTALLATION AND SERVICE BY SHORT CIRCUITING, OPEN CIRCUITING, OR COVER THE ARRAY WITH OPAQUE COVERING.
16. THESE DRAWINGS ARE REPRESENTATIVE OF THE SCOPE AND NATURE OF WORK. IT IS NOT GUARANTEED TO REPRESENT EXACT FIELD CONDITIONS AND DIMENSIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD DIMENSIONS AND TO COORDINATE THE WORK WITH THAT OF THE CONSTRUCTION MANAGER.
17. THE LAYOUT OF THE CONDUIT SHOWN IN THIS DRAWING PACKAGE IS INDICATIVE ONLY. THE INSTALLATION CONTRACTOR WILL BE RESPONSIBLE FOR FIELD ROUTING AND LOCATING ALL CONDUITS TO SUIT SPECIFIC SITE CONDITIONS. THE CONTRACTOR WILL COORDINATE ALL LOCATIONS WITH THE OWNER/GENERAL CONTRACTOR AND ANY OTHER TRADES THAT THE NEW ROUTING MAY AFFECT.

LIMITS OF WORK



VICINITY MAP



CONTRACTOR'S LOGO

CONTRACTOR'S LICENSE NUMBER OR STAMP

REVISION NO.	DESCRIPTION	DATE

PROJECT NAME

HOMEOWNER

ADDRESS

SYSTEM SIZE
10.880 kW-DC
7.600 kW-AC (NAMEPLATE)

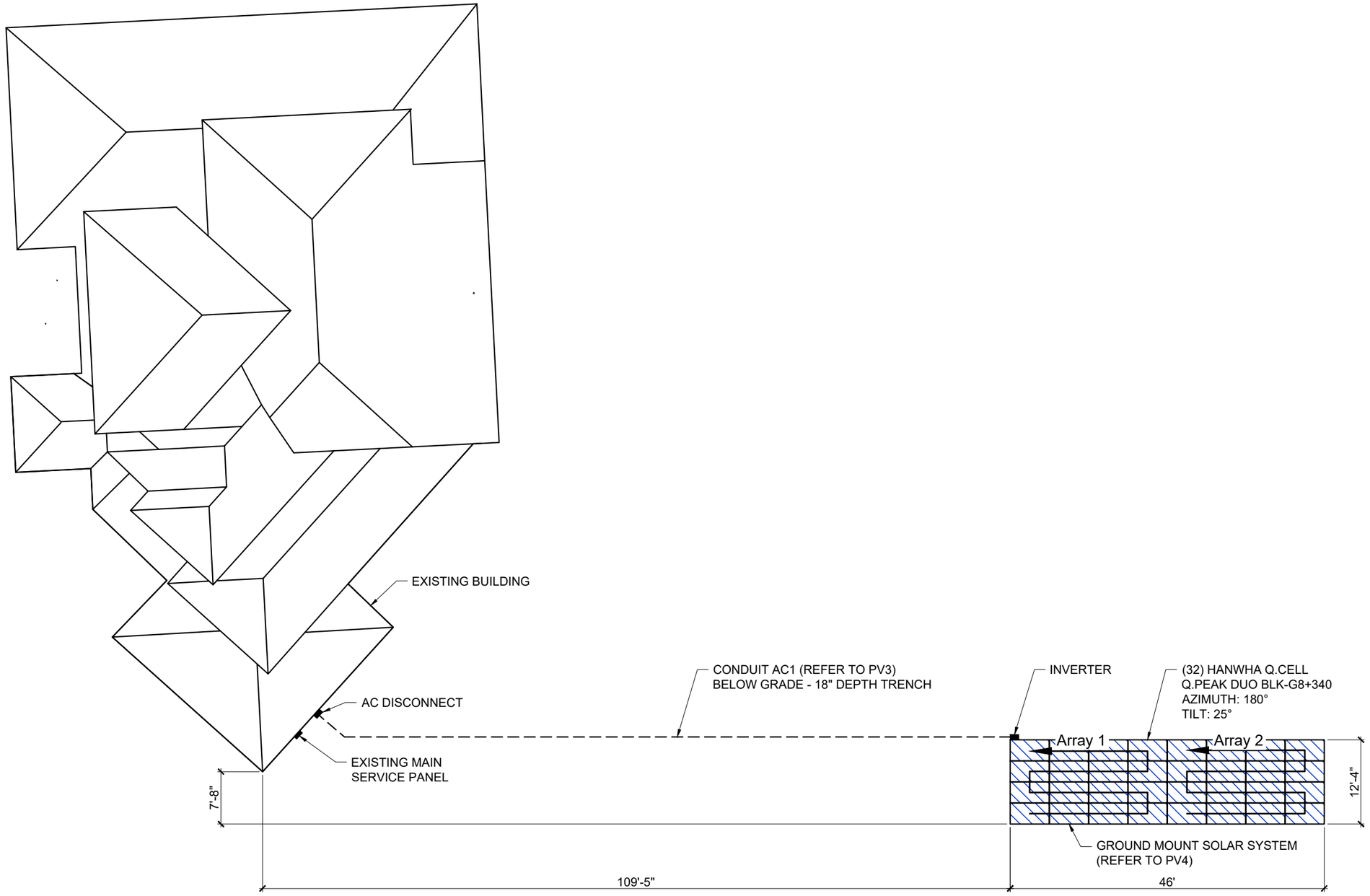
DRAWN BY	EP-HT
APPROVED BY	
DATE	
SCALE	N.T.S

