

# **PROJECT DESCRIPTION**

THIS ROOF-MOUNTED PHOTOVOLTAIC (PV) SYSTEM IS TO BE INSTALLED AT THE SINGLE FAMILY RESIDENTIAL IN SAN BERNARDINO, CALIFORNIA. THE ENERGY PRODUCED BY THE PV SYSTEM SHALL BE INTERCONNECTED WITH THE UTILITY GRID THROUGH THE EXISTING ON-SITE ELECTRICAL EQUIPMENT VIA A BACK-FED BREAKER IN THE MAIN SERVICE PANEL.

SITE VIEW

# **GENERAL NOTES**

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE LATEST CALIFORNIA CODE OF REGULATIONS (CCR), NATIONAL ELECTRICAL CODE EDITION AND ALL APPLICABLE LOCAL CODES AND REGULATIONS. (CONSTRUCTION SHALL COMPLY WITH 2019 CBC, CMC, CPC, CEC, CRC,CFC)

2. ALL PANELS. SWITCHES. ETC. SHALL HAVE SUFFICIENT GUTTER SPACE AND LUGS IN COMPLIANCE TO UL REQUIREMENTS TO ACCOMMODATE CONDUCTORS SHOWN

3.WHERE WIRE SIZES ARE INDICATED ON PLANS FOR INDIVIDUAL CIRCUITS, THE WIRE SIZE INDICATED SHALL APPLY TO THE COMPLETE CIRCUIT, UNLESS OTHERWISE NOTED.

4.CONTRACTOR SHALL EXTEND WIRING FROM ALL JUNCTION BOXES, SWITCHES, ETC. AND MAKE FINAL CONNECTIONS AS REQUIRED TO ALL BUILDING EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS.

5. DRAWINGS AND DIAGRAMMIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED. FOLLOW DRAWING AND LAYOUT WORK AND CHECK DRAWINGS OR OTHER TRADES RELATING TO WORK TO VERIFY SPACE IN WHICH WORK WILL BE INSTALLED. MAINTAIN HEADROOM AND MINIMUM CODE REQUIRED WORKING CLEARANCES AT ALL TIMES.

6.ALL EXTERIOR ELECTRICAL DEVICES AND EQUIPMENT INCLUDING THOSE THAT ARE EXPOSED TO OUTSIDE ENVIRONMENT SHALL BE WEATHERPROOF TYPE NEMA 3R.

7.DISCONNECT SWITCHES SHALL BE MOUNTED ON INDIVIDUAL SUPPORTS, OR OTHERWISE DIRECTLY ON EQUIPMENT, PROVIDED NO MODIFICATION TO EQUIPMENT IS NECESSARY.

8.ALL ELECTRICAL MATERIAL SHALL BE LISTED BY "UL" FOR THE TYPE OF APPLICATION AND "UL" LABEL SHALL APPEAR ON ALL ELECTRICAL EQUIPMENT.

9. 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.

10.AN OSHA APPROVED LADDER PROVIDING ACCESS TO ALL PORTIONS OF THE ARRAY SHALL. BE SECURED IN PRIOR TO REQUESTING INSPECTION.

11.SMOKE ALARMS AND CARBON MONOXIDE DETECTORS WILL MEET THE NECESSARY REQUIREMENTS PER CRC R314, R315

12.UTILITY COMPANY WILL BE NOTIFIED PRIOR TO ACTIVATION OF THE SOLAR PV SYSTEM.

13.ALL EXTERIOR CONDUIT PAINTED TO MATCH EXTERIOR SURFACE. (IF APPLICABLE)

14. NO PLUMBING, MECHANICAL OR BLDG VENTS TO BE COVERED OR OFFSET AROUND ARRAYS

15.EXISTING PLUMBING VENTS, SKYLIGHTS, EXHAUST OUTLETS, VENTILATION'S INTAKE AIR OPENINGS SHALL NOT BE COVERED BY THE SOLAR PHOTOVOLTAIC SYSTEM.

16.ALL EQUIPMENT SHALL BE LISTED AND LABELED BY A RECOGNIZED ELECTRICAL TESTING LABORATORY AND INSTALLED PER THE LISTING REQUIREMENTS AND THE MANUFACTURER'S INSTRUCTIONS. [NEC 690.4(D)]

17.ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R RATED, INCLUDING ALL ROOF MOUNTED TRANSITION BOXES AND SWITCHES.

18. PAINT PV CONDUIT TO MATCH THE DWELLING EXTERIOR.

19.CONTACT THE SERVICING UTILITY BEFORE POWERING ON THE PHOTOVOLTAIC SYSTEM.



ALL MODULES AND RAIL ARE LISTED BY UNDERWRITERS LABORATORIES

1) NO DISCHARGE OF ANY POLLUTANTS TO ANY STORM DRAIN SYSTEM.

2) UL 1703 FOR MODULES & UL 1741 FOR INVERTERS PER CITY SOLAR

FOR ELECTRICAL AND FIRE SAFETY(CLASS A FIRE RATING)

THIS PROJECT SHALL COMPLY WITH THE :

2019 CA ELECTRICAL CODE - 2017 NEC`

ORDINANCES OF THE CITY OF SAN BERNARDINO

# **AERIAL VIEW**



**GOVERNING CODES** 



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	(28) S
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and the	(1)

RTER : LAREDGE, STOREDGE SE7600A-USS (1) SOLAREDGE, SE3000H-US POWER OPTIMIZERS: (28)SOLAREDGE,P320

**PV RAIL**:

**PV MOUNT:** 

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	6. 7. 8. 9. 10. 11. 12. 13. 14.	COV PLC RAF ELE VVA SPE SPE SPE SPE SPE SPE SPE SPE
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DISCLAIMER: If any Errors, Discrepancies or Omissions appear in these drawings, specifications or other contract documents; The Owner or General Contractor shall notify the Designer, in writing, of such error or omission. In the event that the Owner or General Contractor falis to give such notice, before construction and/or fabrication of the work, the Owner or General Contractor will be held responsible to the result of any errors, discrepancies or omissions and the cost of rectifying them.

NOTE:

REQUIREMENTS.

2019 CA BUILDING CODE 2019 CA PLUMBING CODE

2019 CA ENERGY CODE

2019 CA FIRE CODE

2019 CA RESIDENTIAL CODE

2019 CA MECHANICAL CODE

# **SCOPE OF WORK**

SYSTEM SIZE: 9.081 KW-AC 10.080 KW-DC **ROOF MOUNT PV SOLAR** ROOF TYPE: FLAT TILE @ 24" O.C. RAFTERS

> AY/ROOF PITCH: 20° 1UTH: 100°.280° STORIES HOUSE

ILES : SOLARIA POWERXT, 360R-PD

(1)LG BATTERY CHEM RESU 10H

MAIN PANEL/BUS-BAR: (E)200A MAIN BREAKER : (N)175A

**IRONRIDGE XR10 IRINRIDGE ALL TILE HOOK** 

# INDEX SHEET

VER PAGE OT PLAN/ROOF PLAN FTER SIDE VIEW ECTRICAL DIAGRAM **ARNING LABELS** ECS ECS ECS ECS ECS ECS ECS ECS ECS ECS

# CONTRACTOR

JG POWER CO. 3486 MARSHALL ST **RIVERSIDE, CA 92504** PHONE: (714)717-5223

STATE LICENSE#: 1039874

LICENSE TYPE : C 10

**EXPIRATION DATE : 05/31/2022** 

STAMP/ SIGNATURE :



**OWNER / ADDRESS** 

SAN BERNARDINO, CA 92407

OCCUPANCY R3 / TYPE 5 STRU. APN#:

