

HISTORIC AND DESIGN REVIEW COMMISSION

July 05, 2017

HDRC CASE NO: 2017-315
ADDRESS: 606 N PRESA ST
LEGAL DESCRIPTION: NCB 416 BLK 23 LOT E IRRG 60.9 FT OF W 100.9 FT OF 5 OR ARB A6
ZONING: D, HS
CITY COUNCIL DIST.: 1
DISTRICT: Alamo Plaza Historic District
LANDMARK: Maverick, George Building
APPLICANT: Jason Pittman
OWNER: David Adelman/AREA Real Estate
TYPE OF WORK: Installation of solar panels
REQUEST:

The applicant is requesting a Certificate of Appropriateness for approval to solar panel arrays on the rooftop of the historic structure at 606 N Presa Street, commonly known as the Maverick Building.

APPLICABLE CITATIONS:

Historic Design Guidelines, Chapter 3, Guidelines for Additions

6. Designing for Energy Efficiency

C. SOLAR COLLECTORS

- i. Location*—Locate solar collectors on side or rear roof pitch of the primary historic structure to the maximum extent feasible to minimize visibility from the public right-of-way while maximizing solar access. Alternatively, locate solar collectors on a garage or outbuilding or consider a ground-mount system where solar access to the primary structure is limited.
- ii. Mounting (sloped roof surfaces)*—Mount solar collectors flush with the surface of a sloped roof. Select collectors that are similar in color to the roof surface to reduce visibility.
- iii. Mounting (flat roof surfaces)*—Mount solar collectors flush with the surface of a flat roof to the maximum extent feasible. Where solar access limitations preclude a flush mount, locate panels towards the rear of the roof where visibility from the public right-of-way will be minimized.

FINDINGS:

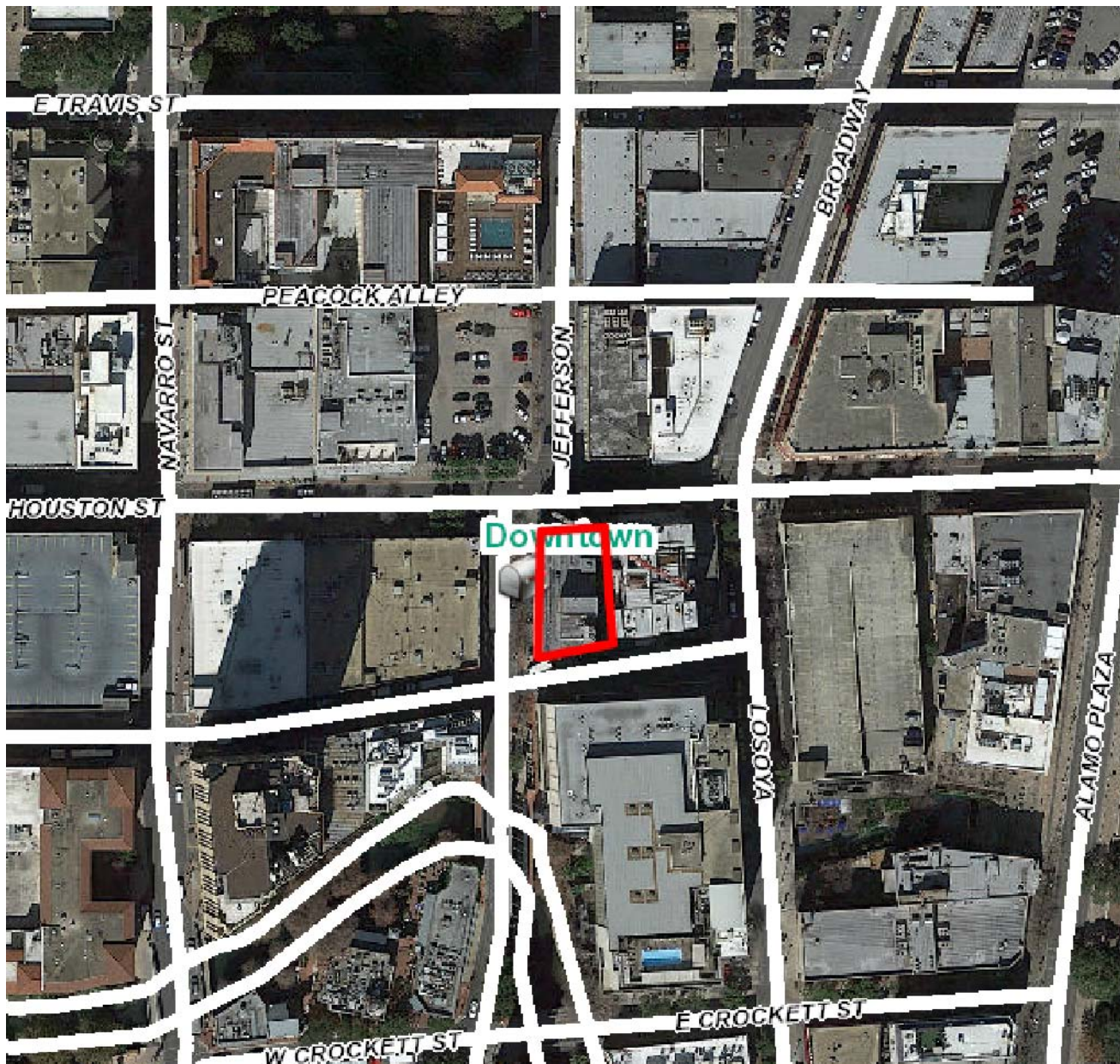
- a. The structure at 606 N Presa, commonly known as the Maverick Building was constructed in 1922 as an office building. The structure has since been converted into a residential structure and has undergone substantial rehabilitation. At this time, the applicant has proposed to install solar panels on the rooftop of the historic structure.
- b. SOLAR INSTALLATION – On the rooftop of the multi-story structure, the applicant has proposed to install a solar panel system. Per the Guidelines for Additions 6.C.iii. solar collectors should be mounted flush with the surfaces of flat roofs to the maximum extent feasible. Staff finds that the applicant should mount the proposed solar system in a manner that will not be visible from the public right of way.

RECOMMENDATION:

Staff recommends approval as submitted based on finding b.

CASE MANAGER:

Edward Hall



Flex Viewer

Powered by ArcGIS Server

Printed: Jun 24, 2017

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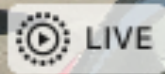






MAVERICK

W. 12th Ave





SCOPE OF WORK:

TO INSTALL A ROOFTOP SOLAR PV SYSTEM. THE POWER GENERATED BY THE PV SYSTEM WILL BE INTERCONNECTED WITH THE UTILITY GRID ON THE LOAD SIDE OF THE MAIN SERVICE PANEL. THE SYSTEM DOES NOT INCLUDE STORAGE BATTERIES.

CONSTRUCTION NOTES:

1. ALL EQUIPMENT TO BE LISTED BY UL AND LABELED FOR ITS APPLICATION.
2. ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600V AND 90°C WET ENVIRONMENT.
3. WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
4. WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
5. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
6. WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
7. ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
8. MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
9. MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
10. THE DC SIDE OF THE PV SYSTEM IS UNGROUNDED AND SHALL COMPLY WITH NEC 690.35.
11. ALL TERMINALS RATED FOR 75°C
12. THE CONTRACTORS SHALL PROVIDE LABELS AND MARKING AS REQUIRED BY NEC ARTICLE 690
13. PV SOURCE CIRCUITS HAVE ARC-FAULT CIRCUIT PROTECTION PER ARTICLE 690.11. ARC FAULT PROTECTION IS PROVIDED BY DC TO AC INVERTERS.
14. ALL PHOTOVOLTAIC SOURCE AND OUTPUT CIRCUITS HAVE GROUND-FAULT PROTECTION IN ACCORDANCE WITH ARTICLE 690.35(C). GROUND FAULT PROTECTION IS PROVIDED BY DC TO AC INVERTERS.
15. THE GROUNDING ELECTRODE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH 690.47 AND CPS

SERVICE GUIDELINES

16. PV SYSTEM SHALL COMPLY WITH 2015 INTERNATIONAL FIRE CODE
17. INSTALL (1) AC SURGE PROTECTOR PER SYSTEM
18. CLEARANCE BETWEEN CONDUIT AND ROOF SHOULD BE NO LESS THAN 1/2"

MODULE DIMENSIONS : 78.23" X 39.33" X 1.57"
72 CELL MODULE

SITE NOTES:

FLAT ROOF
UNIRAC RM 10 BALLAST SYSTEM
CPS ENERGY DOWNTOWN GRID



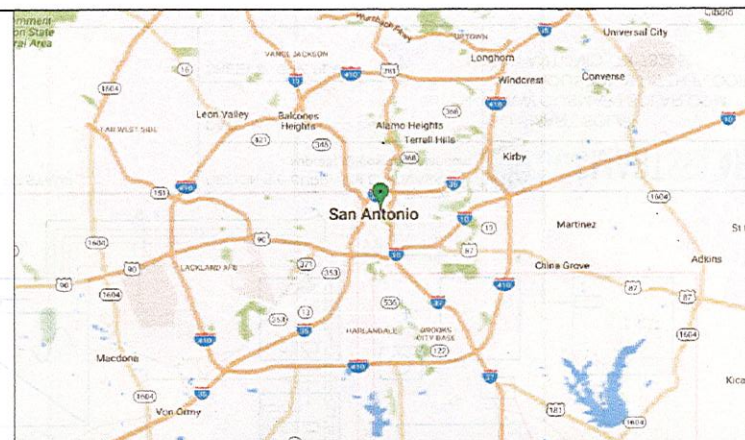
STRUCTURAL ONLY



06/06/2017

TX License #: 99911
TX Firm License #: F11411
U2236-0004-171

PROJECT LOCATION



THE MAVERICK BUILDING
606 N PRESA
SAN ANTONIO, TX 78205

APPLICABLE CODES

2014 NATIONAL ELECTRICAL CODE
2015 INTERNATIONAL BUILDING CODE
UNDERWRITERS LABORATORIES (UL) STANDARDS
OSHA 29 CFR 1910.269
2015 INTERNATIONAL FIRE CODE
CPS ENERGY SERVICE STANDARDS