SHEET TITLE

COVER SHEET

SHEET NO. **PV1**

NOTE
- ALL CONDUIT REFER TO PV3.



CONTRACTOR'S LOGO

CONTRACTOR'S
LICENSE NUMBER OR STAMP

NO.	DESCRIPTION	DATE

PROJECT NAME

HOMEOWNER

ADDRESS

SYSTEM SIZE
10.880 kW-DC
7.600 kW-AC (NAMEPLATE)

DRAWN BY	EP-HT
APPROVED BY	
DATE	
SCALE	1/16" = 1'

SHEET TITLE

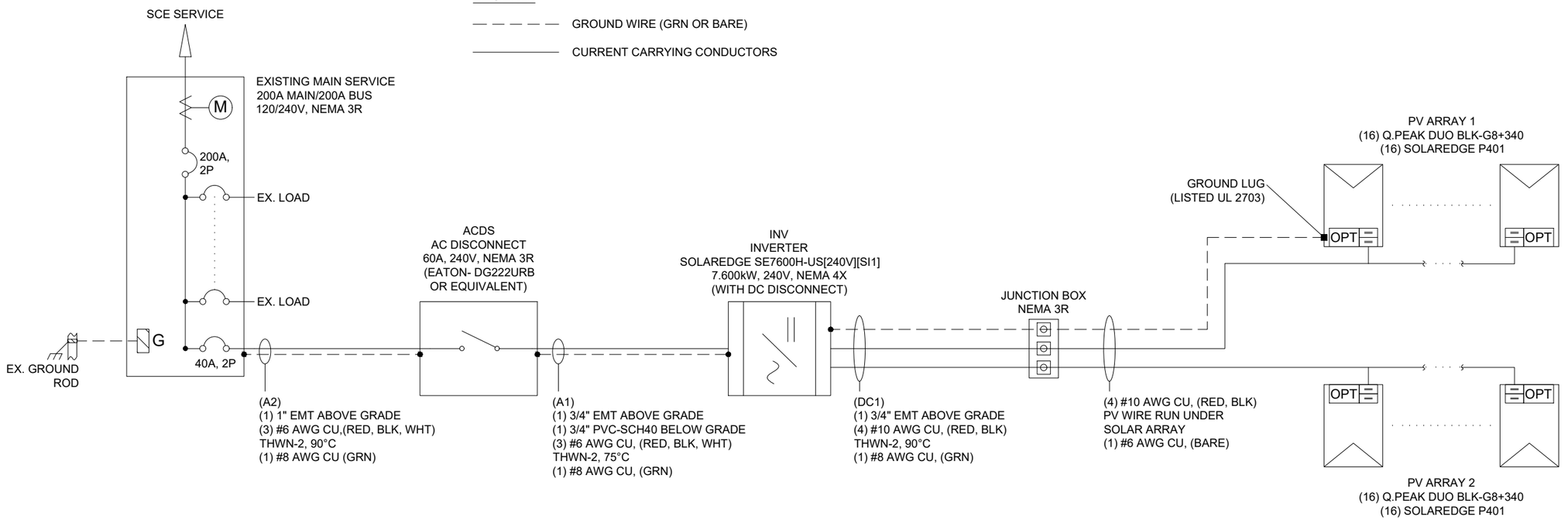
LAYOUT

SHEET NO. **PV2**

LEGEND:

GROUND WIRE (GRN OR BARE)

CURRENT CARRYING CONDUCTORS



MODULE INFORMATION

MANUFACTURER	HANWHA Q.CELL
MODEL	Q.PEAK DUO BLK-G8+340
POWER RATING (W)	340
OPEN CIRCUIT VOLTAGE Voc (Vdc)	40.70
MAX. POWER VOLTAGE Vmp (Vdc)	33.34
MAX. POWER CURRENT Imp (Adc)	9.90
SHORT CIRCUIT CURRENT Isc (Adc)	10.40
VocTC	-0.0027