SYSTEM SIZE

9.081 KW-AC 10.080 KW-DC

MODULES : (28) SOLARIA POWERXT, 360R-PD

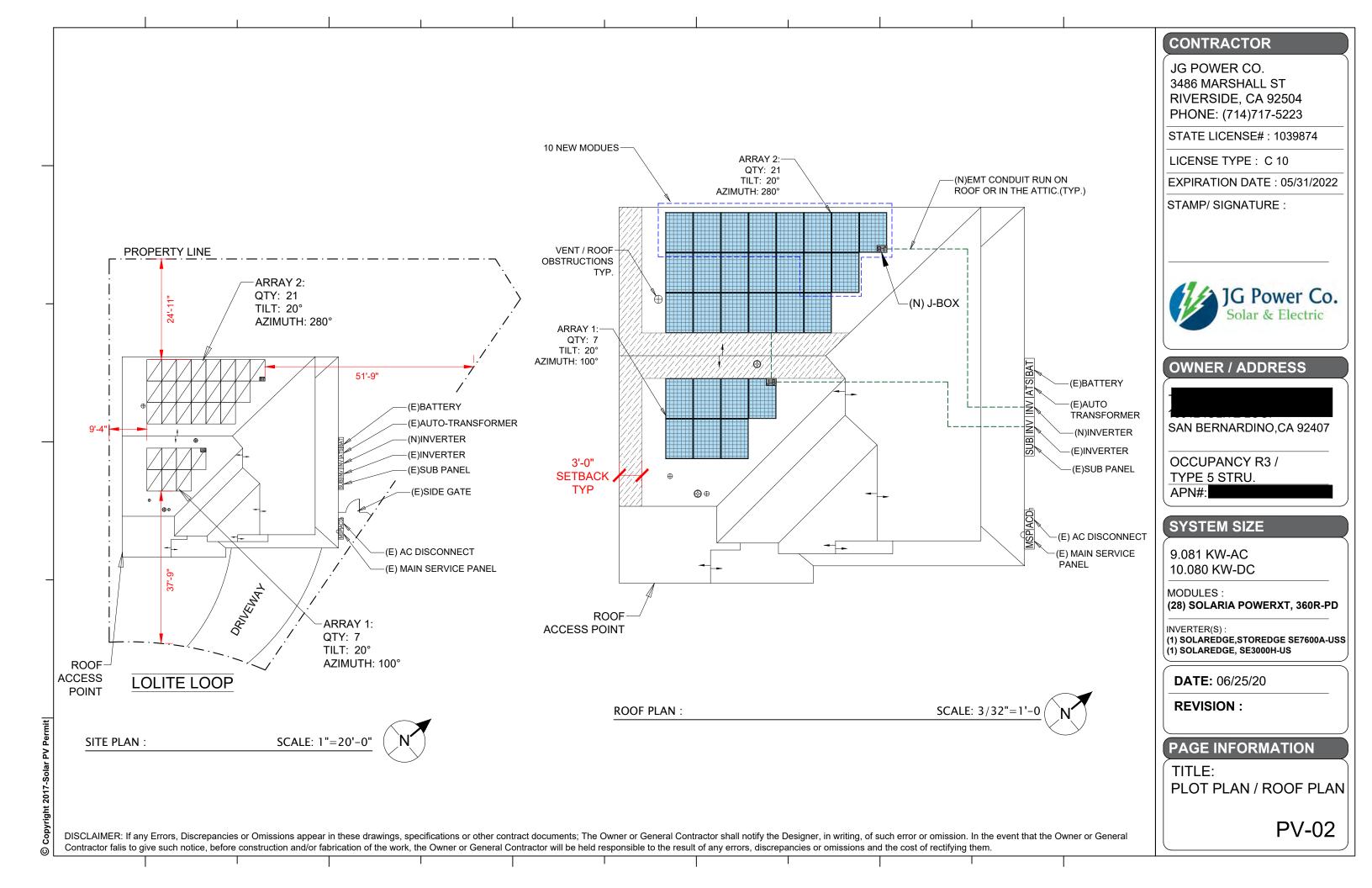
NVERTER(S) (1) SOLAREDGE, STOREDGE SE7600A-USS (1) SOLAREDGE, SE3000H-US

DATE: 06/25/20

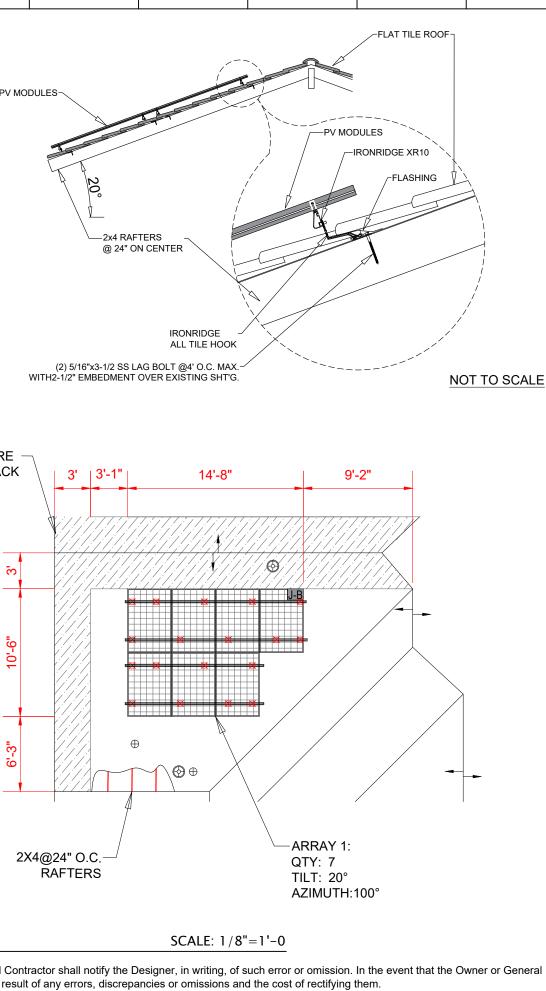
**REVISION:** 

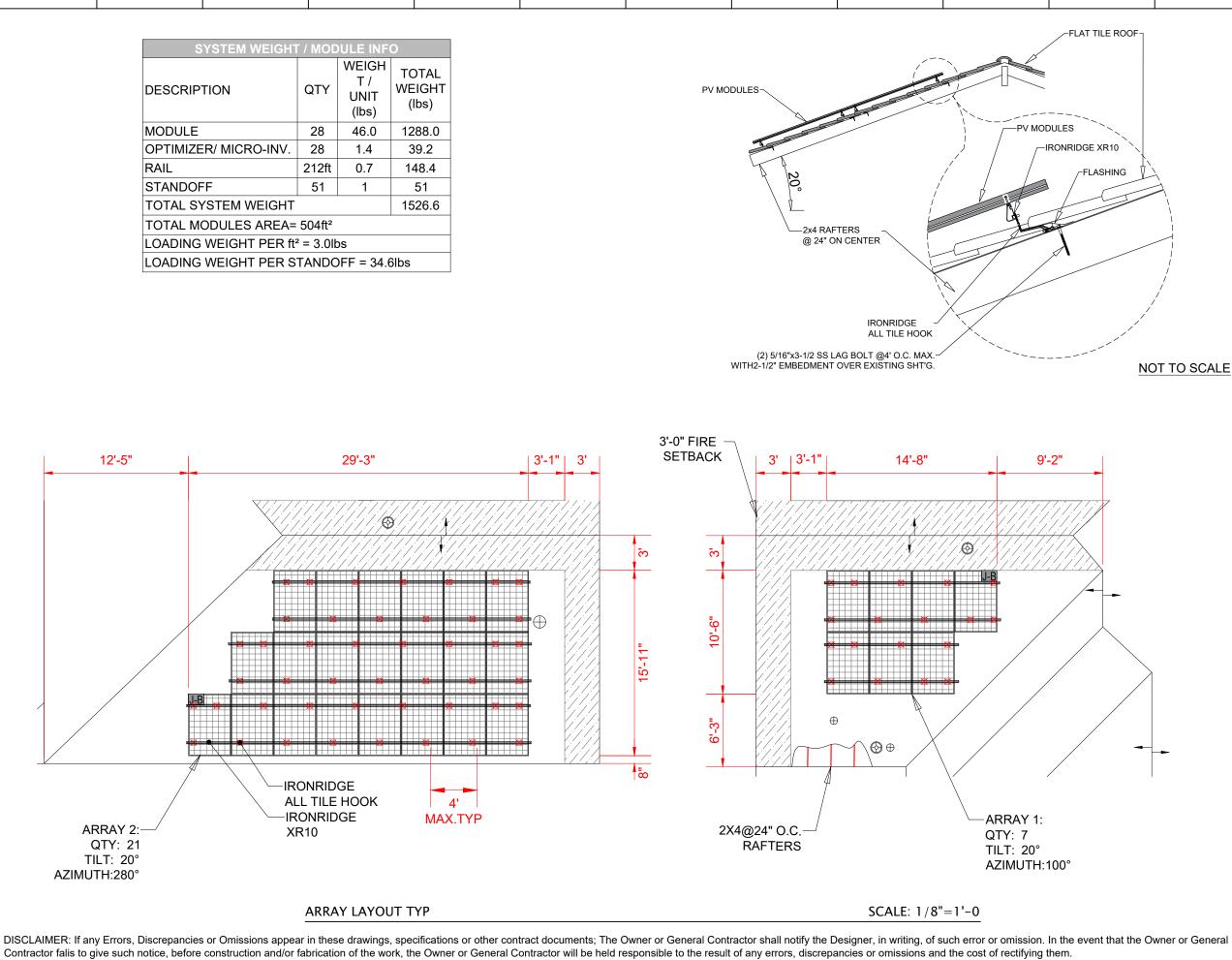
**PAGE INFORMATION** 

TITLE: COVER PAGE



DESCRIPTION	QTY	WEIGH T / UNIT (lbs)	TOTAL WEIGHT (lbs)
MODULE	28	46.0	1288.0
OPTIMIZER/ MICRO-INV.	28	1.4	39.2
RAIL	212ft	0.7	148.4
STANDOFF	51	1	51
TOTAL SYSTEM WEIGHT			1526.6
TOTAL MODULES AREA=	504ft <sup>2</sup>		
LOADING WEIGHT PER ft	² = 3.0lk	os	
LOADING WEIGHT PER S	TANDO	)FF = 34.6	Slbs





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DATE: 06/25/20

**REVISION**:

PAGE INFORMATION

TITLE: **ROOF LAYOUT RAFTER SIDE VIEW PV-03** 

_														
	WIRE TAG#	NE	X AMP C MUL SIGN AI	.T=	BREAKER SIZE AMPS	WIR	E TYPE	EGC / GRND.SIZ		RE RATING IN 90° X DERATE X CONDUC RATE = DERATE WIR	TOR 60	°C	СС	NDUIT SIZE
	1	15.0 x	1.25	=18.8A	20A	(2) #10	PV WIRE	(1)#6 THWN-2 BA COPPER EGC	$  \Delta (\mathbf{y}   \mathbf{y})  $	65 x 1.0 =26.0 >:	=18.8 20> =	=18.8	OPEN	AIR
	2	15.0 x	1.25	=18.8A	20A	(4) #10	THWN-2	(1)#6 THWN-2 E0	GC 40 x 0.	65 x 0.8 =20.8 >:	=18.8 20> =	=18.8	3/4"	EMT FILL:
	3	15.0 x	1.25	=18.8A	20A	(2) #10	THWN-2	(1)#8 THWN-2 E0	GC 40 x 0.	65 x 1.0 =26.0 >:	=18.8 20> =	=18.8	3/4"	EMT FILL:
_	4	32.0 x	1.25	=40.0A	40A	(3) #8 -	THWN-2	(1)#8 THWN-2 E0	GC 55 x 0.	91 x 1.0 =50.1 >:	=40.0 40> =	40.0	3/4"	EMT FILL:
	5	12.5 x	1.25	=15.6A	20A	(3) #10	THWN-2	(1)#8 THWN-2 E0	GC 40 x 0.	91 x 1.0 =36.4 >:	=15.6 20> =	=15.6	3/4"	EMT FILL:
	6	44.5 x	1.25	=55.6A	60A	(3) #6	THWN-2	(1)#8 THWN-2 EC	GC 75 x 0.	91 x 1.0 =68.3 >:	=55.6 60> =	=55.6	3/4"	EMT FILL:
	7	32.0 x	1.25	=40.0A	40A	(3) #8 -	THWN-2	(1)#8 THWN-2 EC	GC 55 x 0.	91 x 1.0 =50.1 >:	=40.0 40> =	40.0	3/4"	EMT FILL:
	8	8.50 x	1.56	=13.3A	20A	(2) #10	THWN-2	(1)#8 THWN-2 E0	GC 40 x 0.	91 x 1.0 =36.4 >:	=13.3 20> =	=13.3	3/4"	EMT FILL:
	9	32.0 x	1.25	=40.0A	40A	(3) #10	THWN-2	(1)#8 THWN-2 E0	GC 40 x 0.	91 x 1.0 =36.4 >:	=40.0 40> =	40.0	3/4"	EMT FILL:

