Photovoltaic System Installation
Request for Proposals

Crow Middle / High School – Eugene, OR

This Request for Proposals ("RFP") is to solicit competitive quotes from photovoltaic (PV) system installers to design and install a solar energy generation system on the roof of the main school/residence building ("school") owned by Crow-Applegate-Lorane (CAL) School District ("Facility Owner"), located at 25863 Crow Rd, Eugene, Oregon 97402. The system integrator/installer chosen ("Contractor") will report directly to and contract with Bonneville Environmental Foundation (BEF). Job site access and coordination will be provided through the Facility Owner.

The PV system will be a minimum of 7 kW and will be installed as one array, at one of two possible locations. One option would be a self-ballast system on the roof of the Multi Purpose Room (MPR) and another would be a positively attached, aluminum rail mounted system on the angled roof of the band room, as described within this RFP document. Required PV modules and AC/DC inverter is also specified within the RFP. The contractor shall procure and install all equipment, provide racking design and any required engineering, and submit for all permits and inspections (and assist in filing any incentive/rebate/net-metering paperwork if applicable).

Bids evaluation will be discretionary and based on total cost, system size and completeness. Please include all items requested. Questions will be answered on a rolling basis until 24 hours before the bid deadline. All questions should be addressed to the Project Manager.

Sean LaFreniere, A.AIA
Project Manager, Technology Specialist
Bonneville Environmental Foundation
240 SW First Ave.
Portland, OR 97204
Office: (503) 553 - 3955
Mobile: (971) 404 - 7568
slafreniere@b-e-f.org

Contractor Walkthrough will be held at the site on:
Thursday, September 26, 2013 at 3:00 pm

Proposals due to Bonneville Environmental Foundation Project Manager by:
Friday, October 11, 2013 by 5:00 pm

Proposed Installation Schedule

	Task	Date:
1	Issue RFP	09/12/2013
2	**Site visit**	**09/26/2013**
3	Proposal Due	10/11/2013
4	Proposal approved	10/18/2013
5	Sign Contract	10/25/2013
6	Apply for permits and order Equipment	10/28/2013
7	Install system	11/14/2013
8	Project complete	11/29/2013

I. **Contractor Requirements**
   A. Preference for local installers
   B. Licensed contractor in Oregon
   C. NABCEP or other certifications preferred
   D. Bonded and insured - $1,000,00 per occurrence, $2,000,000 aggregate

II. **RFP Response shall include:**
   A. **Title: "Crow Middle & High School Photovoltaic Installation Proposal"**
   B. **Background information on your company**
      i. Contractor License number
      ii. Proof of Insurance
      iii. Number of years in business
      iv. Installation Manager's contact information
      v. Resumes or qualifications, education, and relevant experiences of key team members
      vi. Number of PV projects completed and descriptions of similar installations
      vii. References
         1. Proposed project budget with "not-to-exceed" cost estimate and details on materials pricing
         2. Company labor and material mark-up rates for potential change orders
         3. Specification sheets of major system components
         4. Detailed Multi-Line diagram (MLD) identifying:
      viii. Make and model of all photovoltaic system components, including the production meter
      ix. Wire and conduit, size and type
      x. Phase conductors, grounded conductors and grounding conductors
      xi. See Sample Multi-Line Diagram included with the RFP on the website (submitted MLDs do not need to be done in CAD)

1) Electrical Calculations - voltage drop & string sizing
2) Specify racking manufacturer, type and attachment method – if custom racking is required submit design sketches (hand drawn OK)
3) Detailed Site Diagram showing:
      xii. Elevation and plan view of array location(s) or 3-D rendering
      xiii. Elevation of electrical equipment (inverter & disconnects) layout
         1. Implementation plan with timeline (see below)
         2. Estimated annual kWh production

   C. **System Description**
      I. Location
         1. Crow Middle / High School
         2. 25863 Crow Rd, Eugene, Oregon 97402
         3. Owned by CAL School District
      II. Size
         1. Total system size: minimum of 7 kW
         2. Budget: maximum of $38,000
      3. Any residual will be spent on additional education
      III. Site Diagrams/Documentation
         1. Exhibit A – Location Information
         2. Exhibit B – 3D Renderings
         3. Exhibit C – Product Appendixes
      IV. Interconnection
         1. Type: Grid connected
         2. Service Type/Rating: multiple Voltage and wire options available