OPTIMIZER INFORMATION

MANUFACTURER	SOLAREDGE
MODEL	P401
MAX. DC INPUT POWER (VA)	405
MAX. DC INPUT VOLTAGE Voc (Vdc)	60
MAX. DC INPUT CURRENT (Adc)	14.65
MAX. DC OUTPUT VOLTAGE (Vdc)	60
MAX. DC OUTPUT CURRENT (Adc)	15

INVERTER INFORMATION

MANUFACTURER	SOLAREDGE
MODEL	SE7600H-US[240V][SI1]
MAX. OUTPUT POWER (kVA)	7.600
MAX. DC INPUT VOLTAGE Voc (Vdc)	480
MAX. DC INPUT CURRENT (Adc)	20
MAX. AC OUTPUT VOLTAGE (V)	240
MAX. AC OUTPUT CURRENT (A)	32

ELECTRICAL NOTES:

1. INVERTER: UL1741 LISTED WITH INTEGRAL ANTI-ISLANDING PROTECTION PER IEEE1547. UL1741 LISTING INCLUDES COMPLIANCE WITH IEEE519 FOR POWER QUALITY, IEEE929 FOR INTERCONNECTION SAFETY AND CEC REQUIREMENTS. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR DETAILS.

2. SOLAR MODULE LISTED TO UL1703 STANDARDS.

3. IF THE EXISTING MAIN SERVICE PANEL DOES NOT HAVE VERIFIABLE GROUND ELECTRODE. IT IS THE PV CONTRACTORS RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE

4. WHEN A BACKFED BREAKER IS THE METHOD OF UTILITY INTERCONNECTION, BREAKER SHALL NOT READ LINE AND LOAD. P.V. BREAKER TO BE LOCATED ON BUS BAR AT OPPOSITE END FROM (E) MAIN BREAKER.

ELECTRICAL CALCULATION

Voc AT LOWEST TEMPERATURE (1 MODULE/OPTIMIZER): Voc = (1) (40.70) [1 + (-0.0027 ((2-25)))] = 43.23 V

ALLOWANLE BACKFEED PER NEC 705.12(D)(2):
120% MAIN BUS RATING = 200 A x 1.2 = 240.00 A
(PV BACKFEED) 40 A + (MAIN BREAKER) 200 A = 240.0 A ≤ 240.0 A

TEMP. REFERENCE (°C)
MIN. TEMP. 2
2% AVERAGE HIGH. TEMP. 36

CONDUIT LABEL	WIRE TYPE	DC & AC CONNECTION	OUTPUT CURRENT (A)	MAX. CURRENT I x 1.25 PER CEC 690.8(B)(1)(a)	OVER CURRENT PROTECTION DEVICE PER CEC 690.9	CORRECTION FACTOR: AMBIENT TEMP. DERATE PER CEC 310.15(B)(2)(a)	CORRECTION FACTOR: CONDUIT FILL. DERATE PER CEC 310.15(B)(3)(a)	WIRE SIZE	WIRE AMPACITY TEMP. RATING DC WIRE @ 90°C AC WIRE @ 75°C	DERATED WIRE AMPACITY	GROUND WIRE PER CEC 250.122
DC1	THWN-2 (CU)	ARRAY 1 TO INV (DC+)	15	18.75	20	0.91	0.8	10	40	29.12	8
	THWN-2 (CU)	ARRAY 1 TO INV (DC-)	15	18.75	20	0.91	0.8	10	40	29.12	
	THWN-2 (CU)	ARRAY 2 TO INV (DC+)	15	18.75	20	0.91	0.8	10	40	29.12	
	THWN-2 (CU)	ARRAY 2 TO INV (DC-)	15	18.75	20	0.91	0.8	10	40	29.12	
A1	THWN-2 (CU)	INV TO ACDS (L1)	32	40.00	40	0.91	1.00	6	65	59.15	8
	THWN-2 (CU)	INV TO ACDS (L2)	32	40.00	40	0.91	1.00	6	65	59.15	
	THWN-2 (CU)	INV TO ACDS (N)	-	-	-	-	-	6	-	-	
A2	THWN-2 (CU)	ACDS TO MAIN SERVICE (L1)	32	40.00	40	0.91	1.00	6	65	59.15	8
	THWN-2 (CU)	ACDS TO MAIN SERVICE (L2)	32	40.00	40	0.91	1.00	6	65	59.15	
	THWN-2 (CU)	ACDS TO MAIN SERVICE (N)	-	-	-	-	-	6	-	-	