# NOTES:

**NEW 10 MODULES** 

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STRING 1: (10) MODULES IN SERIES

-SOLID BARE E.G.C. (FREE-AIR) MOUNTED UNDER ARRAY

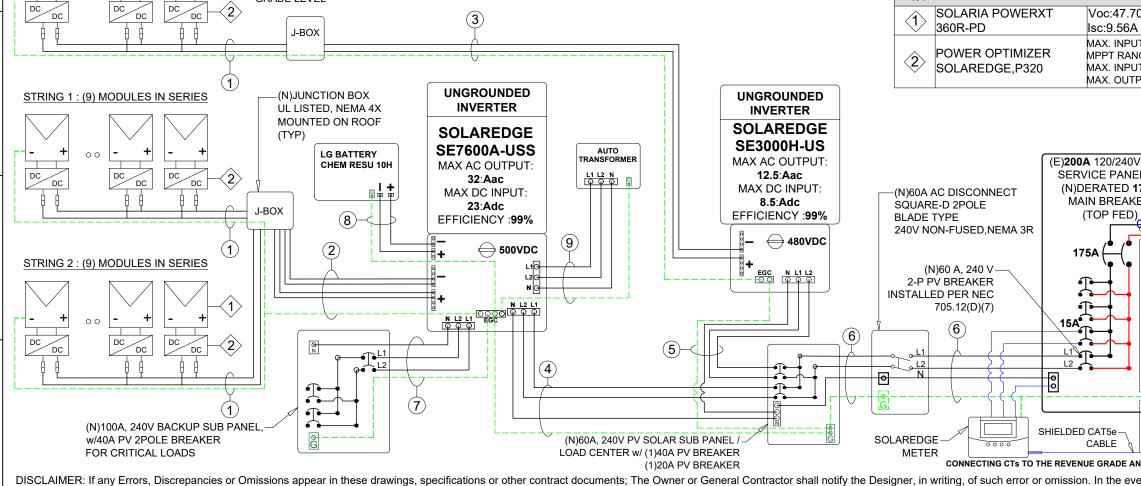
-PER NEC 250.120(C): WHERE CONDUCTORS & GROUND WIRE ARE RUN EXPOSED ON ROOF FROM ARRAY TO J-BOX,

CONDUCTORS & BARE GROUND WIRE SHALL BE CONCEALED INSTALL IN CONDUIT -PER NEC ARTICLE 690.35 INVERTER GROUND FAULT PROTECTION PROVIDED

-ALL GROUNDS AND NEUTRALS BONDED TO EXISTING GROUNDING CONDUCTOR W/ IRREVERSIBLE CRIP CONNECTOR. -BACKFED BREAKERS MUST BE LOCATED @ OPPOSITE END OF BUS BAR FROM MAIN BREAKER OR MAIN LUG ON GRID SIDE WHEN A BACKFED BREAKER IS THE METHOD OF UNTILITY INTERCONNECTION, BREAKER SHALL NOT READ 'LINE OR LOAD'. -PER CEC 250.64(C): CONDUCTOR SPLICES ONLY ALLOWED WITH COMPRESSION CONNECTORS OR EXOTHERMIC WELDING -ALL GROUNDS AND NEUTRALS BONDED TO EXISTING GROUNDING CONDUCTOR W/ IRREVERSIBLE CRIP CONNECTOR. -VERIFY (E) UFER GROUND NEAR MSP. IF (E) UFER IS NOT ACCESSIBLE OR VERIFIABLE, INSTALL A NEW 5/8"Ø X 8' LONG

GROUNDING ROD AND BOND SOLAR SYSTEM EQUIPMENT GROUNDING ACCORDINGLY.

-PRODUCTION METER ADJACENT TO MAIN ELECTRICAL PANEL 10" TO 72" CENTER TO CENTER OF METERS 48" TO 75" ABOVE EQUIPMENT LIST GRADE LEVEL



Contractor falis to give such notice, before construction and/or fabrication of the work, the Owner or General Contractor will be held responsible to the result of any errors, discrepancies or omissions and the cost of rectifying them.

MAIN SERVICE PANEL BUS BAR = 200A MAIN BREAKER =175A 65A AVAILABLE FOR SOLAR

SOLAR BREAKER = 60A OK

# ZE CONDUIT FILL 0.1351, 25% 0.0929, 17% 0.1464, 28% 0.0999, 19% 0.1887, 35%

0.0844, 16% 0.6330, 12% 0.0844, 16%

- MAIN BUS X 120 % = 240A MAIN BREAKER =

		QTY	
70V A	Vmp:39.50V Imp:9.13A	28	
JT VOLTA NGE : 8 T JT CURR	AGE :48Vdc	28	
-	TO UTILITY GRID 120/240V SINGLE PHASE		
		IRECTION METER E, 240 V	AL
V MAIN EL W/ 175A ER )	CTs		
Ŧ	(E)GEC -GROUNDING ELECTRODE SYSTEM	1	
	JMPTION METER the Owner or Gene	eral	

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MODULES : (28) SOLARIA POWERXT, 360R-PD

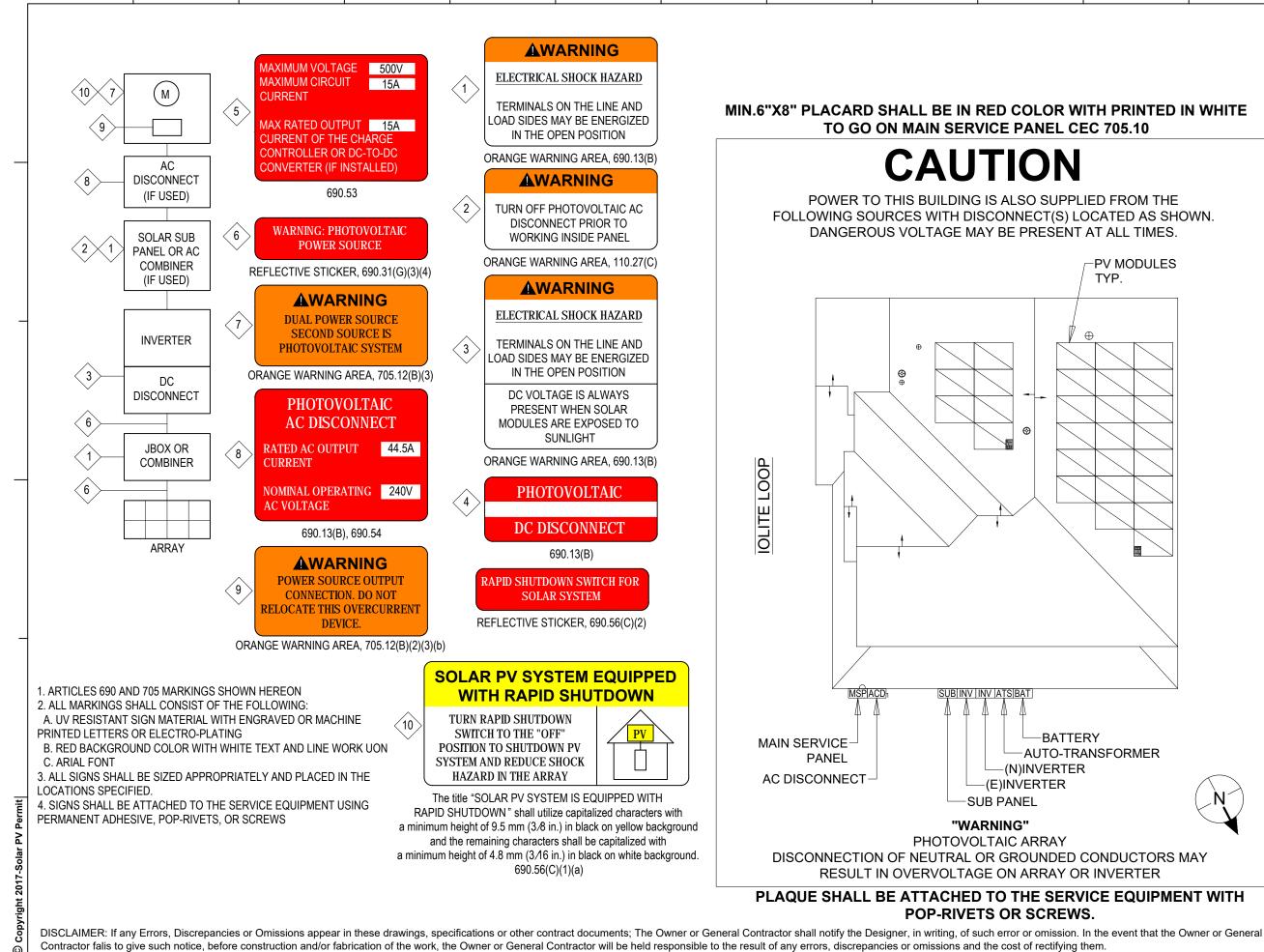
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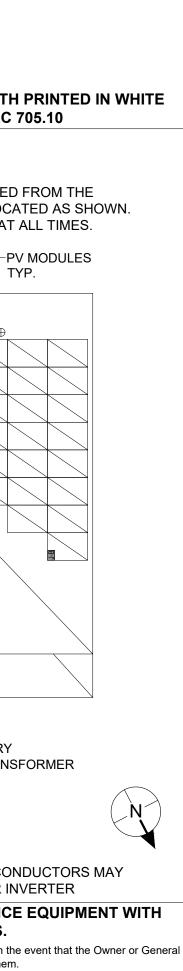
DATE: 06/25/20

**REVISION:** 

**PAGE INFORMATION** 

TITLE: ELECTRICAL DIAGRAM





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**PAGE INFORMATION** 

TITLE: WARNING LABELS



# Solaria PowerXT<sup>®</sup> | Residential



Achieving up to 20% efficiency, Solaria PowerXT solar modules are one of the highest power modules in the residential solar market. Compared to conventional modules, Solaria PowerXT modules have fewer gaps between the solar cells; this leads to higher power and superior aesthetics. Solaria PowerXT residential modules are manufactured with black backsheet and frames, giving them a striking

Developed in California, Solaria's patented cell cutting and module assembly takes processed solar wafers and turns them into PowerXT solar modules. The process starts by creating a highly reliable PowerXT cell where busbars and ribbon interconnections are eliminated. Solaria then packages the cells into the PowerXT solar module, reducing inactive space between the cells. All of the above leads to an exceptionally efficient solar module produced in a cost effective manner.