SYSTEM DETAILS:

6.70 KW SOLAR PV SYSTEM
(20) MISSION 335 W MODULES
(20) SOLAREEDGE P370 OPTIMIZERS
(01) SOLAREEDGE SE 5000A-US INVERTER

PE STAMP:

DESIGN BY: SUPRATIM SRINIVASAN
supratim@gosmartsolar.com

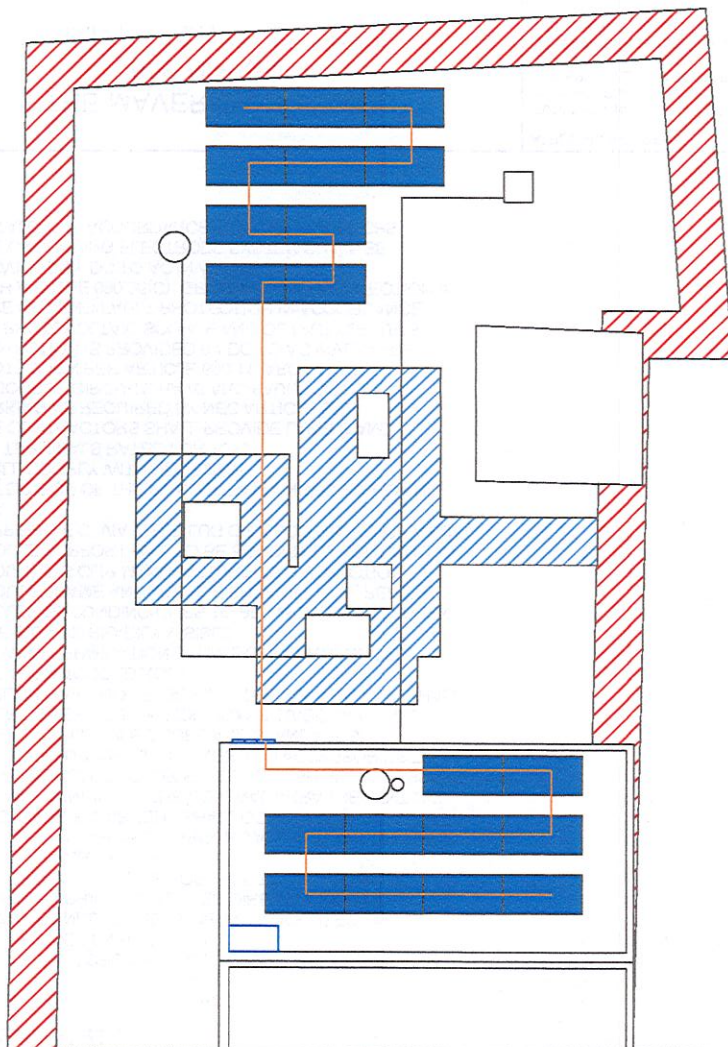
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SHEET #:

COVER / C-100



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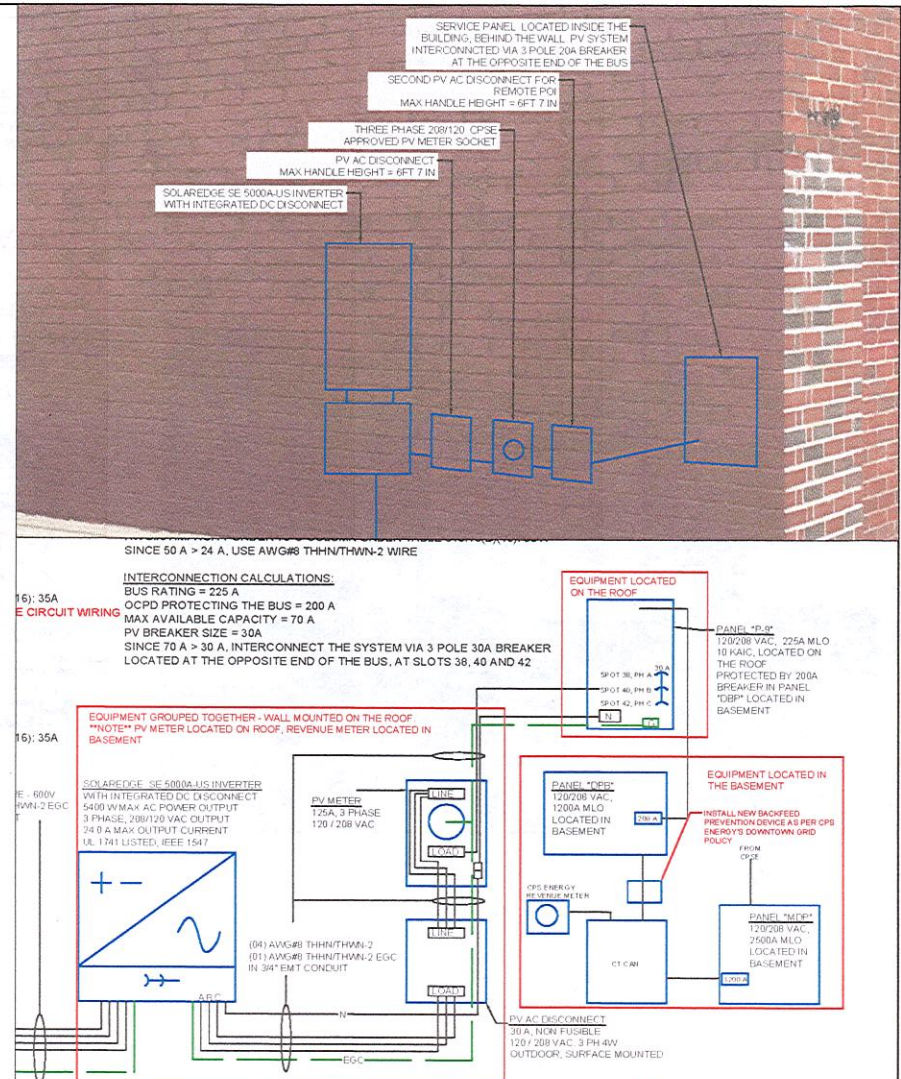
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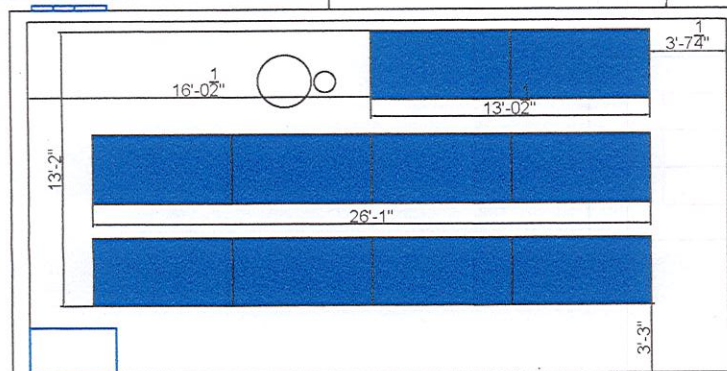
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L-201

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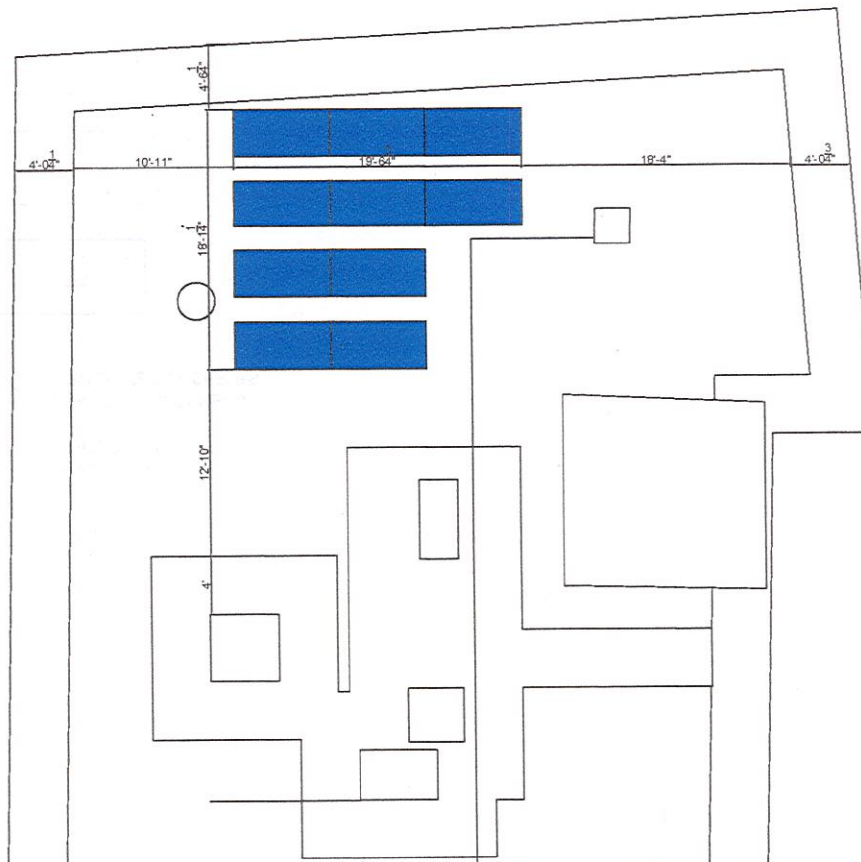