CONTRACTOR'S LOGO

CONTRACTOR'S
LICENSE NUMBER OR STAMP

NO.	DESCRIPTION	DATE

PROJECT NAME

HOMEOWNER

ADDRESS

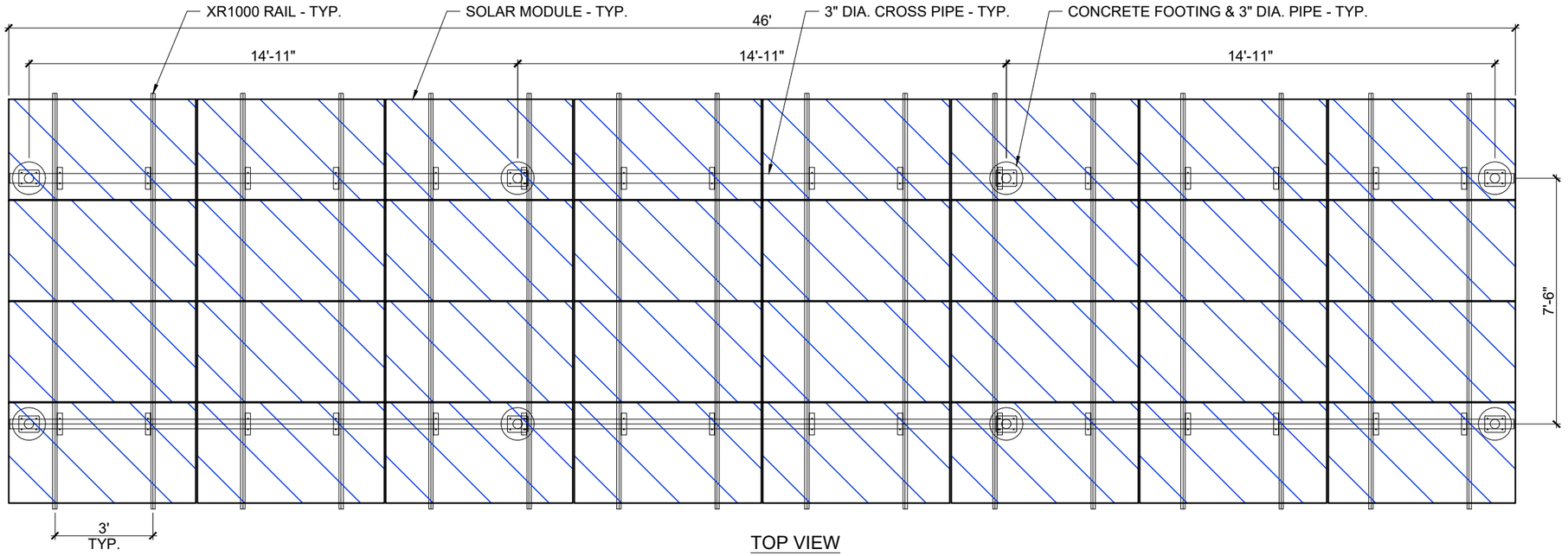
SYSTEM SIZE
10.880 kW-DC
7.600 kW-AC (NAMEPLATE)