# **Higher Efficiency, Higher Power**

Solaria PowerXT modules achieve up to 20% efficiency; conventional modules achieve 15% - 17% efficiency. Solaria PowerXT modules are one of the highest power modules available.

# Lower System Costs

appearance.

Solaria PowerXT modules produce more power per square meter area. This reduces installation costs due to fewer balance of system components.

# Improved Shading Tolerance

Sub-strings are interconnected in parallel, within each of the four module quadrants, which dramatically lowers the shading losses and boosts energy yield.

# Improved Aesthetics

Compared to conventional modules, Solaria PowerXT modules have a more uniform appearance and superior aesthetics.

# Durability and Reliability

Solder-less cell interconnections are highly reliable and designed to far exceed the industry leading 25 year warranty.

# About Solaria

Established in 2000, The Solaria Corporation has created one of the industry's most respected IP portfolios, with over 100 patents encompassing materials, processes, applications, products, manufacturing automation and equipment. Headquartered in Fremont, California, Solaria has developed a technology platform that unlocks the potential of solar energy allowing it to be ubiquitous and universally accessed.

The Solaria Corporation 6200 Paseo Padre Parkway, Fremont, CA 94555 P: (510) 270-2500 www.solaria.com Product specifications are subject to change without notice.







# Solaria PowerXT<sup>®</sup>-360R-PD

Solaria PowerXT-		345R-PD	350R-PD	355R-PD	360R-PD
Max Power (Pmax)	[W]	345	350	355	360
Efficiency	[%]	19.1	19.4	19.6	19.9
Open Circuit Voltage (Voc)	[V]	46.9	47.1	47.4	47.7
Short Circuit Current (Isc)	[A]	9.46	9.49	9.53	9.56
Max Power Voltage (Vmp)	[V]	38.5	38.8	39.1	39.5
Max Power Current (Imp)	[A]	8.93	9.02	9.09	9.13
Power Tolerance	[%]	-0/+3	-0/+3	-0/+3	-0/+3
Performance at NOCT (800)	N/m²,	20°C Amb,	Wind 1 m	(s, AM 1.5)	
Max Power (Pmax)	[W]	255	259	261	265
Open Circuit Voltage (Voc)	[V]	44.1	44.3	44.6	44.8
Short Circuit Current (Isc)	[A]	7.66	7.69	7.68	7.71
Max Power Voltage (Vmp)	[V]	35.4	35.7	36.0	36.3
Max Power Current (Imp)	[A]	7.15	7.22	7.27	7.30
Temperature Characteristi	CS				
NOCT		[°C]		45 +/-2	1.
Temp. Coeff. of Pmax		[% / °C]		-0.39	
Temp. Coeff. of Voc		[% / °C]	-	-0.29	
Temp. Coeff. of Isc		[% / °C]		0.04	
Design Parameters					

Design Falameters		
Operating temperature	[°C]	-40 to +85
Max System Voltage	[V]	1000
Max Fuse Rating	[A]	15
Bypass Diodes	[#]	4

25

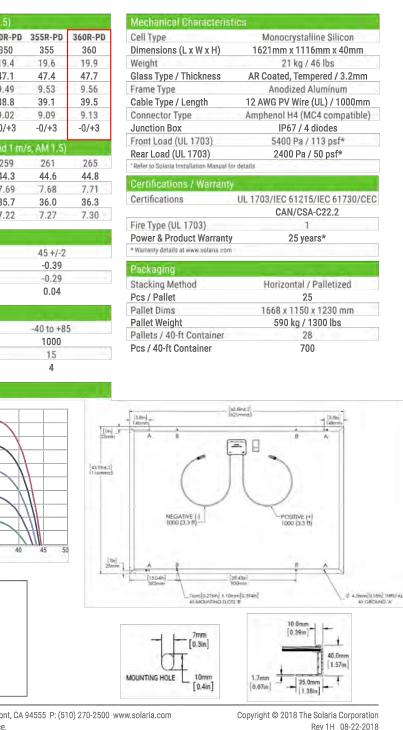
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Authorized Dealer

# Warrenty details at www.solaria ackadind Stacking Method

PCS/Fallel	
Pallet Dims	
Pallet Weig	ht
Pallets / 40	-ft Container
Pcs / 40-ft	





The Solaria Corporation 6200 Paseo Padre Parkway, Fremont, CA 94555 P: (510) 270-2500 www.solaria.com Product specifications are subject to change without notice.

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**REVISION:** 

PAGE INFORMATION

**PV-06** 

# solaredge

SolarEdge Single Phase StorEdge<sup>™</sup> **Solutions for North America** 

# SolarEdge StorEdge<sup>™</sup> Solutions Benefits:

- More Energy DC-coupled architecture stores PV power directly to the battery without AC conversion losses
- Simple Design & Installation single inverter for PV, battery storage, grid-tied and backup applications
- Enhanced Safety no high voltage during installation, maintenance or firefighting
- Full Visibility monitor battery status, PV production, remaining backup power and self-consumption data

### USA-CANADA-GERMANY-ITALY-FRANCE-JAPAN-CHINA-AUSTRALIA-THE NETHERLANDS-UK-ISRAEL-TURKEY-SOUTH AFRICA-BULGARIA www.solaredge.us

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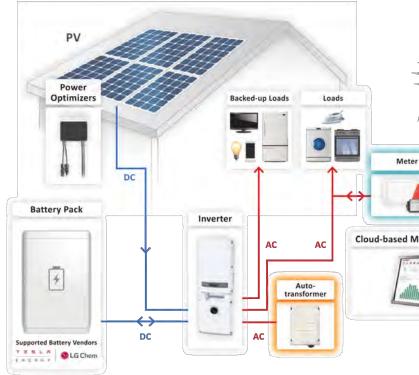
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# SolarEdge Single Phase StorEdge™ Solutions for North America Solutions for North America

# StorEdge<sup>™</sup> Features:

- Smart Energy Management export control, time-of-use shifting, maximized self-consumption, demand response and peak shaving capabilities
- Backup power automatically provides power to backed-up loads in the event of grid interruption
- All-in-one solution uses a single DC optimized phase inverter to manage and monitor both PV generation and energy storage
- Compatible with Tesla Powerwall Home Battery and the LG Chem RESU

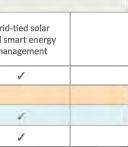


SolarEdge	StorEdge <sup>™</sup> Solutions for North	n America - Product Sele	ctor
	Grid-tied solar, backup power and smart energy management	Grid-tied solar and backup power	Gric and s ma
Single Phase StorEdge™ Inverter	√	1	
Auto-transformer	1	1	
SolarEdge Electricity Meter	1		
Battery	1	1	

# Grid



**Cloud-based Monitoring Platform** 



# CONTRACTOR

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PAGE INFORMATION

**PV-07** 



# **SolarEdge Single Phase StorEdge Inverter** for North America SE7600A-US<sup>(1)</sup>

Single inverter for PV, grid-tied storage and backup power

- Includes the hardware required to provide automatic backup power to backed-up loads in case of grid interruption

Includes all interfaces needed for battery connection

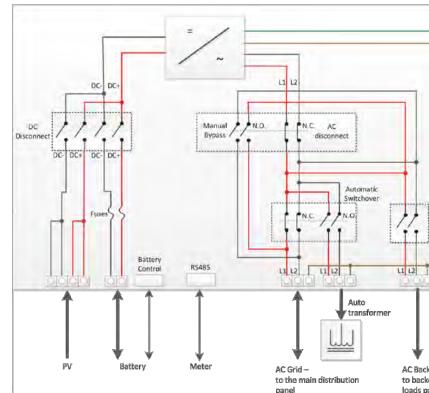
SE760	0A-US		
OUTPUT - AC (LOADS/GRID) Rated AC Power Output	760	0	VA
Max AC Power Output	835	-	VA
AC Output Voltage Min-Nom-Max (L-L) <sup>(2)</sup>	211-240	-	VA
	59.3 - 60		
AC Frequency Min-Nom-Max <sup>(2)</sup>	59.3 - 60		Hz
Maximum Continuous Output Current @240V			A
GFDI	1		A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes		
Charge Battery from AC (if Allowed)	Yes		
THD	<3		%
Power factor with rated power	>0.99 (configurable; 0.9		
Typical Nighttime Power Consumption	<5		W
OUTPUT - AC (BACKUP POWER) <sup>(3)</sup>		>(4)	
Rated AC Power Output	5000	·	VA
Max AC Power Output - Surge	660		VA
AC Output Voltage Min-Nom-Max (L-L)	211-240		Vac
AC Output Voltage Min-Nom-Max (L-N)	105-120		Vac
AC Frequency Min-Nom-Max	55 - 60		Hz
Maximum Continuous Output Current @240V - Backup Mode	21		A
Max Continuous Output Current per Phase @120V	25		A
GFDI	1		A
AC Circuit Breaker	Yes		
THD	<5		%
Power factor with rated power	0.2 leading to 0.2 lagging		
Automatic switchover time	<2		sec
Typical Nighttime Power Consumption	<5		W
INPUT - DC (PV and BATTERY)			
Transformer-less, Ungrounded	Yes		
Max Input Voltage	500		
Nom DC Input Voltage	400	)	Vdc
Reverse-Polarity Protection	Yes		
Ground-Fault Isolation Detection	600kΩ Sei	nsitivity	
Maximum Inverter Effciency	98		%
CEC Weighted Effciency	97.	5	%
INPUT - DC (PV)			
Maximum DC Power (STC)	1025		W
Max Input Current <sup>(5)</sup>	23		Adc
2-pole Disconnection	Yes	5	
INPUT - DC (BATTERY)			-
Continuous Peak Power	330		W
Number of Batteries per Inverter <sup>(6)</sup>	1	2 for high capacity	
Supported Battery Types	LG Chem RESU 10H Tesla Powerwall 1	Tesla Powerwall 1	
Max Input Current	lesia Powerwali 1 8.5		Adc
2-pole Disconnection	Yes	5	
DC Fuses on Plus and Minus	12A (field re	placeable)	
ADDITIONAL FEATURES			
Supported Communication Interfaces	RS485 for battery, RS485, E	thernet, ZigBee (optional)	
Battery Power Supply	Yes, 12V		
Revenue Grade Data, ANSI C12.20	Optior		
Integrated AC, DC and Communication Connection Unit	Yes		
AC Disconnect	Yes		
Manual Inverter Bypass Switch	Yes		
DC Voltage Rapid Shutdown (PV and Battery)	Yes, according to N		
Auto-transformer thermal protection	Yes		