VECTOR
ENGINEERS
651 W. SALENA PARK BLVD. PHONE (801) 990-1775
DRAPER, UTAH 84030 FAX (801) 990-1776

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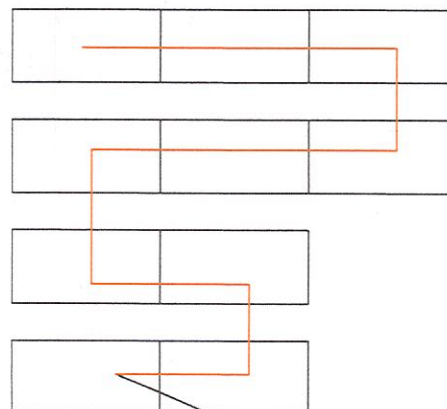
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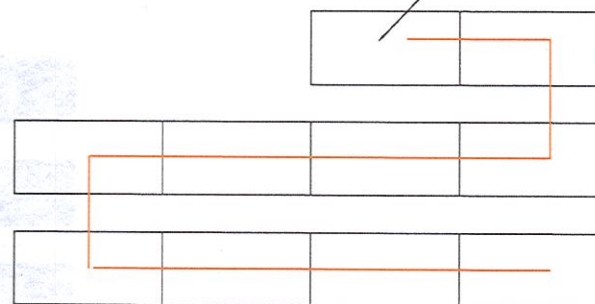


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STRING 1 - 10 PANELS
CONNECTED IN SERIES

STRING 2 - 10 PANELS
CONNECTED IN SERIES



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STRING SIZING / L-203



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THREE LINE CALCUALTIONS:

PV SOURCE CIRCUIT CALCULATIONS-

MAX CIRCUIT CURRENT : $9.38 \times 1.25 = 11.7 \text{ A}$

CORRECTION FACTOR DUE TO INCREASED IRRADIANCE : 1.25

ADJUSTED CIRCUIT AMPACITY = 14.7 A

AWG#10 AMPACITY UNDER 75°C COLUMN UNDER TABLE 310.15(B)(16): 35A

SINCE $35 \text{ A} > 14.7$, USE AWG#10 USE-2/PV WIRE FOR ALL PV SOURCE CIRCUIT WIRING

PV OUTPUT CIRCUIT CALCULATIONS-

NUMBER OF OPTIMIZERS PER STRING: 10

TOTAL STRING POWER = 3350 W

VOLTAGE PER STRING = 350V

MAX CIRCUIT CURRENT: 9.57

CORRECTION FACTOR DUE TO INCREASED IRRADIANCE : 1.25

ADJUSTED CIRCUIT AMPACITY = $9.57 \times 1.25 = 12.0$

AWG#10 AMPACITY UNDER 75°C COLUMN UNDER TABLE 310.15(B)(16): 35A

SINCE $35 \text{ A} > 12.0 \text{ A}$, USE AWG#10 USE-2/PV WIRE

INVERTER OUTPUT CIRCUIT CALCULATIONS:

MAX CIRCUIT CURRENT: 24 A

CORRECTION FACTOR DUE TO CONTINUOUS CONDITION : 1.25

ADJUSTED CIRCUIT AMPACITY = 30 A

AWG#8 AMPACITY UNDER 75°C COLUMN UNDER TABLE 310.15(B)(16): 50 A

SINCE $50 \text{ A} > 24 \text{ A}$, USE AWG#8 THHN/THWN-2 WIRE

INTERCONNECTION CALCULATIONS:

BUS RATING = 225 A

OCPD PROTECTING THE BUS = 200 A

MAX AVAILABLE CAPACITY = 70 A

PV BREAKER SIZE = 30A

SINCE $70 \text{ A} > 30 \text{ A}$, INTERCONNECT THE SYSTEM VIA 3 POLE 30A BREAKER LOCATED AT THE OPPOSITE END OF THE BUS, AT SLOTS 38, 40 AND 42

SOLAR ARRAY DETAILS: 6.70 KW DC ARRAY

(20) SOLAR MODULES TOTAL

(10) MODULES CONNECTED IN SERIES PER STRING

(02) STRINGS TOTAL

(04) AWG#10 PV WIRE - 600V

(01) AWG#8 THHN/THWN-2 EGC
IN 3/4" EMT CONDUIT

SOLAREGE SE 5000A-US INVERTER

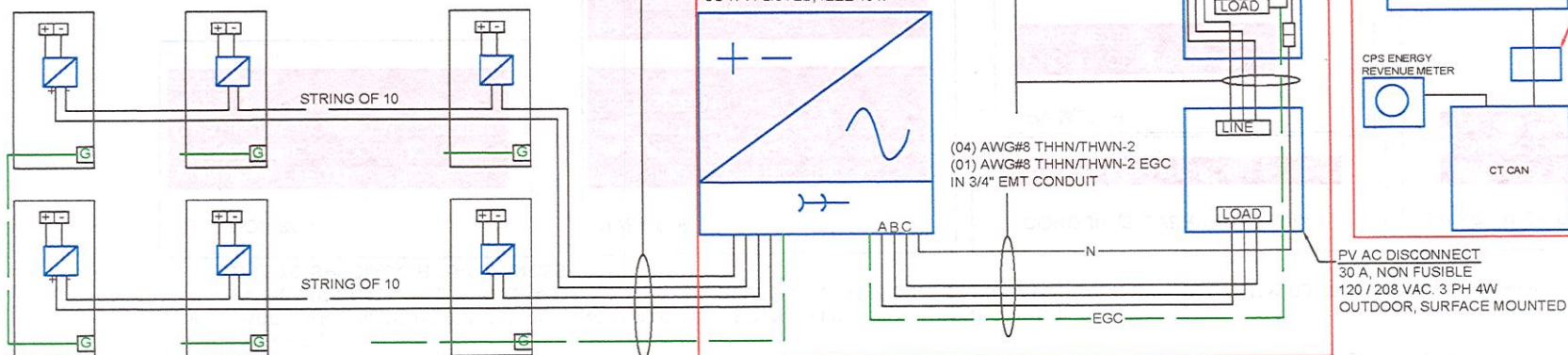
WITH INTEGRATED DC DISCONNECT

5400 W MAX AC POWER OUTPUT

3 PHASE, 208/120 VAC OUTPUT

24.0 A MAX OUTPUT CURRENT

UL 1741 LISTED, IEEE 1547



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THREE LINE / E-301



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NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE NEC AND ALL APPLICABLE CODES ON ALL LABELING THAT IS REQUIRED FOR OTHER COMPONENTS OF THE PV SYSTEM INSTALLATION
2. LABELS SHALL BE REFLECTIVE WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT
3. LABELING IS REQUIRED TO BE ENGRAVED OR ETCHED PLASTIC OR METAL WHICH CAN BE RIVETED OR PERMANENTLY ADHERED TO THE DEVICE
4. LABELS SHALL HAVE MINIMUM 3/8 INCH TEXT HEIGHT USING WHITE LETTERING ON RED BACKGROUND.
5. INVERTER OUTPUT CONNECTION IS TYPICALLY A CIRCUIT BREAKER AT SERVICE PANEL ALSO REFERRED TO AS INTERCONNECTION BREAKER.
6. LABELING IS ALSO REQUIRED ON JUNCTION BOX USED WITH LINE SIDE CONNECTIONS.
7. PV METER SHALL BE LOCATED ADJACENT TO THE REVENUE METER UNLESS PRE-APPROVED BY THE UTILITY TO BE REMOTELY LOCATED DUE TO SPECIAL CIRCUMSTANCES.



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JUNCTION BOX

WARNING: ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

PV AC DISCONNECT

PV SYSTEM AC DISCONNECT
OPERATING CURRENT : 24.0 A
OPERATING VOLTAGE : 208 VAC

WARNING: ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

INVERTER

WARNING: ELECTRIC SHOCK HAZARD. TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

PHOTOVOLTAIC SYSTEM
EQUIPPED WITH RAPID
SHUTDOWN

PV SYSTEM DC DISCONNECT
RATED MPP CURRENT: 9.57 A
RATED MPP VOLTAGE : 350 V
MAX SYSTEM VOLTAGE : 500 V
SHORT CIRCUIT CURRENT : 15.0 A

CONDUIT @ EVERY 10 FT MAX

CAUTION: SOLAR CIRCUIT

PV METER

PHOTOVOLTAIC SYSTEM
KWH METER

WARNING: ELECTRIC SHOCK HAZARD. TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

PV BREAKER FOR INTERCONNECTION

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

CPS ENERGY REVENUE METER

REVENUE METER

MAIN SERVICE PANEL

WARNING: ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

PHOTOVOLTAIC SYSTEM
EQUIPPED WITH RAPID
SHUTDOWN

WARNING: THIS EQUIPMENT IS FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE SHALL NOT EXCEED AMPACITY OF THE BUSBAR

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LABELS / E-302



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MSE Mono 72

High Power Mono Module

MISSION SOLAR
ENERGY



Class Leading Output:
Up to 335W power



Advanced P-Type
monocrystalline cell
technology



Certified Reliability:
3X IEC, salt mist, ammonia



Buy American Act

Proudly assembled in the USA

Mission Solar Energy is headquartered in San Antonio, TX with module facilities onsite. Our hardworking team calls Texas home and is devoted to producing high quality solar products and services. Our supply chain includes local and domestic vendors increasing our impact to the U.S. economy.