DRAWN BY	EP-HT
APPROVED BY	
DATE	
SCALE	N.T.S

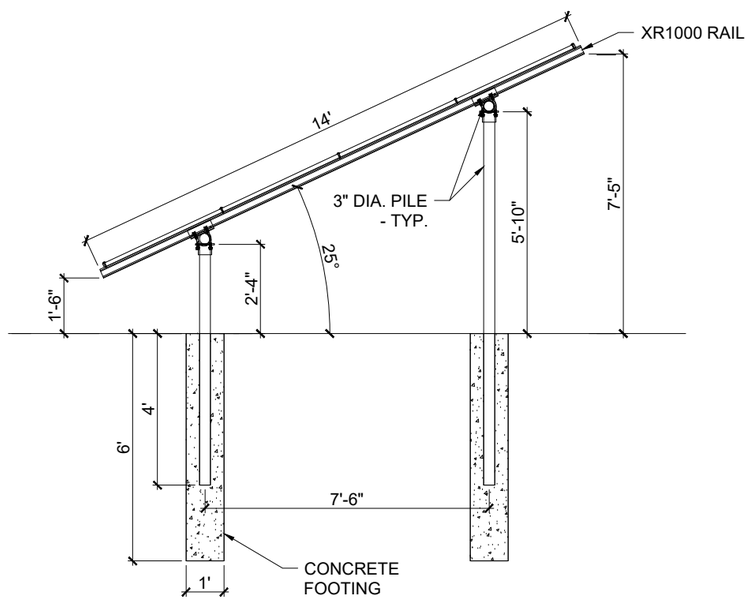
SHEET TITLE

SINGLE LINE DIAGRAM & ELECTRICAL CALCULATION

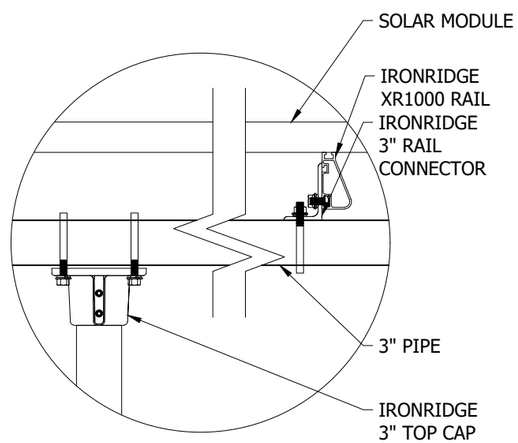
SHEET NO. **PV3**



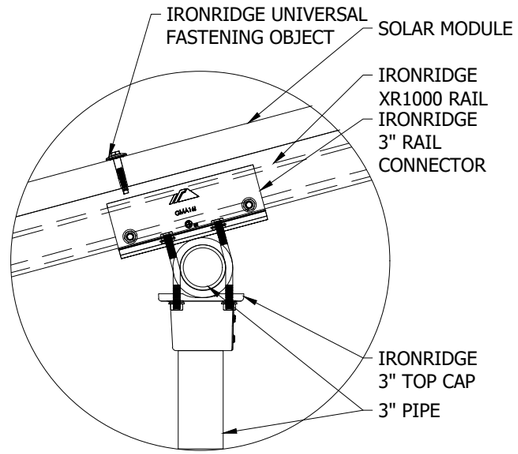
TOP VIEW
STRUCTURAL DETAIL



SIDE VIEW
STRUCTURAL DETAIL



PIPE FITTINGS FRONT VIEW



PIPE FITTINGS SIDE VIEW

CONTRACTOR'S LOGO

CONTRACTOR'S
LICENSE NUMBER OR STAMP

NO.	DESCRIPTION	DATE

PROJECT NAME

HOMEOWNER

ADDRESS

SYSTEM SIZE
10.880 kW-DC
7.600 kW-AC (NAMEPLATE)

DRAWN BY	EP-HT
APPROVED BY	
DATE	
SCALE	N.T.S

SHEET TITLE

STRUCTURAL DETAIL

SHEET NO. **PV4**

WARNING: PHOTOVOLTAIC POWER SOURCE

- INSTALL LOCATION: CONDUIT
- WHITE LETTERING, RED BACKGROUND
- MATERIAL: REFLECTIVE, PREMIUM OUTDOOR VINYL WITH FILM LAMINATION

WARNING

INVERTER OUTPUT CONNECTION
DO NOT RELOCATE
THIS OVERCURRENT DEVICE

- INSTALL LOCATION: MAIN SERVICE, SUB PANEL
- WHITE LETTERING, RED BACKGROUND
- MATERIAL: PREMIUM OUTDOOR VINYL WITH FILM LAMINATION

WARNING

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERNINALS
TERNINALS ON BOTH THE LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION

- INSTALL LOCATION: AC DISCONNECT
- WHITE LETTERING, RED BACKGROUND
- MATERIAL: PREMIUM OUTDOOR VINYL WITH FILM LAMINATION

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OUTPUT CURRENT 40 AMPS
AC NORMAL OPERATING VOLTAGE 240 VOLTS

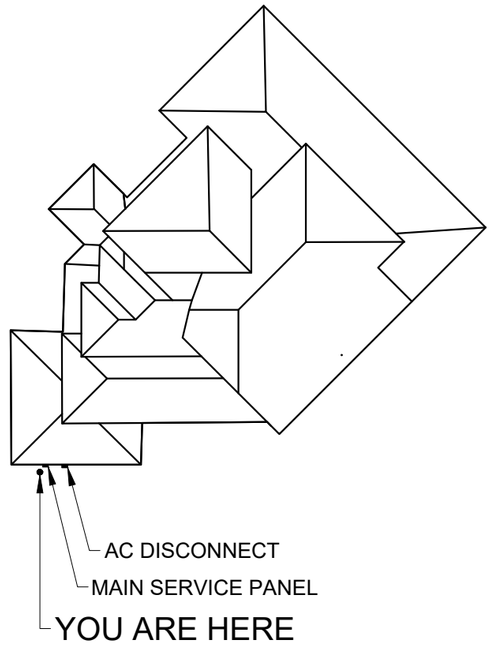
- INSTALL LOCATION: AC DISCONNECT
- WHITE LETTERING, RED BACKGROUND
- MATERIAL: PREMIUM OUTDOOR VINYL WITH FILM LAMINATION