**SolarEdge Single Phase StorEdge Inverter** for North America SE7600A-US

	SE7600A-USS	
STANDARD COMPLIANCE		
Safety	UL1741, UL1699B, UL1998, UL9540, CSA 22.2	
Grid Connection Standards	IEEE1547, Rule 21, Rule 14	
Emissions	FCC part15 class B	
INSTALLATION SPECIFICATIONS		
AC Output (Loads/Grid) conduit size / AWG range	1" / 14-6 AWG	
AC Output (Backup) conduit size / AWG range	0.75-1" knockouts / 14-6 AWG	
AC Input (Auto-transformer) conduit size / AWG range	0.75-1" / 14-6 AWG	
DC Input (PV) conduit size / # of Strings / AWG range	0.75" / 1-2 Strings 14-8 AWG	
DC Input (Battery) conduit size / AWG range	0.75″ / 16-10 AWG	
Dimensions with Connection Unit (HxWxD)	37 x 12.5 x 7.2 / 940 x 315 x 184	in / mm
Weight with Connection Unit	58.5 / 26.5	lb / kg
Cooling	Natural convection and internal fan (user replaceable)	
Noise	<50	dBA
Min - Max Operating Temperature	-13 to +140 / -25 to +60	°F/°C
Protection Rating	NEMA 3R	

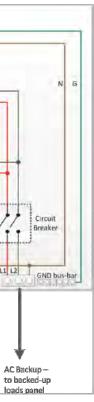
**Inverter Interface** 



<sup>(1)</sup> These specificatons apply to inverters with part numbers SE7600A-USS0XXXX and connecton unit model number BCU-1PH-USS
<sup>(2)</sup> For other regional settings please contact SolarEdge Support
<sup>(3)</sup> Not designed for standalone applications and requires AC for commissioning
<sup>(4)</sup> The rated AC power output is the minimum between 5000VA and the battery continuous peak power
<sup>(3)</sup> A higher current source may be used; the inverter will limit its input current to the values stated
<sup>(6)</sup> For two batteries for double power contact SolarEdge technical support
<sup>(7)</sup> Revenue grade inverter P/N: SE7600A-USS02NNG2
<sup>(7)</sup>

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6



# CONTRACTOR

JG POWER CO. 3486 MARSHALL ST **RIVERSIDE, CA 92504** PHONE: (714)717-5223

STATE LICENSE# : 1039874

LICENSE TYPE : C 10

EXPIRATION DATE : 05/31/2022

STAMP/ SIGNATURE :



**OWNER / ADDRESS** 

SAN BERNARDINO, CA 92407

OCCUPANCY R3 / TYPE 5 STRU. APN#:

SYSTEM SIZE

9.081 KW-AC 10.080 KW-DC

MODULES : (28) SOLARIA POWERXT, 360R-PD

INVERTER(S) : (1) SOLAREDGE,STOREDGE SE7600A-USS (1) SOLAREDGE, SE3000H-US

DATE: 06/25/20

**REVISION**:

PAGE INFORMATION

TITLE: SPECS



# SolarEdge Auto-transformer SEAUTO-TX-5000

SEAUTO-TX-5000 ELECTRICAL RATINGS Rated Power - Continuous 5000 VA Rated Power - Peak 7600 for 10sec VA 120/240V Split Phase Output Voltage Max Continuous Output Current per Phase @120V 25 Δ Split Phase Imbalance (@Rated Power) Yes, up to 25A difference between phases Thermal Protection Yes INSTALLATION SPECIFICATIONS AC Output conduit size / AWG range 0.75" / 14-6 AWG Dimensions (HxWxD) 6.7 x 7.9 x 5.5 / 170 x 200 x 140 in/mm Weight 29.7 / 13.5 lb / kg -13 to +140 / -25 to +60 °F/°C Min - Max Operating Temperature Protection Rating NEMA 3R Installation Wall mounted





# SolarEdge Electricity Meter for North America

SE-MTR240-0-000-S2

For meter specifications refer to: https://www.solaredge.com/sites/default/files/se\_electricity\_meter\_na.pdf



# CE @ FC

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# I Energy Meter with Modbus Connection for North America

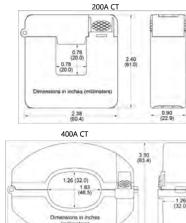
SE-MTR240-NN-S-S1

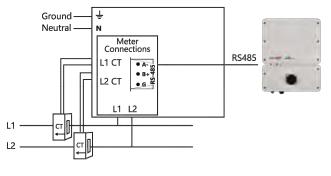
SUPPORTED INVERTERS	SINGLE PHA	SINGLE PHASE INVERTERS			
ELECTRICAL SERVICE	and the second	0.30 787.5			
AC Input Voltage (Nominal)	240				
AC Frequency (Nominal)		60	Hz		
Max AC Input Current		100	mA		
Connector Type	Terminal b	lock - 22 to 12	AWG		
Grids supported		2/N/PE L2/PE			
Power Consumption (Nominal)		3	W		
METER ACCURACY (@ 77°F / 25°C, PF:0.7	7-1)				
1 - 100% of Rated Current CT		±1.0	%		
CURRENT TRANSFORMERS <sup>(1)</sup>					
Nominal Input (at CT Rated Current)	CT1, CT2: 0.333		Vac RMS		
Rated RMS current®	200	400	A		
Dimensions (Internal / External)	0.8 x 0.8; 2.4 x 2.4 / 20 x 20; 61 x 61	1.26 x 1.83; 3.3 x 4.5 / 32 x 46.5; 83.4 x 114	in/mm		
STANDARD COMPLIANCE					
Safety	UL 1741:2010 Ed.2(Supp	lement SA)+R: 07 Sep 2016			
Emmissions.	FCC 47 CFR F	Part 15 Subpart B			
ENVIRONMENTAL					
Operating Temperatures	-40 to +14	0 / -40 to +60	"F / "C		
Relative Humidity (noncondensing)	5	5-90	%		
Enclosure type	High impact, ABS and/or AB	IS/PC plastic UL 94V-0, IEC FV-0			
Protection Rating	NEMA	A Type 3R			
INSTALLATION SPECIFICATIONS					
Dimensions (HxWxD)	8.1 x 12.4 x 4.6 /	206.6 x 316 x 117.5	in / mm		
Weight	3.5	9 / 1.8	lb / kg		
Conduit Entry Diameters	0.75 or	1 / 19 or 25	in		
Mounting Type	Brack	et mount			

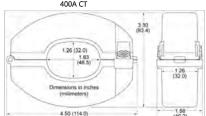
Por other ratings contact SolarEdge

### **Current Transformer Dimensions**

### **Connecting the Energy Meter**







\* Current Transformers (CTs) should be ordered separately: SEACT0750-200NA-20 (200A); SEACT1250-400NA-20 (400A). Each comes in boxes of 20.

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INVERTER(S) (1) SOLAREDGE, STOREDGE SE7600A-USS (1) SOLAREDGE, SE3000H-US

DATE: 06/25/20

**REVISION:** 

PAGE INFORMATION

**PV-09** 

# **Single Phase Inverter** with HD-Wave Technology

# for North America

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



# Optimized installation with HD-Wave technology

- I Specifically designed to work with power optimizers
- I Record-breaking efficiency
- I Fixed voltage inverter for longer strings
- / Integrated arc fault protection and rapid shutdown for // Optional: Revenue grade data, ANSI C12.20 NEC 2014 and 2017, per article 690.11 and 690.12
- / UL1741 SA certified, for CPUC Rule 21 grid compliance

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- I Extremely small
- I Built-in module-level monitoring
- I Outdoor and indoor installation
- Class 0.5 (0.5% accuracy)



INVERTERS

# / 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	SI
OUTPUT		-				_
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	
AC Output Voltage MinNomMax. (211 - 240 - 264)	*	×.	~	Ý	1	
AC Output Voltage MinNomMax. (183 - 208 - 229)			14.1	×.	-	
AC Frequency (Nominal)				59.3 - 60 - 60.5"		
Maximum Continuous Output Current @240V	12,5	16	21	25	32	
Maximum Continuous Output Current @208V	1	-16	-	24	-	
GFDI Threshold				1		
Utility Monitoring, Islanding Protection, Country Configurable Thresholds				Yes		
INPUT						
Maximum DC Power @240V	4650	5900	7750	9300	11800	1
Maximum DC Power @208V	1	5100	1	7750		
Transformer-less, Ungrounded				Yes.		
Maximum Input Völtage				480	_	
Nominal DC Input Voltage		3	80			
Maximum Input Current @240V	8.5	10.5	13.5	16.5	20	
Maximum Input Current @208V	-	g		13,5	-	
Max. Input Short Circuit Current				-45		
Reverse-Polarity Protection				Yes		
Ground-Fault Isolation Detection				600ko Sensitivity		
Maximum Inverter Efficiency	99			9	9.2	
CEC Weighted Efficiency			9	9		
Nighttime Power Consumption				< 2,5		
ADDITIONAL FEATURES						
Supported Communication Interfaces			R5485, Ethernel	, ZigBee (optional), C	iellular (optional)	
Revenue Grade Data, ANSI C12.20				Optional <sup>(3)</sup>		
Rapid Shutdown - NEC 2014 and 2017 690.12			Automatic Rapir	d Shutdown upon AC	Grid Disconnect	
STANDARD COMPLIANCE						
Sáfety		UL1741	UL1741 SA, UL1699B;	CSA C22.2, Canadiar	AFCI according to 1	F.I.L. N
Grid Connection Standards			IEEE	1547, Rule 21, Rule 14	+ (HI)	
Emissions				FCC Part 15 Class B	1	
INSTALLATION SPECIFICATIO	ONS					
AC Output Conduit Size / AWG Range		1	* Maximum / 14-6 AW	G		T
DC Input Conduit Size / # of Strings / AWG Range		* Maxi	mum / 1-2 strings / 14	6 AWG		
Dimensions with Safety Switch (HxWxD)		17.7 ×	14.5 x 6.8 / 450 x 370	a. 174		
Weight with Safety Switch	22	/ 10	25.1/11.4	26,2	/ 11.9	
Noise		Q.	25			
Cooling				Natural Convection		
Operating Temperature Range			-13 ta +140 /	25 to +60% (-40°F /	-40°C option)®	
Protection Rating			NEMA d	X (Inverter with Safet	y Switch)	