**Assembled
in the USA**

CERTIFICATIONS

IEC 61215/ IEC 61730/ IEC 61701
UL 1703: CSA



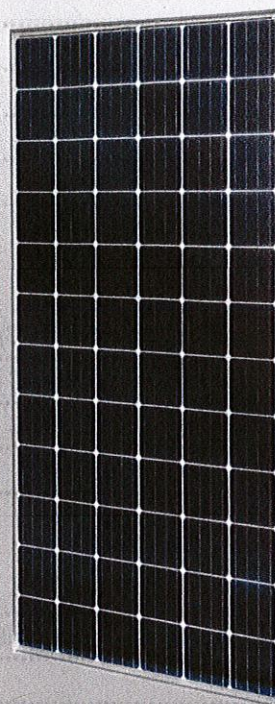
Independently Audited by

SOLARBUYER



PowerGuard
SPECIALTY INSURANCE SERVICES

*As there are different certification requirements in different markets, please contact your local Mission Solar Energy sales representative for the specific certificates applicable to the products in the region in which the products are to be used.



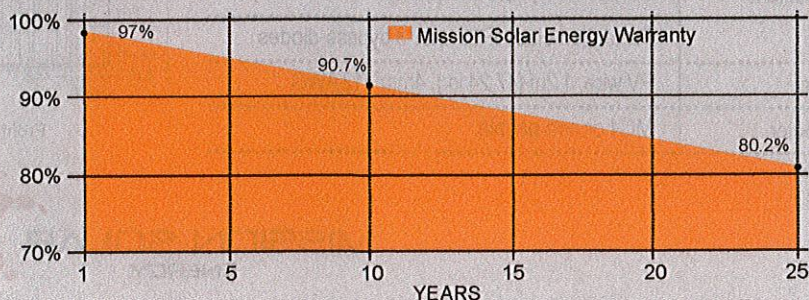
Best in class quality

Mission Solar Energy production lines are fully automated and include multiple quality checks throughout the production process including 2X EL Testing, 100% Visual inspection, and positive binning.

Proven reliability and bankability

Mission Solar Energy panels have been tested by independent testing centers to meet and exceed IEC standards. Our panels are deployed in projects across North America.

25-YEAR LINEAR WARRANTY



ELECTRICAL SPECIFICATIONS

Electrical parameters at Standard Test Condition (STC)

Module Type			MSE325SO6J	MSE330SO6J	MSE335SO6J
Power Output	P _{max}	Wp	325	330	335
Module Efficiency		%	16.38	16.63	16.93
Tolerance				-0/+3%	
Short-Circuit Current	I _{sc}	A	9.08	9.23	9.38
Open Circuit Voltage	V _{oc}	V	45.79	46.12	46.14
Rated Current	I _{mp}	A	8.62	8.72	8.87
Rated Voltage	V _{mp}	V	37.72	37.85	37.89

STC: Irradiance 1000 W/m², Cell temperature of 25°C, AM 1.5

TEMPERATURE COEFFICIENTS

Normal Operating Cell Temperature (NOCT)	44°C (±2°C)
Temperature Coefficient of P _{max}	-0.419%/°C
Temperature Coefficient of V _{oc}	-0.315%/°C
Temperature Coefficient of I _{sc}	0.049%/°C

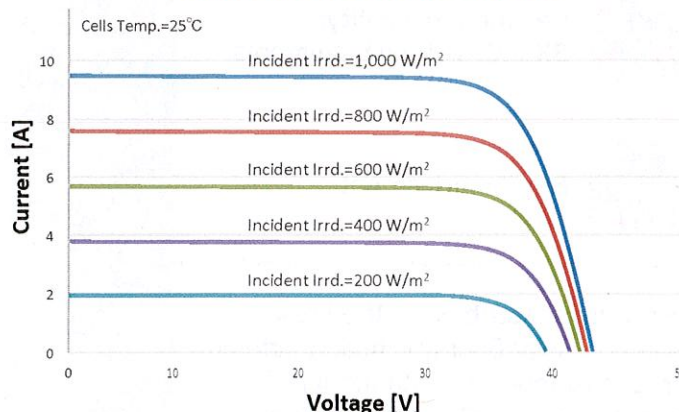
OPERATING CONDITIONS

Maximum System Voltage	1,000VDC
Operating Temperature Range	-40°C (-40°F) to +90°C (194°F)
Maximum Series Fuse Rating	15A
Fire Safety Classification	Type 1, Class C
Static Load Wind/Snow	2400Pa/5400Pa
Hail Safety Impact Velocity	25mm at 23 m/s

MECHANICAL DATA

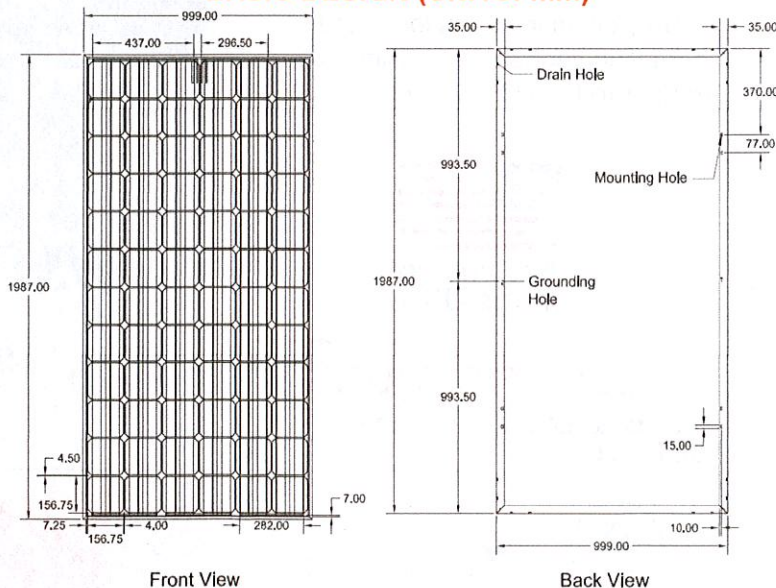
Solar Cells	P-type Mono-crystalline Silicon (156.75mm)
Cell orientation	72 cells (6x12), 4 busbar
Module dimension	1987mm x 999mm x 40mm (78.23 in. x 39.33 in. x 1.57 in.)
Weight	21.6 kg (47.6 lb)
Front Glass	3.2mm (0.126 in.) tempered, Low-iron, Anti-reflective coating
Frame	Anodized aluminum alloy
Encapsulant	Ethylene vinyl acetate (EVA)
J-Box	Protection class IP67 with 3 bypass-diodes
Cables	PV wire, 1.2m (47.24 in.), 4mm ² /12 AWG
Connector	MC4 or compatible

MSE330SO6J: 330WP, 72CELL SOLAR MODULE CURRENT-VOLTAGE CURVE



Current-voltage characteristics with dependence on irradiance and module temperature

BASIC DESIGN (UNITS: mm)

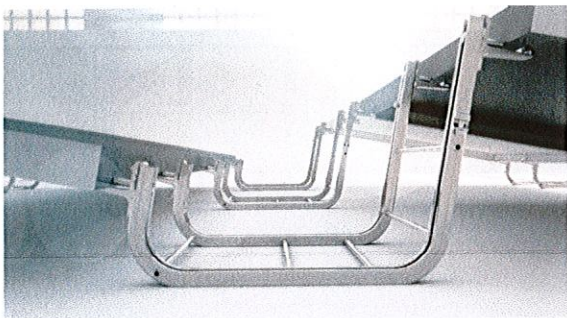


MISSION SOLAR
ENERGY



RM ROOF MOUNT

SPECIFICATIONS



THE POWER OF SIMPLICITY

Introducing the Unirac RM. An easy to assemble, high quality, low part number flat roof solution from the industry's leading PV mounting manufacturer.

The smart design and engineering of the Unirac RM is the result of years of proven performance as the industry's leading PV mounting company. Assembled from 2 parts with 1 tool, Unirac delivers the easiest to install and most reliable flat roof solution on the market today, designed to reduce overall project costs, risks and complexity.

www.unirac.com



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PROJECT CHARACTERISTICS

Allowable Roof Slope:	5 Degrees
Unevenness:	+/- 3.5 Degrees
Max Building Height:	100 ft ¹
Wind Speed:	Up to 120 mph ²
Wind Exposure:	Categories B and C. (D Upon Request)
PSF on Roof:	As low as 3.5 PSF ³
Surfaces:	EPDM, PVC & TCO Membranes, Bitumen & Concrete
Min. Local Contact Area:	38 in ² per Module (57 in ² with Roof Pad)
Module Orientation:	Landscape
Nominal Module Tilt Angle:	10 Degrees (Nominal) ⁴
Row Spacing:	18 in (Nominal) ⁴

COMPONENTS MATERIALS

Ballast Bay	Aluminum 6063-T5
Module Clamp	Aluminum 6005A-T61
Locking 3/8" Hex Bolt	Stainless Steel 300 Series
Roof Pad	TPE 70 Shore A

BALLAST BAY GEOMETRY

Width:	21 in
Length:	17 in
Height:	13 in
Weight:	3.5 lbs
Roof Pad:	3 in x 10 in

MODULE COMPATIBILITY

Standard 60 and 72 Cell Framed Modules	
Module Clamp w/ Integrated Bonding to UL2703	
Seismic Attachment	If Required
Cable Management	Compatible w/ Strut Accessories

WARRANTY

10 Year Structural Performance Warranty
20 Year Workmanship Warranty

¹ Self configurable up to 60'. Greater than 60' upon request.