3. PV Electrical Panel – connection method TBD by contractor
    i. Location: inside gmultipurpose room (MPR) at backstage
    ii. Alt Location: inside Auto Shop storage room
4. Trenching to Transformer – provided by Contractor
    i. Location: NE building corner/edge to utility transformer
5. PV Energy Production meter and base – *provided by Contractor*
    i. Location: post mounted at meter at existing transformer
    ii. Alt Location: at building wall opposite transformer
6. AC / DC Disconnect
    i. Contractor to use integrated inverter disconnect unless required by Utility or authority having jurisdiction (AHJ) to provide additional
7. Net meter – existing or *provided by Utility*
    i. Location: at existing transformer

D. **System Components**

I. Mounting system – *provided by Contractor*
1. Location: roof of multipurpose room (MPR)
2. Alt. Location: roof of Band Room (elec tie-in at Auto Shop)
3. Make and Model: TBD
4. Tilt: TBD
5. Orientation: TBD
6. Theft resistant fasteners: yes

II. PV Modules – *provided by Contractor*
1. (1) Arrays of (27) PV modules
2. Location: roof of multipurpose room (MPR)
3. Alt. Location: roof of Band Room (elec tie-in at Auto Shop)
4. Make and model: SolarWorld, 240-270W, Mono-black

III. Inverter – *provided by Contractor*
1. (1) Inverters
5. Location: inside garage, at entry, adjacent to e
6. Make and model: SMA SunnyBoy 7000 US 208 or 240V config as req'd

IV. Balance of Systems - *provided by Contractor*
1. AC Disconnect (if required)
2. Meter Base for utility revenue meter at point of service location
3. UV resistant DC wiring to junction box(es) or combiner(s)
4. Array grounding hardware, as required by 690.47
5. DC side lightning protection (AC side optional)
6. All array mounting hardware/fasteners to make the PV system code compliant, operational and secure
7. DC wiring, conduit and fittings from DC J box(es) or combiner(s) to DC disconnect
8. DC wiring from DC disconnect to inverter (if applicable)
9. AC wiring, conduit and fittings between disconnects and inverter
10. AC wiring, conduit and fittings from inverter to electrical sub-panel
11. AC wiring from 120V power supply to SMA Webbox
12. Cat-5e cable from SMA inverter to SMA Webbox
13. Cat-5e cable from SMA Webbox to local MDF connection
14. 4-wire data cable from SMA Sensorbox to SMA Webbox
15. SMA Power injector to support SMA Sensorbox, installed complete
16. All electrical components, fittings, hardware and fasteners required in order for system to be operational and compliant with NEC and local authority having jurisdiction (AHJ).
17. All necessary labeling according to NEC, AHJ, the utility and BEF ***PV System Labeling Requirements*** – document available on website

V. Data monitoring - *provided by Contractor*

1. Inverter Monitoring: Sunny Communications Module
2. Weather Monitoring: Sunny SensorBox w/insolation, ambient temp, and cell temp
   a) W/ Sunny Power Injector
3. Communications Gateway: Sunny Webbox
4. Wiring: Belkin Shielded CAT5e
5. DECK Monitoring Software Only account – *provided by BEF*

E. **Services Requested from Contractor**

I. System Design - contractor must submit (or confirm if already submitted as part of RFP package and unchanged) the following design documents prior to system installation