For other regional settings please contact SolarEdge support
 A higher current source may be used; the inverter will limit its input current to the values stated
 Revenue grade inverter P/N: SExxxdH-US000NNC2

efer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

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	US SE11400H-US	
10000	11400 @ 240V 10000 @ 208V	VA
10000	11400 @ 240V 10000 @ 208V	VĄ
*	×	Vac
20	×	Vac
		+1z
42	47.5	A
-	48.5	A.
	-	A
		-
15500	17650	W
÷	15500	W
		Vdc
400		Vdc
27	30.5	Adc
-	27	Adc
	1	-96
	99 @ 240V 98.5 @ 208V	96
		W
07		
		1
1ª Maxir	mum /14-4 AWG	1
Maximum /	1-3 strings / 14-6 AWG	
	7.3 / 540 x 370 x 185	in / mm
	38.8 / 17.6	16 / k
<50		dBA
		F/1

# CONTRACTOR

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SAN BERNARDINO, CA 92407

OCCUPANCY R3 / TYPE 5 STRU. APN#:

SYSTEM SIZE

9.081 KW-AC 10.080 KW-DC

MODULES : (28) SOLARIA POWERXT, 360R-PD

INVERTER(S) (1) SOLAREDGE, STOREDGE SE7600A-USS (1) SOLAREDGE, SE3000H-US

DATE: 06/25/20

**REVISION:** 

PAGE INFORMATION

TITLE: SPECS

RoHS

# **Power Optimizer**

For North America P320 / P340 / P370 / P400 / P405 / P485 / P505



# POWEROPTIMIZE ス

# PV power optimization at the module-level

- I Specifically designed to work with SolarEdge inverters
- / Up to 25% more energy
- I Superior efficiency (99.5%)
- / Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- / Flexible system design for maximum space utilization

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- / Fast installation with a single bolt
- / Next generation maintenance with modulelevel monitoring
- / Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- / Module-level voltage shutdown for installer and firefighter safety



P320 / P340 / P370 / P400 / 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)	P405 (for high- voltage modules)	P485 (for high- voltage modules)	P505 (for higher current modules)	
INPUT								
Rated Input DC Power®	320	340	370	400	405	485	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	4	8	60	80	125%	2)	83(2)	Vdc
MPPT Operating Range	8 -	48	8 - 60	8 - 80	12.5 -	105	12.5 - 83	Vdc
Maximum Short Circuit Current (Isc)		11			10.1		14	Adc
Maximum DC Input Current		13.75			12.5		17.5	Adc
Maximum Efficiency				99.5				%
Weighted Efficiency			g	8.8			98.6	%
Overvoltage Category				П				
OUTPUT DURING OPERA	TION (POWER	OPTIMIZER	CONNECTED	TO OPERATIN	IG SOLAREDGE	INVERTER)		
Maximum Output Current				15				Add
Maximum Output Voltage		6	50			85		Vdc
Optimizer STANDARD COMPLIANC	-							
EMC			FCC Part15 C	lass B, IEC61000-6-2	, IEC61000-6-3			
EMC Safety				lass B, IEC61000-6-2 109-1 (class II safety)				
			IEC62		, UL1741			
Safety			IEC62	109-1 (class II safety)	, UL1741			
Safety Material			IEC62	109-1 (class II safety) JL94 V-0 , UV Resista	, UL1741			
Safety Material RoHS			IEC62	109-1 (class II safety) JL94 V-0 , UV Resista	, UL1741			Vdc
Safety Material ROHS INSTALLATION SPECIFIC/			IEC62	109-1 (class II safety) JL94 V-0 , UV Resista Yes	, UL1741 ant			Vdc
Safety Material RoHS INSTALLATION SPECIFIC/ Maximum Allowed System Voltage	ATIONS	: 153 x 27.5 / 5.1 x 6	IEC62	109-1 (class II safety) JL94 V-0 , UV Resista Yes 1000	, UL1741 ant	/ 5.1 x 6.3 x 1.9	129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm
Safety Material RoHS INSTALLATION SPECIFIC/ Maximum Allowed System Voltage Compatible inverters	ATIONS	: 153 x 27.5 / 5.1 x 6 630 / 1.4	IEC62	109-1 (class II safety) JL94 V-0 , UV Resist Yes 1000 ngle Phase and Thre 129 x 153 x 33.5 /	, UL1741 ant ee Phase inverters			mm / in
Safety Material RoHS <b>INSTALLATION SPECIFIC/</b> Maximum Allowed System Voltage Compatible inverters Dimensions (W x L x H)	ATIONS		IEC62	109-1 (class II safety) JL94 V-0 , UV Resist Yes 1000 ngle Phase and Thre 129 x 153 x 33.5 / 5.1 x 6 x 1.3	, UL1741 ant ee Phase inverters 129 x 159 x 49.5 /		5.1 x 6.4 x 2.3	mm / in
Safety Material RoHS INSTALLATION SPECIFIC/ Maximum Allowed System Voltage Compatible inverters Dimensions (W x L x H) Weight (including cables)	ATIONS		IEC62 L All SolarEdge Si 5 x 1.1	109-1 (class II safety) JL94 V-0 , UV Resist Yes 1000 ngle Phase and Thre 129 x 153 x 33.5 / 5.1 x 6 x 1.3	, UL1741 ant ee Phase inverters 129 x 159 x 49.5 /	1.9 Single or dual	5.1 x 6.4 x 2.3 1064 / 2.3	mm /in gr/l
Safety Material RoHS INSTALLATION SPECIFIC/ Maximum Allowed System Voltage Compatible inverters Dimensions (W x L x H) Weight (including cables) Input Connector	ATIONS		IEC62 All SolarEdge Si 5 x 1.1 MC4 <sup>(3)</sup>	109-1 (class II safety) JL94 V-0 , UV Resist. Yes 1000 ngle Phase and Three 129 x 153 x 33.5 / 5.1 x 6 x 1.3 750 / 1.7	, UL1741 ant ee Phase inverters 129 x 159 x 49.5 / 845 /	1.9 Single or dual	5.1 x 6.4 x 2.3 1064 / 2.3	mm /in gr/
Safety Material RoHS INSTALLATION SPECIFIC/ Maximum Allowed System Voltage Compatible inverters Dimensions (W x L x H) Weight (including cables) Input Connector Input Wire Length	ATIONS	630 / 1.4	IEC62 L All SolarEdge Si 5 x 1.1 MC4 <sup>(3)</sup> E 1.2 / 3.9	109-1 (class II safety) JL94 V-0 , UV Resist. Yes 1000 ngle Phase and Thre 129 x 153 x 33.5 / 5.1 x 6 x 1.3 750 / 1.7 0.16 / 0.52 Double Insulated / M 1.2 / 3.9	, UL1741 ant ee Phase inverters 129 x 159 x 49.5 / 845 / C4 1.2 / 3	1.9 Single or dual MC4 <sup>(3)(4)</sup>	5.1 x 6.4 x 2.3 1064 / 2.3	mm / in gr / m /
Safety Material RoHS INSTALLATION SPECIFIC/ Maximum Allowed System Voltage Compatible inverters Dimensions (W x L x H) Weight (including cables) Input Connector Input Wire Length Output Wire Type / Connector	ATIONS 129 >	630 / 1.4	IEC62 L All SolarEdge Si 5 x 1.1 MC4 <sup>(3)</sup> E 1.2 / 3.9	109-1 (class II safety) JL94 V-0 , UV Resist. Yes 1000 ngle Phase and Thre 129 x 153 x 33.5 / 5.1 x 6 x 1.3 750 / 1.7 0.16 / 0.52 Double Insulated / M	, UL1741 ant ee Phase inverters 129 x 159 x 49.5 / 845 / C4 1.2 / 3	1.9 Single or dual MC4 <sup>(3)(4)</sup>	5.1 x 6.4 x 2.3 1064 / 2.3 MC4 <sup>(7)</sup>	mm /in gr/l m/ <sup>-</sup>
Safety Material RoHS INSTALLATION SPECIFIC/ Maximum Allowed System Voltage Compatible inverters Dimensions (W x L x H) Weight (including cables) Input Gonnector Input Wire Length Output Wire Type / Connector Output Wire Length	ATIONS 129 >	630 / 1.4	IEC62 L All SolarEdge Si 5 x 1.1 MC4 <sup>(3)</sup> E 1.2 / 3.9	109-1 (class II safety) JL94 V-0 , UV Resist. Yes 1000 ngle Phase and Thre 129 x 153 x 33.5 / 5.1 x 6 x 1.3 750 / 1.7 0.16 / 0.52 Double Insulated / M 1.2 / 3.9	, UL1741 ant ee Phase inverters 129 x 159 x 49.5 / 845 / C4 1.2 / 3	1.9 Single or dual MC4 <sup>(3)(4)</sup>	5.1 x 6.4 x 2.3 1064 / 2.3 MC4 <sup>(7)</sup>	Vdc mm /in gr/l m/f1 °C/°

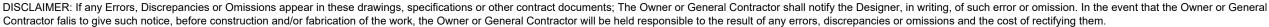
<sup>(2)</sup> NEC 2017 requires max input voltage be not more than 80V

<sup>(9)</sup> For other connector types please contact SolarEdge
<sup>(9)</sup> For dual version for parallel connection of two modules use the P485. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimize erature above +85°C / +185°F power de-