² ASCE 7-05 Wind Maps

³ Criteria used: ASCE 7-10 wind (110 mph), Snow=0, Building height= 30 ft., Exposure Category B

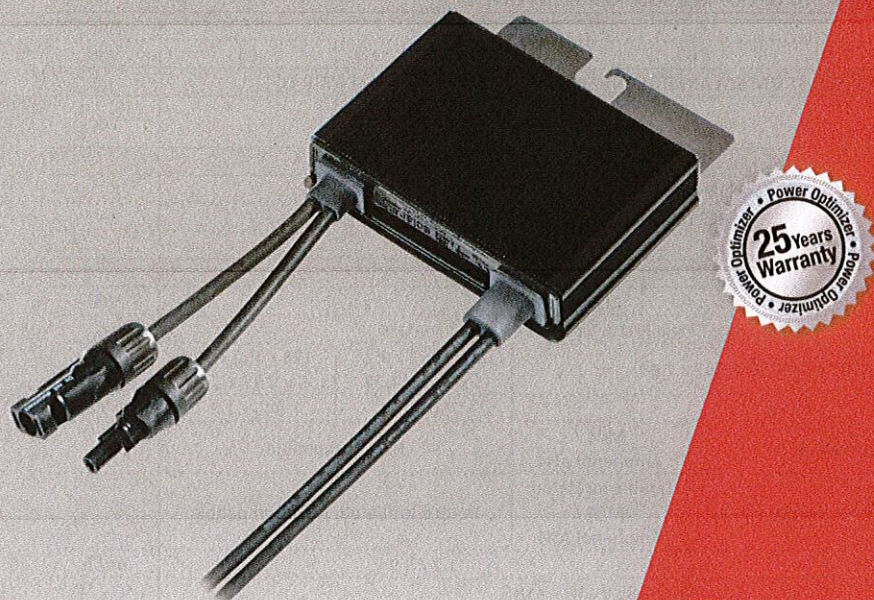
⁴ Varies by module



SolarEdge Power Optimizer

Module Add-On For North America

P300 / P320 / P370 / P400 / P405



POWER OPTIMIZER

PV power optimization at the module-level

- 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
- Module-level voltage shutdown for installer and firefighter safety



SolarEdge Power Optimizer

Module Add-On for North America

P300 / P320 / P370 / P400 / P405

	P300 (for 60-cell mod- ules)	P320 (for high-power 60-cell modules)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P405 (for thin film modules)	
INPUT						
Rated Input DC Power ⁽¹⁾	300	320	370	400	405	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	125	Vdc
MPPT Operating Range	8 - 48		8 - 60	8 - 80	12.5 - 105	Vdc
Maximum Short Circuit Current (Isc)	10	11		10.1		Adc
Maximum DC Input Current	12.5	13.75		12.63		Adc
Maximum Efficiency				99.5		%
Weighted Efficiency				98.8		%
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					Vdc
STANDARD COMPLIANCE						
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3					
Safety	IEC62109-1 (class II safety), UL1741					
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)	128 x 152 x 27.5 / 5 x 5.97 x 1.08			128 x 152 x 35 / 5 x 5.97 x 1.37	128 x 152 x 50 / 5 x 5.97 x 1.96	mm / in
Weight (including cables)	630 / 1.4			750 / 1.7	845 / 1.9	gr / lb
Input Connector	MC4 Compatible		MC4 / Amphenol AH4	MC4 Compatible		
Output Wire Type / Connector	Double Insulated; MC4 Compatible		Double Insulated; MC4 / Amphenol AH4	Double Insulated; MC4 Compatible		
Output Wire Length	0.95 / 3.0			1.2 / 3.9		m / ft
Operating Temperature Range				-40 - +85 / -40 - +185		°C / °F
Protection Rating				IP68 / NEMA6P		
Relative Humidity				0 - 100		%

⁽¹⁾ Rated STC power of the module. Module of up to +5% power tolerance allowed.

PV SYSTEM DESIGN USING A SOLAREDGE INVERTER ⁽²⁾⁽³⁾	SINGLE PHASE HD-WAVE	SINGLE PHASE	THREE PHASE 208V	THREE PHASE 480V
Minimum String Length (Power Optimizers)	8		10	18
Maximum String Length (Power Optimizers)	25		25	50
Maximum Power per String	5700 (6000 with SE7600H-US)	5250	6000	12750
Parallel Strings of Different Lengths or Orientations	Yes			

⁽²⁾ For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf.

⁽³⁾ It is not allowed to mix P405 with P300/P370/P400/P600/P700 in one string.





SolarEdge Single Phase Inverters

For North America

SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US /
SE7600A-US / SE10000A-US / SE11400A-US

INVERTERS



The best choice for SolarEdge enabled systems

- Specifically designed to work with power optimizers
- Integrated arc fault protection for NEC 2011 690.11 compliance
- Rapid shutdown for NEC 2014 690.12
- Superior efficiency (98%)
- Small, lightweight and easy to install on provided bracket
- Built-in module-level monitoring
- Internet connection through Ethernet or Wireless
- Outdoor and indoor installation
- Fixed voltage inverter, DC/AC conversion only
- Pre-assembled Safety Switch for faster installation
- Optional – revenue grade data, ANSI C12.20



Single Phase Inverters for North America

SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US /
SE7600A-US / SE10000A-US / SE11400A-US

	SE3000A-US	SE3800A-US	SE5000A-US	SE6000A-US	SE7600A-US	SE10000A-US	SE11400A-US		
OUTPUT									
Nominal AC Power Output	3000	3800	5000	6000	7600	9980 @ 208V 10000 @ 240V	11400	VA	
Max. AC Power Output	3300	4150	5400 @ 208V 5450 @ 240V	6000	8350	10800 @ 208V 10950 @ 240V	12000	VA	
AC Output Voltage Min.-Nom.-Max. ⁽¹⁾ 183 - 208 - 229 Vac	-	-	✓	-	-	✓	-		
AC Output Voltage Min.-Nom.-Max. ⁽¹⁾ 211 - 240 - 264 Vac	✓	✓	✓	✓	✓	✓	✓		
AC Frequency Min.-Nom.-Max. ⁽¹⁾	59.3 - 60 - 60.5							Hz	
Max. Continuous Output Current	12.5	16	24 @ 208V 21 @ 240V	25	32	48 @ 208V 42 @ 240V	47.5	A	
GFDI Threshold	1							A	
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							Yes	
INPUT									
Maximum DC Power (STC)	4050	5100	6750	8100	10250	13500	15350	W	
Transformer-less, Ungrounded	Yes								
Max. Input Voltage	500							Vdc	
Nom. DC Input Voltage	325 @ 208V / 350 @ 240V							Vdc	
Max. Input Current ⁽²⁾	9.5	13	16.5 @ 208V 15.5 @ 240V	18	23	33 @ 208V 30.5 @ 240V	34.5	Adc	
Max. Input Short Circuit Current	45							Adc	
Reverse-Polarity Protection	Yes								
Ground-Fault Isolation Detection	600µs Sensitivity								
Maximum Inverter Efficiency	97.7	98.2	98.3	98.3	98	98	98	%	
CEC Weighted Efficiency	97.5	98	97 @ 208V 98 @ 240V	97.5	97.5	97 @ 208V 97.5 @ 240V	97.5	%	
Nighttime Power Consumption	< 2.5					< 4		W	
ADDITIONAL FEATURES									
Supported Communication Interfaces	RS485, RS232, Ethernet, ZigBee (optional)								
Revenue Grade Data, ANSI C12.20	Optional ⁽³⁾								
Rapid Shutdown – NEC 2014 690.12	Yes								
STANDARD COMPLIANCE									
Safety	UL1741, UL1741 SA, UL1699B, UL1998, CSA 22.2								
Grid Connection Standards	IEEE1547								
Emissions	FCC part15 class B								
INSTALLATION SPECIFICATIONS									
AC output conduit size / AWG range	3/4" minimum / 16-6 AWG					3/4" minimum / 8-3 AWG			
DC input conduit size / # of strings / AWG range	3/4" minimum / 1-2 strings / 16-6 AWG					3/4" minimum / 1-3 strings / 14-6 AWG			
Dimensions with Safety Switch (HxWxD)	30.5 x 12.5 x 7.2 / 775 x 315 x 184					30.5 x 12.5 x 10.5 / 775 x 315 x 260		in / mm	
Weight with Safety Switch	51.2 / 23.2		54.7 / 24.7			88.4 / 40.1		lb / kg	
Cooling	Natural Convection				Natural convection and internal fan (user replaceable)	Fans (user replaceable)			
Noise	< 25				< 50				dBA
Min.-Max. Operating Temperature Range	-13 to +140 / -25 to +60 (-40 to +60 version available ⁽⁴⁾)							°F / °C	
Protection Rating	NEMA 3R								

⁽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.

⁽³⁾ Revenue grade inverter P/N: SExxxxA-US000NCC2.

⁽⁴⁾ -40 version P/N: SExxxxA-US000NNU4 (for 7600W inverter: SE7600A-US002NNU4).