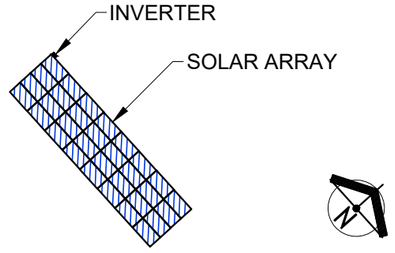
PHOTOVOLTAIC SYSTEM
INVERTER
RATED MAX POWER - POINT CURRENT: 20 A
RATED MAX POWER - POINT VOLTAGE: 380 V
SHORT CIRCUIT CURRENT: 30 A
MAXIMUM SYSTEM VOLTAGE: 480 V

- INSTALL LOCATION: INVERTER
- WHITE LETTERING, RED BACKGROUND
- MATERIAL: REFLECTIVE, PREMIUM OUTDOOR VINYL WITH FILM LAMINATION

WARNING

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





ADDRESS:

- INSTALL LOCATION: MAIN SERVICE PANEL
- WHITE LETTERING, RED BACKGROUND
- MATERIAL: ACRYLIC WITH UV RATED POLYMER AND FULL ADHESIVE BACKING

CONTRACTOR'S LOGO

CONTRACTOR'S
LICENSE NUMBER OR STAMP

NO.	DESCRIPTION	DATE

PROJECT NAME

HOMEOWNER

ADDRESS

SYSTEM SIZE
10.880 kW-DC
7.600 kW-AC (NAMEPLATE)

DRAWN BY	EP-HT
APPROVED BY	
DATE	
SCALE	N.T.S

SHEET TITLE

SIGNAGE & PLACARD

SHEET NO. **PV5**

powered by Q.ANTUM DUO

Q.PEAK DUO BLK-G8+
335-350

ENDURING HIGH PERFORMANCE

VDE Quality Tested – high reliability, low degradation, optimized durability, continuous line monitoring – www.VDEinfo.com ID. 40032587

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2020

25 YR Warranty Product & Performance

Q CELLS Yield Security

Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY
Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.8%.

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

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING
High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

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

STATE OF THE ART MODULE TECHNOLOGY
Q.ANTUM DUO combines cutting edge cell separation and innovative 12-busbar design with Q.ANTUM Technology.

[1] APT test conditions according to IEC/TS 62804-1:2015, method B (–1500 V, 168 h)
[2] See data sheet on rear for further information

THE IDEAL SOLUTION FOR:

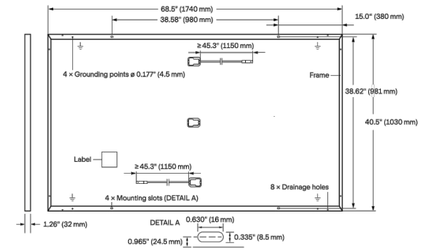
Rooftop arrays on residential buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	68.5 × 40.6 × 1.26 in (including frame) (1740 × 1030 × 32 mm)
Weight	43.9 lbs (19.9 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 × 20 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 × 1.26-2.36 × 0.59-0.71 in (53-101 × 32-60 × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥ 45.3 in (1150 mm), (–) ≥ 45.3 in (1150 mm)
Connector	Stäubli MC4; IP68

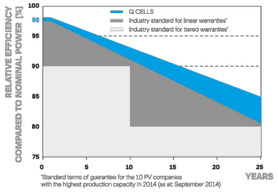


ELECTRICAL CHARACTERISTICS

POWER CLASS				335	340	345	350
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / –0 W)							
Minimum	Power at MPP[1]	P_{MPP}	[W]	335	340	345	350
	Short Circuit Current[1]	I_{SC}	[A]	10.34	10.40	10.45	10.51
	Open Circuit Voltage[1]	V_{OC}	[V]	40.44	40.70	40.95	41.21
	Current at MPP	I_{MPP}	[A]	9.85	9.90	9.96	10.01
	Voltage at MPP	V_{MPP}	[V]	34.01	34.34	34.65	34.97
	Efficiency[1]	η	[%]	≥18.7	≥19.0	≥19.3	≥19.5
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]							
Minimum	Power at MPP	P_{MPP}	[W]	250.9	254.6	258.4	262.1
	Short Circuit Current	I_{SC}	[A]	8.33	8.38	8.42	8.47
	Open Circuit Voltage	V_{OC}	[V]	38.13	38.38	38.62	38.86
	Current at MPP	I_{MPP}	[A]	7.75	7.79	7.84	7.88
	Voltage at MPP	V_{MPP}	[V]	32.36	32.67	32.97	33.27

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

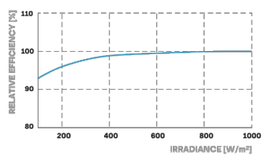
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.54% degradation per year. At least 93.1% of nominal power up to 10 years. At least 85% 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 organization of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS							
Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	–0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	–0.35	Nominal Module Operating Temperature	NMOT	[°F]	109±5.4 (43±3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull[3]	[lbs / ft²]	75 (3600 Pa) / 55 (2667 Pa)	Permitted Module Temperature on Continuous Duty	–40 °F up to +185 °F (–40 °C up to +85 °C)
Max. Test Load, Push / Pull[3]	[lbs / ft²]	113 (5400 Pa) / 84 (4000 Pa)		