PV System Desi a SolarEdge In	ign Using verter <sup>(6)(7)</sup>	Single Phase HD-Wave	Single phase	Three Phase for 208V grid	Three Phase for 277/480V grid	
Minimum String Length	P320, P340, P370, P400	8	3	10	18	
(Power Optimizers)	P405, P485, P505	6	5	8	14	
Maximum String Length (Power Optimizers)		2	5	25	50(8)	
Maximum Power per String		5700 (6000 with SE7600-US - SE11400- US)	5250	6000 <sup>(9)</sup>	12750(10)	w
Parallel Strings of Different Length	ns		,	Yes	·	

<sup>69</sup> For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string\_sizing\_na.pdf <sup>69</sup> It is not allowed to mix P405/P485/P505 with P320/P340/P370/P400 in one string <sup>60</sup> A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirem <sup>60</sup> For 2089 (grid it is allowed to install up to 6,500W per string when the maximum power difference between each string is 2,000W <sup>60</sup> For 277/480V grid: it is allowed to install up to 17,550W per string when the maximum power difference between each string is 2,000W

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DATE: 06/25/20

**REVISION:** 

PAGE INFORMATION



Innovation for a Better Life	<b>()</b> LG Chem	RES	U		CHI	NGE YOUR ENE	
CHANGE YOUR ENERGY		48V					
		Ma	dels	RESU3.3	RESU6.5	RESU10	
CHARGE	· · · · · · · · · · · · · · · · · · ·	Total Ener	gy [kWh] <sup>1)</sup>	3.3	6.5	9.8	
		Usable Ene	rgy [kWh] <sup>2)</sup>	29	5.9	8.8	
		Capac	ty [Ah]	63	126	189	
YOUR LIFE		Nominal	/oltage [V]		5	1.8	
		Voltage	Range [V]		42.0	-58.8	
		Max Po	wer [kW]	3.0	4.2	5.0	
		Peak Power [	W] (for 3 sec.)	3.3	4.6	70	7.0
			WxHxD,In)	17.8 × 15.9 × 4.7	17.8×25.8×4.7	17.8×19.1×8.9	
			ht [lb]	68	115	165	
			tection Rating			55	_
			inication			12.0B	
			Cell			642	
		Certificates	Product	10 1073	3 / TUV (IEC 62619) / CE / F		TUN
RESU		RESUPLUS		• Dimension : 8.5 x 6.1	nsion kit specially desig 8V models can be cross x 4.8 (W x H x.D, in) le Battery Units : Up to 2	-connected with eacl	
		400V Ma	dels	RES Type-R	5U7H Type-C	RE Type-R	ESU10
		Total Ener	gy [kWh] '		70		9.8
			rgy [kWh] <sup>21</sup>		5.6		9.3
			ty [Ah]		63		63
			Range [V]	350-450	430-550	350-450	11
			ver [kW]		35		5.0
Compact Size & Easy Installation Proven Safety	ees		wer [kW]	5.0 (for 5 sec.)	5.0 (for 10 sec.)	70/	(for 10 s
The compact and lightweight nature of the RESU	nium-ion battery is	the second se	N x H x D, In)	29.3×27.3×81	293×357×81	293×35.7×8.1	Per La 3
allows easier and faster installation.	ESS markets.			165	192	29.3 × 35.7 × 6.1	-
	2016		ht [lb]	102			-
Diverse Product Options	WINNER		tection Rating	inclus.		55	-
3.3k//h		Commu	nication	RS485	CAN2.0B	RS485	41.5
The RESU series offers diverse product options		Certificates	Cell	THE R. LAND AND ADDRESS OF ADDRESS OF		642	
ranging from 3.3kWh to 13.1kWh.		Certificates	Product	TUV (IEC 62619) / CE / FCC / RCM	TUV (IEC 62619) / CE / RCM	UL1973/TUV (IEC	62619
* The ees award is one of the most honorable awards presented annually at ees Europe, the largest exhibition for batteries and energy storage systems in Europe, with the purpose to pay tribute to pioneering products and solutions for energy storage	e system. www.lgesspartner.com		sured at the initial stag	; Fromus, Huawei - More bra je of battery life under the o	nds to be added	uture 77'F	

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RESU13         131         124         252         5.0         0/11.0 (Backup Mode)         17.8 × 24.6 × 8.9         214
131 124 252 5.0 0 / 11.0 (Backup Mode) 17.8 x 24.6 x 8.9
12.4 252 5.0 0 / 11.0 (Васкир Моde) 17.8 x 24.6 x 8.9
252 5.0 0 / 11.0 (Backup Mode) 17.8 × 24.6 × 8.9
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17.8 x 24.6 x 8.9
the second se
V(IEC.62619)/CE/FCC/RCM
DH Type-C
JPC-C
130.650
430-550
sec.)
sec.)
sec.) 29.3 x 35.7 x 8 1
sec) 29.3 x 35.7 x 8.1

# CONTRACTOR

JG POWER CO. 3486 MARSHALL ST RIVERSIDE, CA 92504 PHONE: (714)717-5223

STATE LICENSE# : 1039874

LICENSE TYPE : C 10

EXPIRATION DATE : 05/31/2022

STAMP/ SIGNATURE :



OWNER / ADDRESS

SAN BERNARDINO,CA 92407

OCCUPANCY R3 / TYPE 5 STRU. APN#:

SYSTEM SIZE

9.081 KW-AC 10.080 KW-DC

MODULES : (28) SOLARIA POWERXT, 360R-PD

INVERTER(S) : (1) SOLAREDGE,STOREDGE SE7600A-USS (1) SOLAREDGE, SE3000H-US

DATE: 06/25/20

**REVISION**:

PAGE INFORMATION

TITLE: SPECS



Solar Is Not Always Sunny

enough to buckle a panel frame.

these results. They resist uplift, protect against buckling and safely and efficiently

transfer loads into the building structure.

Their superior spanning capability

requires fewer roof attachments, reducing the number of roof

penetrations and the amount

of installation time.

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years,

XR Rails are the structural backbone preventing

but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing



# **XR** Rail Family

# **XR Rail Family**

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.

XR100





XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves 6 foot spans, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
  Clear anodized finish
- Internal splices available

# **Rail Selection**

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Lo	ad			Rail S	pan	
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	
	100					
Mana	120					
None	140	XR10		XR100		
	160					
	100					
10.00	120					
10-20	140					
	160					
	100					
30	160					
10	100					
40	160					
50-70	160					
80-90	160					

### © 2014 IranRidae, Inc. All rights reserved. Visit www.ironridae.com or call 1-800-227-9523 for more ini.

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 8 feet.

· 8' spanning capability

Heavy load capability

Clear & black anodized finish

Internal splices available

Force-Stabilizing Curve

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

### **Compatible with Flat & Pitched Roofs**





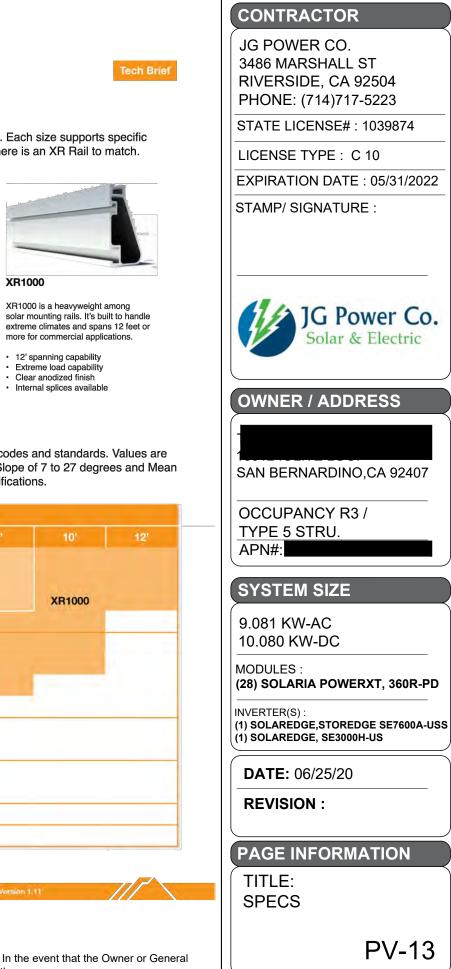
IronRidge offers a range of tilt leg options for flat roof mounting applications.

### **Corrosion-Resistant Materials**

All XR Rails are made of marine-grade aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.



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# Background

All roofing products are tested and classified for their ability to resist fire.

Recently, these fire resistance standards were expanded to include solar equipment as part of the roof system. Specifically, this requires the modules, mounting hardware and roof covering to be tested together as a system to ensure they achieve the same fire rating as the original roof covering.

These new requirements are being adopted throughout the country in 2016.

# IronRidge Certification

IronRidge was the first company to receive a Class A Fire Rating-the highest possible rating-from Intertek Group plc., a Nationally Recognized Testing Laboratory.

IronRidge Flush Mount and Tilt Mount Systems were tested on sloped and flat roofs in accordance with the new UL 1703 & UL 2703 test standards. The testing evaluated the system's ability to resist flame spread, burning material and structural damage to the roof.

Refer to the table below to determine the requirements for achieving a Class A Fire Rating on your next project.

# **Class A Fire Rating**

# **Fire Testing Process**

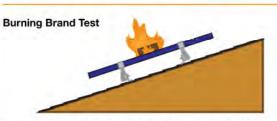
# **Test Setup**

Solar Modules Solar modules are given a Type classification based on their

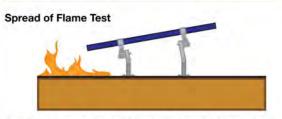
materials and construction. Mounting System Mounting is tested as part of a system that includes type-tested

modules and fire-rated roof covering. Roof Covering

Roof covering products are given a Fire Class Rating of A, B or C based on their tested fire resistance



A burning wooden block is placed on module as a fan blows at 12 mph. Flame cannot be seen on underside of roof within 90 minutes



Flame at southern edge of roof is aimed up the roof as a fan blows at 12 mph. The flame cannot spread 6 feet or more in 10 minutes.

System	Roof Slope	Module	Fire Rating*
Flush Mount	Any Slope	Type 1, 2, & 3	Class A
Tilt Mount	≤ 6 Degrees	Type 1, 2, & 3	Class A

### \*Class A rated PV systems can be installed on Class A, B, and C roofs

# **Frequently Asked Questions**

### What is a "module type"?

The new UL1703 standard introduces the concept of a PV module type, based on 4 construction parameters and 2 fire performance parameters. The purpose of this classification is to certify mounting systems without needing to test it with every module.