RoHS



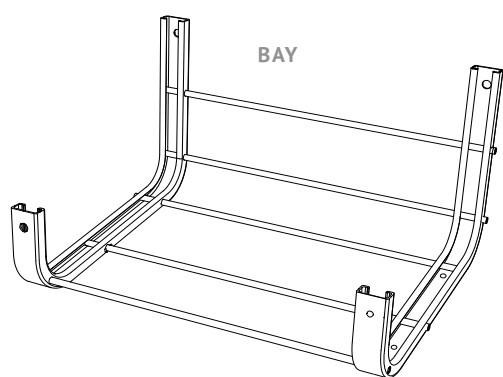
The background of the cover is a high-contrast, black and white photograph of a series of metal roof mounts. The mounts are arranged in a perspective view, receding into the distance. The lighting is dramatic, with strong highlights and deep shadows, emphasizing the metallic texture and the structural design of the mounts. The mounts appear to be made of galvanized steel or a similar durable material. The overall aesthetic is industrial and professional.

RM ROOF MOUNT

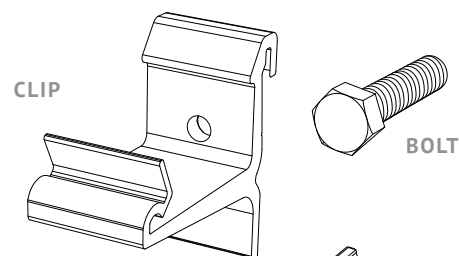
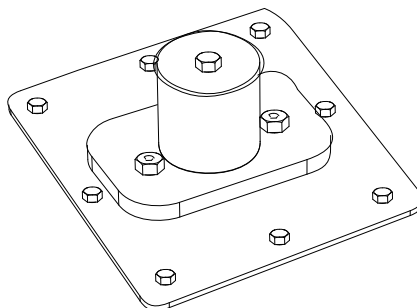
Quick Start Guide

Quick Start Guide

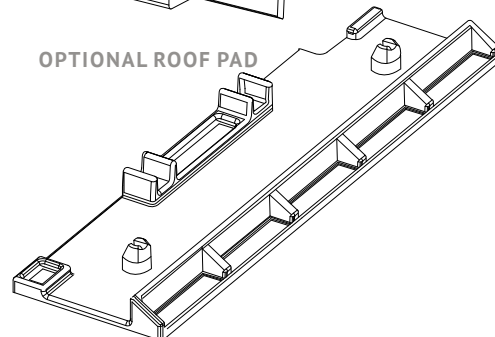
STANDARD PARTS AND HARDWARE



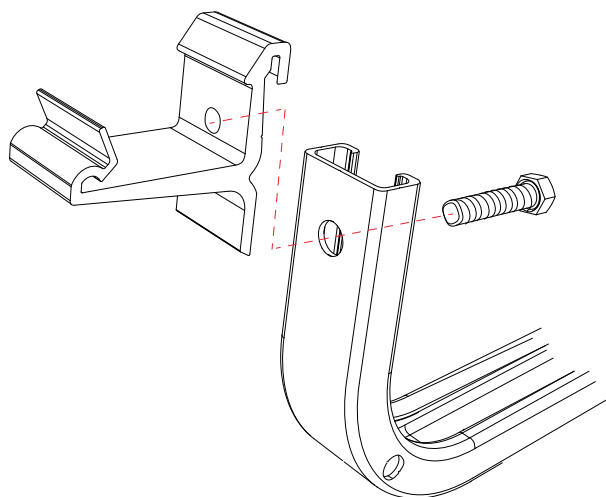
OPTIONAL MECHANICAL ATTACHMENT



OPTIONAL ROOF PAD



ATTACH CLIPS LOOSELY TO BAY POSTS INTENDED TO HOLD MODULES



NOTE:

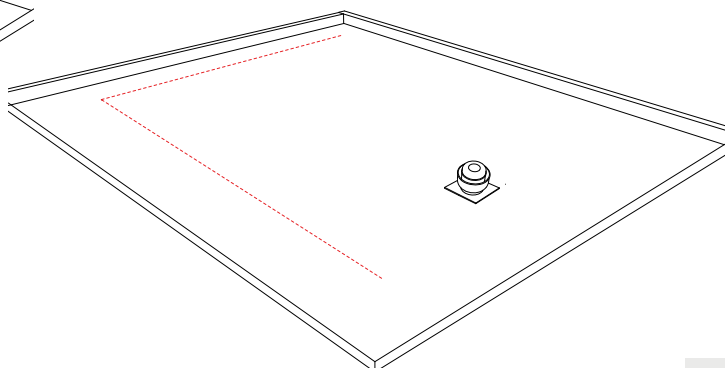
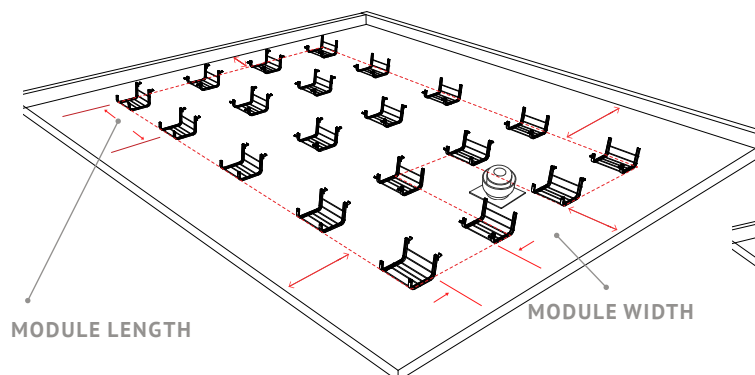
For complete electrical bonding path, clips must be tapped in place with hammer.



RM is certified to UL2703 for electrical bonding.

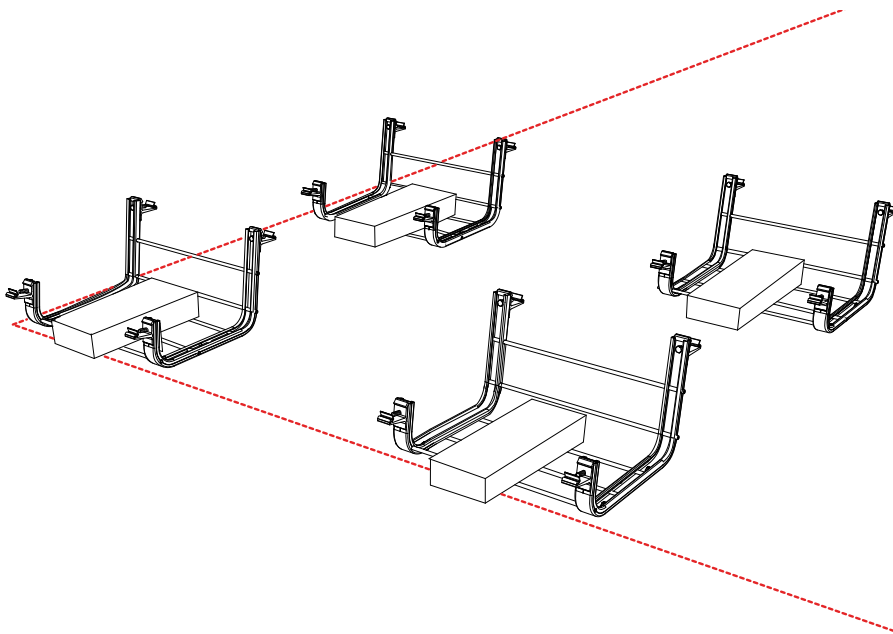
LOCATE ARRAY ON ROOF

MARK ROOF WHERE ARRAY WILL START

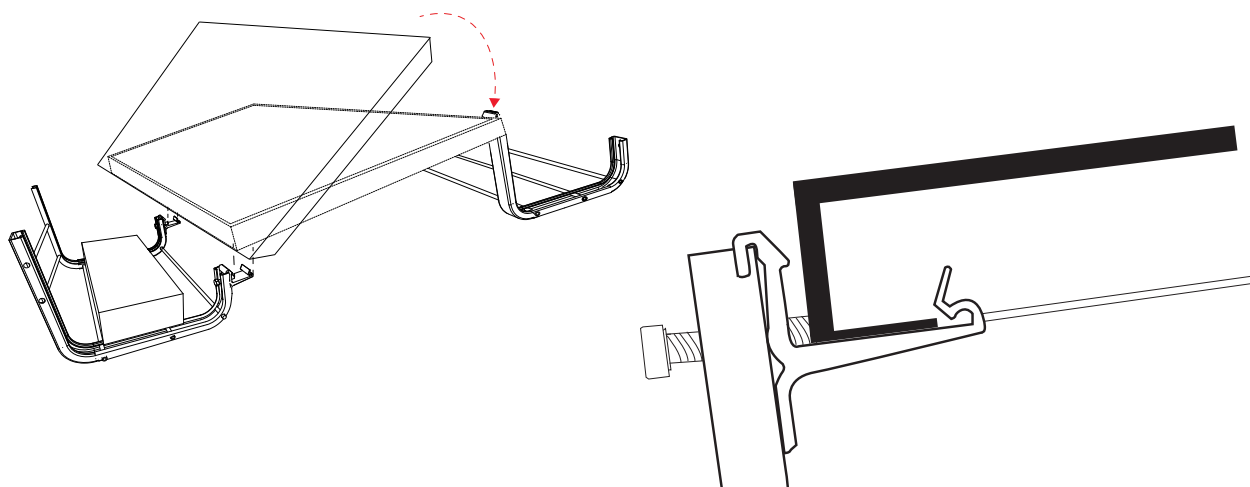


Quick Start Guide

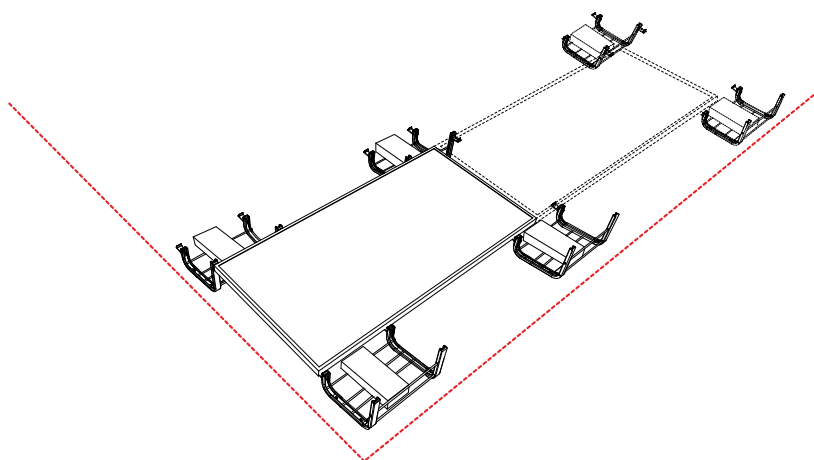
PLACE SOME BALLAST IN 1ST FOUR BAYS FOR FIRST MODULE