[3] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, VDE Quality Tested, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells)

CSA Certified US UL 61730 · CE · TÜVRheinland CERTIFIED www.tuv.com ID 1111220277

PACKAGING AND TRANSPORT INFORMATION

Horizontal packaging	70.1 in 1780 mm	42.5 in 1080 mm	47.6 in 1208 mm	1485 lbs 674 kg	28 pallets	26 pallets	32 modules
Vertical packaging	71.5 in 1815 mm	45.3 in 1150 mm	48.0 in 1220 mm	1505 lbs 683 kg	28 pallets	24 pallets	32 modules

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. Q CELLS supplies solar modules in two different stacking methods, depending on the location of manufacture (modules are packed horizontally or vertically). You can find more detailed information in the document "Packaging and Transport Information", available from Q CELLS.

Hanwha Q CELLS America Inc.
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Power Optimizer

For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505

POWER OPTIMIZER

PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

solaredge.com

solaredge

Power Optimizer

For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505

Optimizer model (typical module compatibility)	P320 (for 60-cell modules)	P340 (for high-power 60-cell modules)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P401 (for high power 60 and 72 cell modules)	P405 (for high-voltage modules)	P485 (for high-voltage modules)	P505 (for higher current modules)	
INPUT									
Rated Input DC Power[1]	320	350	370	400	405		485	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	60	125[2]		83[2]	Vdc
MPPT Operating Range	8 - 48		8 - 60	8 - 80	8-60	12.5 - 105		12.5 - 83	Vdc
Maximum Short Circuit Current (Isc)	11	11.02	11	10.1	11.75	11		14	Adc
Maximum DC Input Current	13.75			12.5	14.65	12.5		17.5	Adc
Maximum Efficiency	99.5								%
Weighted Efficiency	98.8							98.6	%
Overvoltage Category	II								
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)									
Maximum Output Current	15								Adc
Maximum Output Voltage	60					85			Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)									
Safety Output Voltage per Power Optimizer	1 ± 0.1								Vdc
STANDARD COMPLIANCE									
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3								
Safety	IEC62109-1 (class II safety), UL1741								
Material	UL94 V-0, UV Resistant								
RoHS	Yes								
INSTALLATION SPECIFICATIONS									
Maximum Allowed System Voltage	1000								Vdc
Compatible inverters	All SolarEdge Single Phase and Three Phase inverters								
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1		129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 153 x 29.5 / 5.1 x 6 x 1.16		129 x 159 x 49.5 / 5.1 x 6.3 x 1.9		129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight (including cables)	630 / 1.4		750 / 1.7	655 / 1.5		845 / 1.9		1064 / 2.3	gr / lb
Input Connector	MC4[3]						Single or dual MC4[3][4]	MC4[3]	
Input Wire Length	0.16 / 0.52			0.16 or 0.9 /0.52 or 2.95[5]		0.16 / 0.52			m / ft
Output Wire Type / Connector	Double Insulated / MC4								
Output Wire Length	0.9 / 2.95		1.2 / 3.9						m / ft
Operating Temperature Range[6]	-40 to +85 / -40 to +185								°C / °F
Protection Rating	IP68 / NEMA6P								
Relative Humidity	0 - 100								%

(1) Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed
(2) NEC 2017 requires max input voltage be not more than 80V
(3) For other connector types please contact SolarEdge
(4) For dual version for parallel connection of two modules use P485-4NMDMRM. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimizer connected to one PV module. When connecting a single module seal the unused input connectors with the supplied pair of seals
(5) Longer inputs wire length are available for use. For 0.9m input wire length order P401-xxxLxxx
(6) For ambient temperature above +85°C / +185°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details

PV System Design Using a SolarEdge Inverter[7][8]		Single Phase HD-Wave	Single phase	Three Phase for 208V grid	Three Phase for 277/480V grid	
Minimum String Length (Power Optimizers)	P320, P340, P370, P400, P401	8		10	18	
	P405, P485, P505	6		8	14	
Maximum String Length (Power Optimizers)		25		25	50[9]	
Maximum Power per String		5700 (6000 with SE7600-US - SE11400-US)	5250	6000[10]	12750[11]	W
Parallel Strings of Different Lengths or Orientations		Yes				

(7) For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf
(8) It is not allowed to mix P405/P485/P505 with P320/P340/P370/P400/P401 in one string
(9) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement
(10) For 208V grid: it is allowed to install up to 6,500W per string when the maximum power difference between each string is 1,000W
(11) For 277/480V grid: it is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W