## What roofing materials are covered?

All fire rated roofing materials are covered within this certification including composition shingle, clay and cement tile, metal, and membrane roofs.

### What if I have a Class C roof, but the jurisdiction now requires Class A or B?

Generally, older roofs will typically be "grandfathered in", and will not require re-roofing. However, if 50% or more of the roofing material is replaced for the solar installation the code requirement will be enforced.

### Where is the new fire rating requirement code listed?

2012 IBC: 1509.7.2 Fire classification. Rooftop mounted photovoltaic systems shall have the same fire classification as the roof assembly required by Section 1505.

## Where is a Class A Fire Rating required?

The general requirement for roofing systems in the IBC refers to a Class C fire rating. Class A or B is required for areas such as Wildland Urban Interface areas (WUI) and for very high fire severity areas. Many of these areas are found throughout the western United States. California has the most Class A and B roof fire rating requirements. due to wild fire concerns

### Are standard mid clamps covered?

Mid clamps and end clamps are considered part of the PV "system", and are covered in the certification.

### More Resources

# (EID

Installation Manuals Visit our website for manuals that include UL 2703 Listing and Fire Rating Classification. Go to IronRidge.com



Go to IronRidge.com

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# compatible with Class A?

Attachments and their respective flashings are not constituents of the rating at this time. All code-compliant flashing methods are acceptable from a fire rating standpoint.

# What mounting height is acceptable?

UL fire testing was performed with a gap of 5", which is considered worst case in the standard. Therefore, the rating is applicable to any module to roof gap.

# Am I required to install skirting to meet the fire code?

No, IronRidge achieved a Class A fire rating without any additional racking components.

### What determines Fire Classification?

Fire Classification refers to a fire-resistance rating system for roof covering materials based on their ability to withstand fire exposure.

Class A - effective against severe fire exposure Class B - effective against moderate fire exposure Class C - effective against light fire exposure

# What if the roof covering is not Class A rated?

The IronRidge Class A rating will not diminish the fire rating of the roof, whether Class A, B, or C.

# What tilts is the tilt mount system fire rated for?

The tilt mount system is rated for 1 degrees and up and any roof to module gap, or mounting height.



# What attachments and flashings are deemed

Engineering Certification Letters We offer complete engineering resources and pre-stamped certification letters.

# CONTRACTOR

JG POWER CO. 3486 MARSHALL ST **RIVERSIDE, CA 92504** PHONE: (714)717-5223

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**OWNER / ADDRESS** 

SAN BERNARDINO, CA 92407

OCCUPANCY R3 / TYPE 5 STRU. APN#:

# SYSTEM SIZE

9.081 KW-AC 10.080 KW-DC

MODULES : (28) SOLARIA POWERXT, 360R-PD

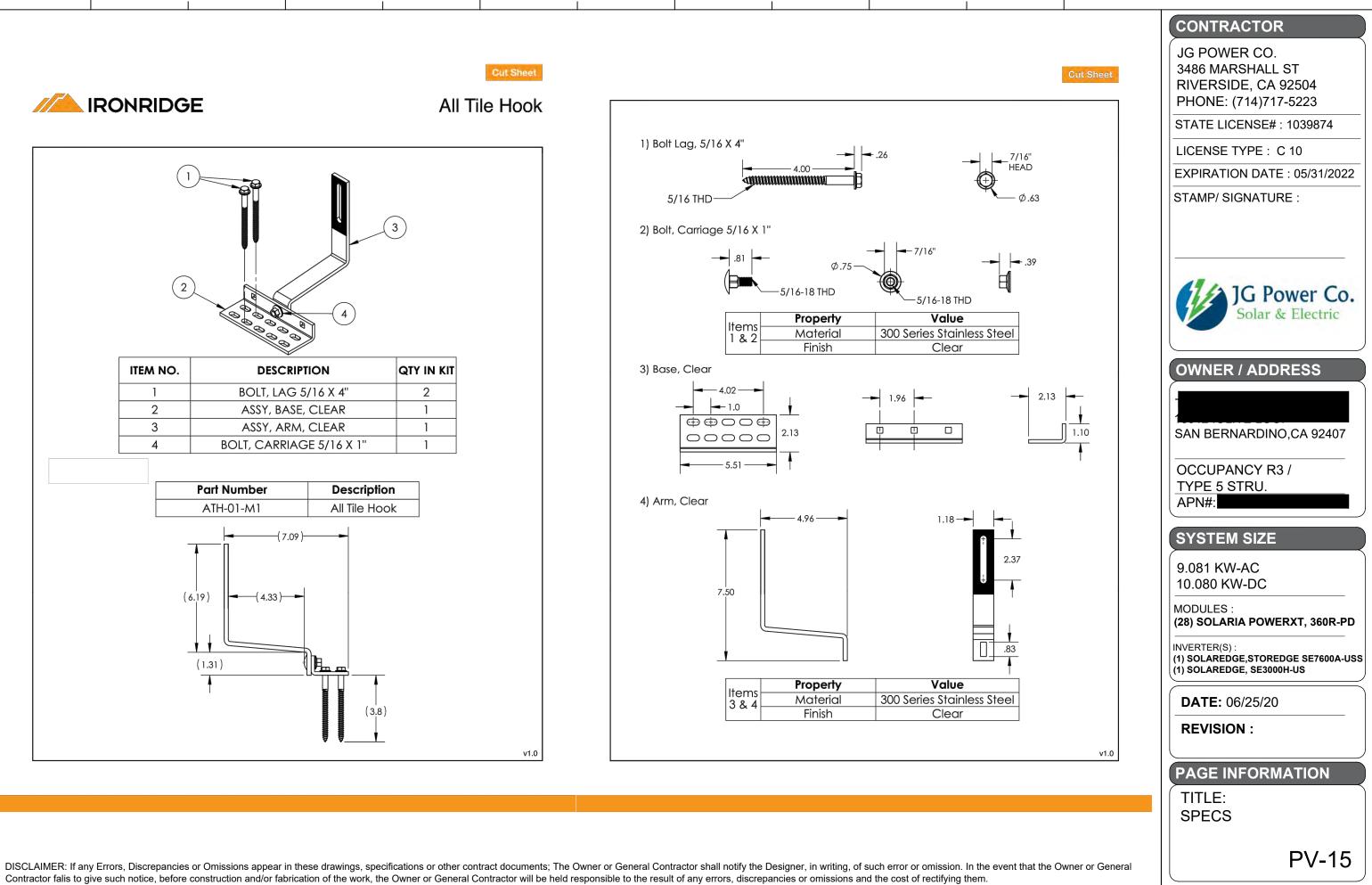
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**REVISION:** 

PAGE INFORMATION

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# Simplified Grounding for Every Application

The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family-Flush Mount, Tilt Mount and Ground Mount-are fully listed to the UL 2703 standard.

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

> Stopper Sleeve The Stopper Sleeve snaps onto the UFO, converting it into a bonded end clamp.

**Bonded Splice** Each Bonded Splice uses self-drilling screws to form a secure connection. No bonding strap needed.

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

**Bonded Attachments** The bonding bolt attaches and bonds the L-foot to the rail. It is installed with the same socket as the rest of the system

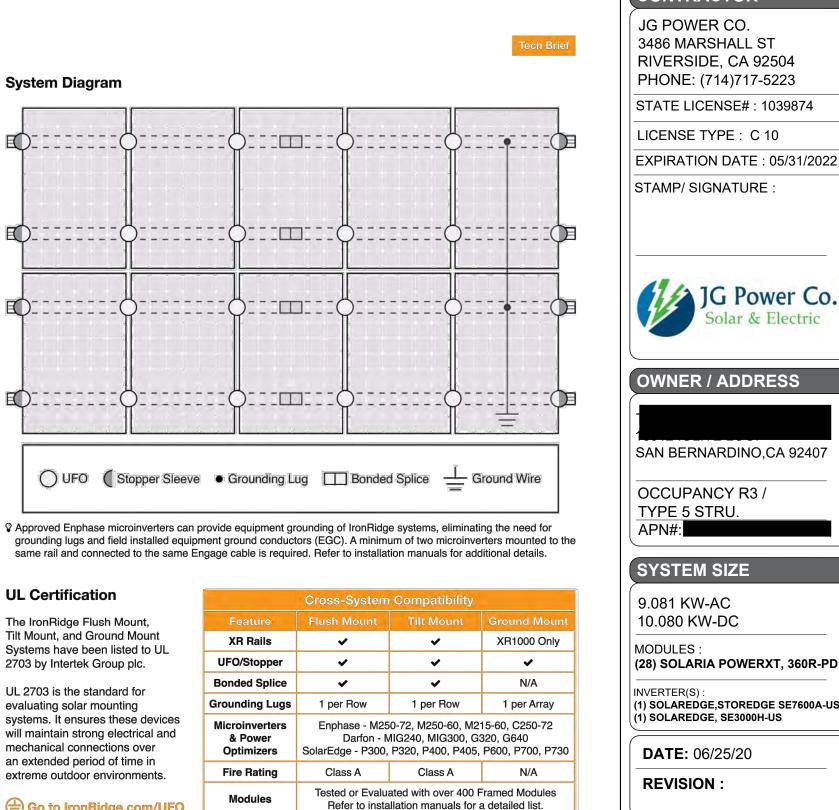
**UFO Family of Components** 

Universal Fastening Object (UFO)

The UFO securely bonds solar modules to XR

Rails. It comes assembled and lubricated, and

can fit a wide range of module heights.



Tilt Mount, and Ground Mount

Go to IronRidge.com/UFO

	Cross-System	Compatib		
Feature	Flush Mount	Tilt Mou		
XR Rails	~	✓		
UFO/Stopper	~	~		
Bonded Splice	~	~		
Grounding Lugs	1 per Row	1 per Ro		
Microinverters & Power Optimizers	Enphase - M250-72, M250- Darfon - MIG240, MIG SolarEdge - P300, P320, P400			
Fire Rating	Class A	Class A		
Modules	Tested or Evalua Refer to insta	ated with over Illation manua		

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# CONTRACTOR

(28) SOLARIA POWERXT, 360R-PD

(1) SOLAREDGE,STOREDGE SE7600A-USS

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**PV-16**