PLACE MODULE IN CLIPS AND TIGHTEN BOLTS

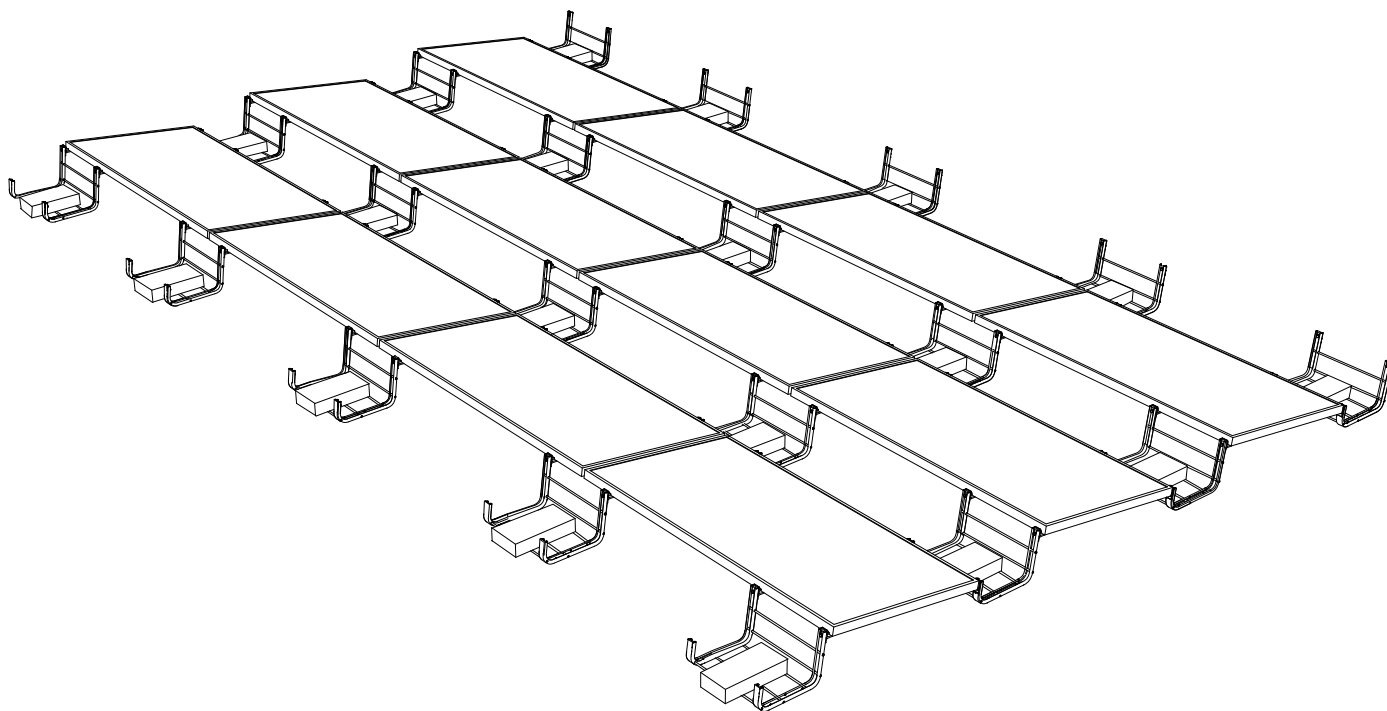


PLACE ANOTHER MODULE IN NEXT BAY CLIPS

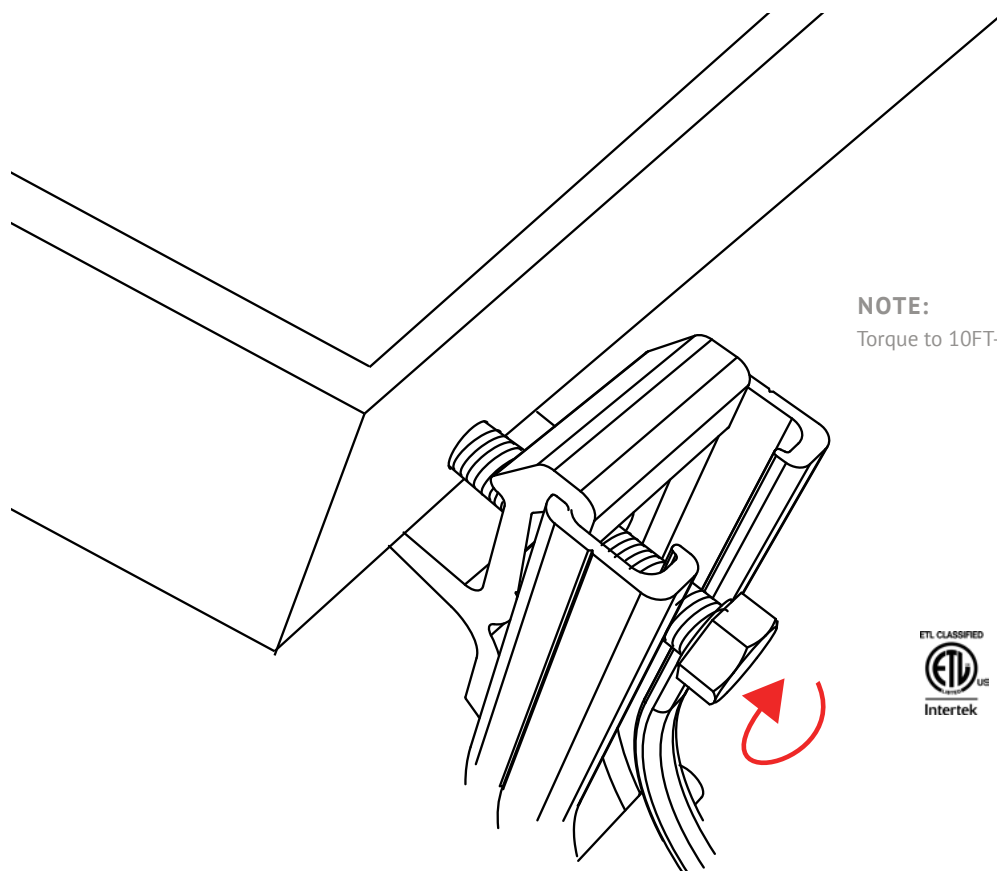


Quick Start Guide

REPEAT INTERCONNECTING ADJACENTLY



TORQUE CLIP BOLTS IN SEQUENCE



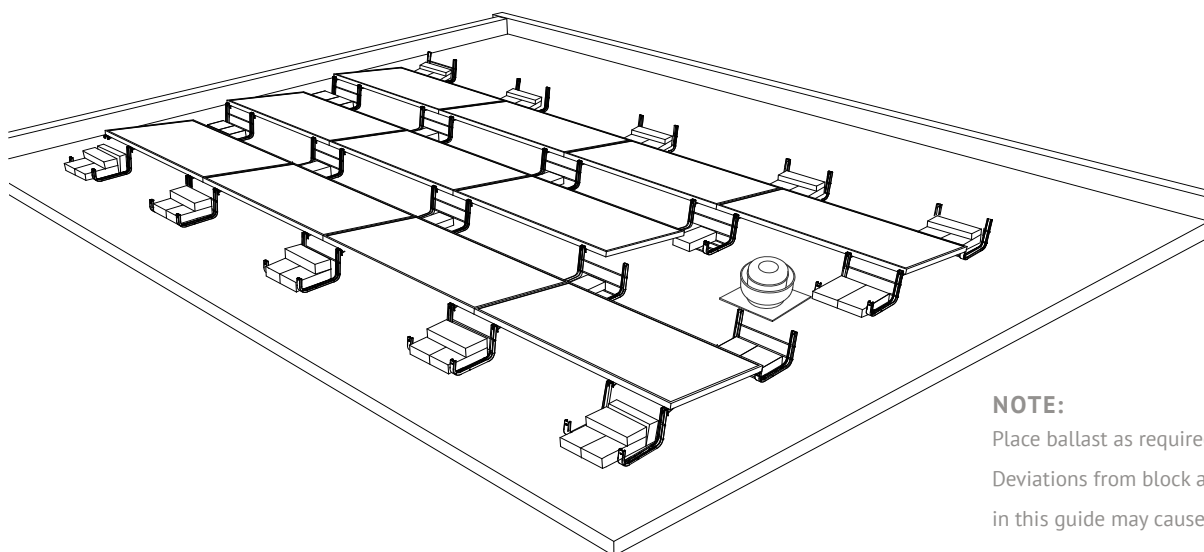
NOTE:
Torque to 10FT-LBS



RM is certified
to UL2703 for
electrical bonding.