Intertek

RoHS

Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US /
SE7600H-US / SE10000H-US / SE11400H-US

INVERTERS

12-25 YEAR WARRANTY

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Extremely small
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)

solaredge.com

solaredge

Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/
SE7600H-US / SE10000H-US / SE11400H-US

	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXXXH-XXXXXBXX4							
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5[1]							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
Power Factor	1, adjustable -0.85 to 0.85							
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380				400			Vdc
Maximum Input Current @240V[2]	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V[2]	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600kΩ Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W

[1] For other regional settings please contact SolarEdge support
[2] A higher current source may be used; the inverter will limit its input current to the values stated

ADDITIONAL FEATURES			
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)		
Revenue Grade Data, ANSI C12.20	Optional[3]		
Inverter Commissioning	with the SetApp mobile application using built-in Wi-Fi station for local connection		
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect		
STANDARD COMPLIANCE			
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07		
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)		
Emissions	FCC Part 15 Class B		
INSTALLATION SPECIFICATIONS			
AC Output Conduit Size / AWG Range	3/4" minimum / 14-6 AWG	3/4" minimum /14-4 AWG	
DC Input Conduit Size / # of Strings / AWG Range	3/4" minimum / 1-2 strings / 14-6 AWG	3/4" minimum / 1-3 strings / 14-6 AWG	
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174	21.3 x 14.6 x 7.3 / 540 x 370 x 185	in / mm
Weight with Safety Switch	22 / 10	25.1 / 11.4	26.2 / 11.9	38.8 / 17.6	lb / kg
Noise	< 25	<50			dBA
Cooling	Natural Convection				
Operating Temperature Range	-40 to +140 / -40 to +60[4]				°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)				

[3] Revenue grade inverter P/N: SExxxxH-US000BNC4
[4] Full power up to at least 50°C / 122°F; for power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

pe.eaton.com

Eaton general duty non-fusible safety switch

DG222URB

UPC:782113144238

Dimensions:

- **Height:** 14.38 IN
- **Length:** 7.38 IN
- **Width:** 8.69 IN

Weight:9 LB

Notes:WARNING! Switch is not approved for service entrance unless a neutral kit is installed.

Warranties:

- Eaton Selling Policy 25-000, one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.

Specifications:

- **Type:** Non-fusible, single-throw
- **Amperage Rating:** 60A
- **Enclosure:** NEMA 3R, Rainproof
- **Enclosure Material:** Painted galvanized steel
- **Fuse Configuration:** Non-fusible
- **Number Of Poles:** Two-pole
- **Number Of Wires:** Two-wire
- **Product Category:** General duty safety switch
- **Voltage Rating:** 240V

Supporting documents:

- Eatons Volume 2-Commercial Distribution
- Eaton Specification Sheet - DG222URB

Certifications:

- UL Listed

Product compliance: No Data

Datasheet

Ground Mount System

All-Terrain Mounting

The IronRidge Ground Mount System combines our XR100 or XR1000 rails with locally-sourced steel pipes or mechanical tubing, to create a cost-effective structure capable of handling any site or terrain challenge.

Installation is simple with only a few structural components and no drilling, welding, or heavy machinery required. In addition, the system works with a variety of foundation options—including concrete piers, ground screws, helical or driven piles, and above-ground ballast blocks.

Rugged Construction
Engineered steel and aluminum components ensure durability.

PE Certified
Pre-stamped engineering letters available in most states.

UL 2703 Listed System
Meets newest effective UL 2703 standard.

Design Software
Online tool generates engineering values and bill of materials.

Flexible Architecture
Multiple foundation and array configuration options.

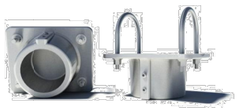
25-Year Warranty
Products guaranteed to be free of impairing defects.

Datasheet

360° Product Tour
Visit ironridge.com

Substructure

Top Caps

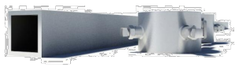


Connect vertical and cross pipes.

Bonded Rail Connectors

Attach and bond Rail Assembly to cross pipes.

Diagonal Braces



Optional Brace provides additional support.

Cross Pipe & Piers

Steel pipes or mechanical tubing for substructure.

Rail Assembly

XR100/XR1000 Rails

Curved rails increase spanning capabilities.

UFOs

Universal Fastening Objects bond modules to rails.

Stopper Sleeves

Snap onto the UFO to turn into a bonded end clamp.

CAMO

Bond modules to rails while staying completely hidden.

Resources

Design Assistant
Go from rough layout to fully engineered system. For free.
Go to ironridge.com/design

NABCEP Certified Training
Earn free continuing education credits, while learning more about our systems.
Go to ironridge.com/training