Quick Start Guide

COMPLETE BALLAST PLACEMENT



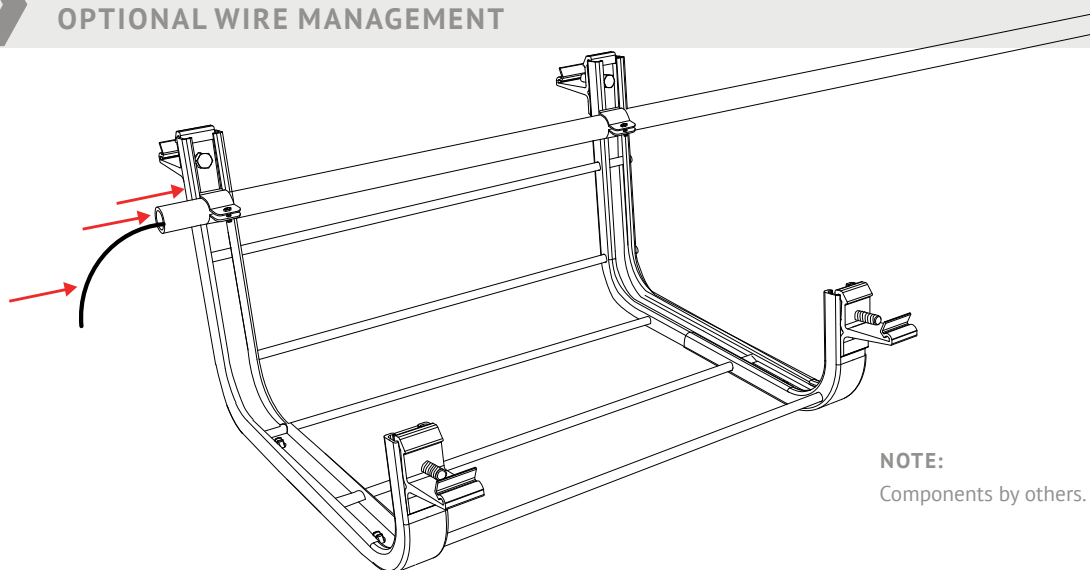
NOTE:

Place ballast as required.

Deviations from block arrangements shown in this guide may cause shading



OPTIONAL WIRE MANAGEMENT

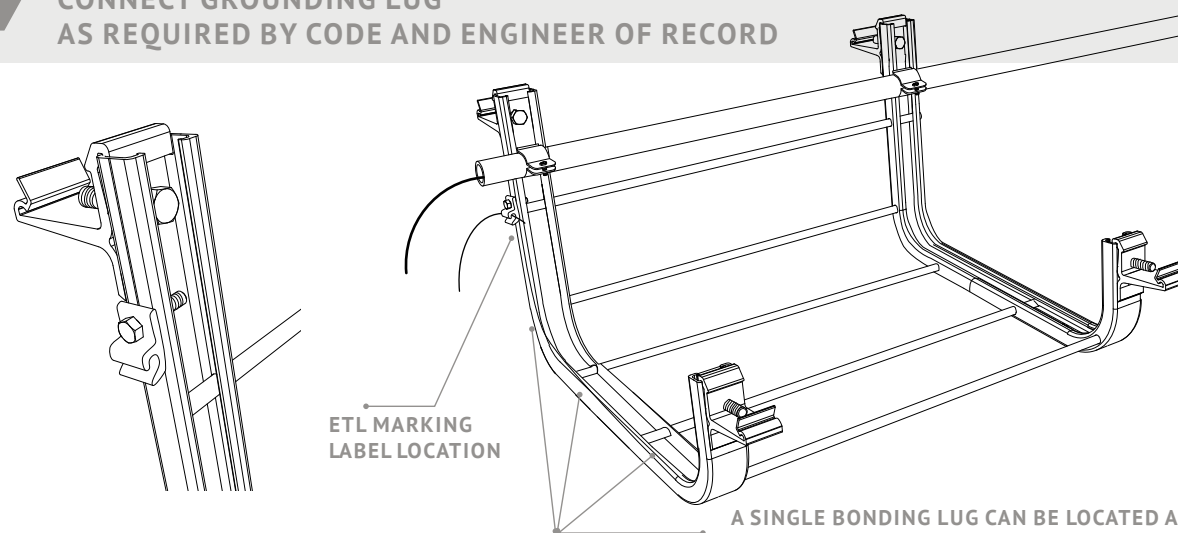


NOTE:

Components by others.



CONNECT GROUNDING LUG AS REQUIRED BY CODE AND ENGINEER OF RECORD

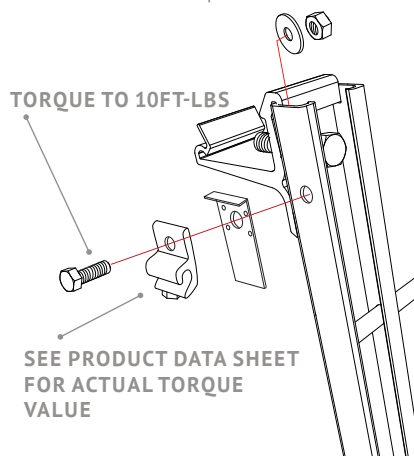


A SINGLE BONDING LUG CAN BE LOCATED ANYWHERE ALONG THE SAME SURFACE AS THE MARKING LABEL

Quick Start Guide

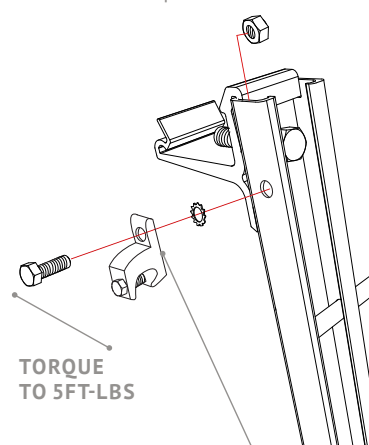
GROUNDING LUG DETAIL

WEEBLug UNIRAC PN 0080025
Conductor: See product data sheet



Ground Lug	Bolt size	Drill size
WEEBLug	1/4"-20	17/64"
IlSCO	#10-32	7/32"

IlSCO lay-in Lug IlSCO PN GBL-4DBT
Conductor: See product data sheet



Grounding Lug Mounting Details:

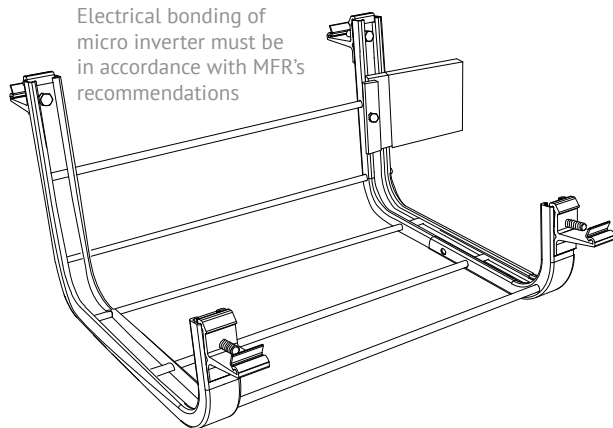
Details are provided for both the WEEB and IlSCO

products. The WEEBLug has a grounding symbol located on the lug assembly. The IlSCO lug has a green colored set screw for grounding indication purposes. One lug is recommended per string. Installation must be in accordance with NFPA NEC 70, however the electrical designer of record should refer to the latest revision of NEC for actual grounding conductor cable size.

OPTIONAL MICRO-INVERTER MOUNTING

NOTE:

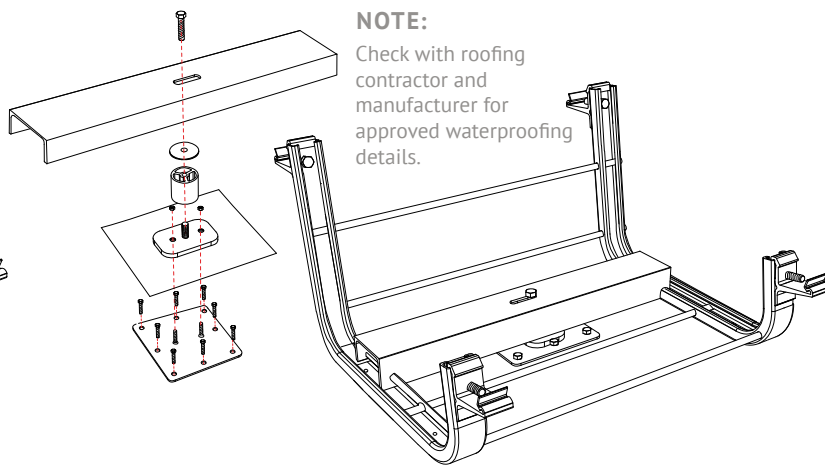
Electrical bonding of micro inverter must be in accordance with MFR's recommendations



OPTIONAL MECHANICAL ATTACHMENT

NOTE:

Check with roofing contractor and manufacturer for approved waterproofing details.



OPTIONAL ROOF PAD