1. Detailed Site Diagram showing:
   b) Elevation and plan view of PV array location and/or 3-D rendering
   c) Elevation of electrical equipment (inverter & disconnects) layout
1. Electrical Single-line diagram - must include information about major system components specifications and ratings, conductor size and type, conduit size, ratings of combiner boxes and series OCPD's, and type and ratings of facility electrical panel interconnection point. See attached file**: *Line Diagram Form***
2. Electrical Calculations - voltage drop and string sizing calculations
3. Mechanical /structural calculations – must include all racking load calculations for dead load, snow load, wind loading, (etc.) and specify racking attachment method.
4. Coordination with electrical and roofing subcontractors and/or consultants
   a) The school is engaging in re-reroofing this summer, any required structural modifications and materials would be provided for and installed prior to the PV installation by the roofer or their sub contractors
   b) The school is interested in making required electrical upgrades if needed, these would be performed during the PV installation and by the PV installer or sub contractors
   c) Any structural improvements required by the PV installation that are not clearly and timely communicated to the school and the roofers during the roofing project will be the responsibility of the PV installer during the PV installation
2. As-builts – Contractor must field verify all dimensions, prepare own as-builts, as required to ensure feasibility of bid installation plan and timeline

II. Procure materials

1. Contractor shall be responsible for procuring all system materials, as outlined in the system description, unless otherwise indicated above that it will be supplied by BEF or others

III. PV System installation

1. Contractor shall be responsible for installing a grid-tied photovoltaic installation at the host facility
2. The installation must be compliant with the 2008 NEC and/or local authority having jurisdiction
3. It is the installer's responsibility to ensure code compliance with the local authority
4. The installation shall be executed according to the system design documentation
5. The BEF Project Manager must approve any design changes made in the field

IV. Rebates and Interconnection

1. It will be the responsibility of the Contractor to ensure the Net Metering and interconnection agreement documents are submitted prior to system installation
2. Contractor shall complete technical portions of these documents and send to the Facility Owner for signature and be available to answer questions
3. Contractor shall coordinate with the utility to confirm acceptable location for AC disconnect and Production meter

4. It will be the responsibility of the Contractor to make sure that all rebate applications are submitted – up front cash rebate or tax incentives (that can be monetized) will go to BEF, production based annual payments or credits will go to the Facility Owner
5. It will be the responsibility of the Contractor to ensure that any and all other documentation necessary to meet utility requirements is submitted
6. It shall be the Responsibility of the Contractor to ensure that the Net Meter has been installed and the system has passed any required utility inspection

V. Electrical permit
   1. It will be the responsibility of the Contractor to obtain electrical permit, schedule inspections and pay associated fees

VI. Building permit
   1. It is the responsibility of the Contractor to determine if a building permit is required for the installation
   2. If necessary it will be the responsibility of the Contractor to obtain building permit, schedule inspections and pay associated fees
   3. If necessary it will be the responsibility of the Contractor to conduct mechanical/structural calculations needed to obtain a building permit, including, but not limited to: dead load, snow load, wind loading, and racking attachment method
   4. It is the responsibility of the Contractor to determine if stamped structural engineering calculations are required and this fee should be included in the bid price
   5. It is the responsibility of the Contractor to provide all information required to the structural engineer or other consultants

VII. Data Monitoring Installation
   1. Contractor will install the monitoring system and weather station
   2. Contractor will provide all required wiring, including CAT5e and other low voltage
   3. BEF will make arrangements with Facility IT staff for proper network connectivity of monitoring system, and will order equipment with proper network configuration
   4. BEF will order and configure the DECK Monitoring account
   5. It is the responsibility of the Contractor to coordinate with the facility IT staff to make the final connection, make sure that it is working and data is being transmitted to SMA and to DECK Monitoring

VIII. System Documentation - Contractor must deliver all documentation to BEF and host facility as outlined in BEF's ***Project Documentation Checklist*** – document available on website

IX. System Commissioning – Contractor shall commission the system according to BEF's ***PV Commissioning Checklist*** – document available on website

X. Final Walk through – Contractor shall schedule a tour of the completed system with the Teacher Champion, Principle, Facility Manager, IT Technician and other interested school staff and/or parents

XI. System warranty – 5 year workmanship warranty

Exhibit A: Location Information

A. Breezeway
B. Main Office
C. Band Room
D. MultiPurpose
E. Auto Shop
F. Library/IDF

Figure 1. Related Structures

1. Disconect
2. Inverter
3. Array
4. Tranformer/meter

Figure 2. Close up of Option C.

Exhibit B: 3D Site Rendering

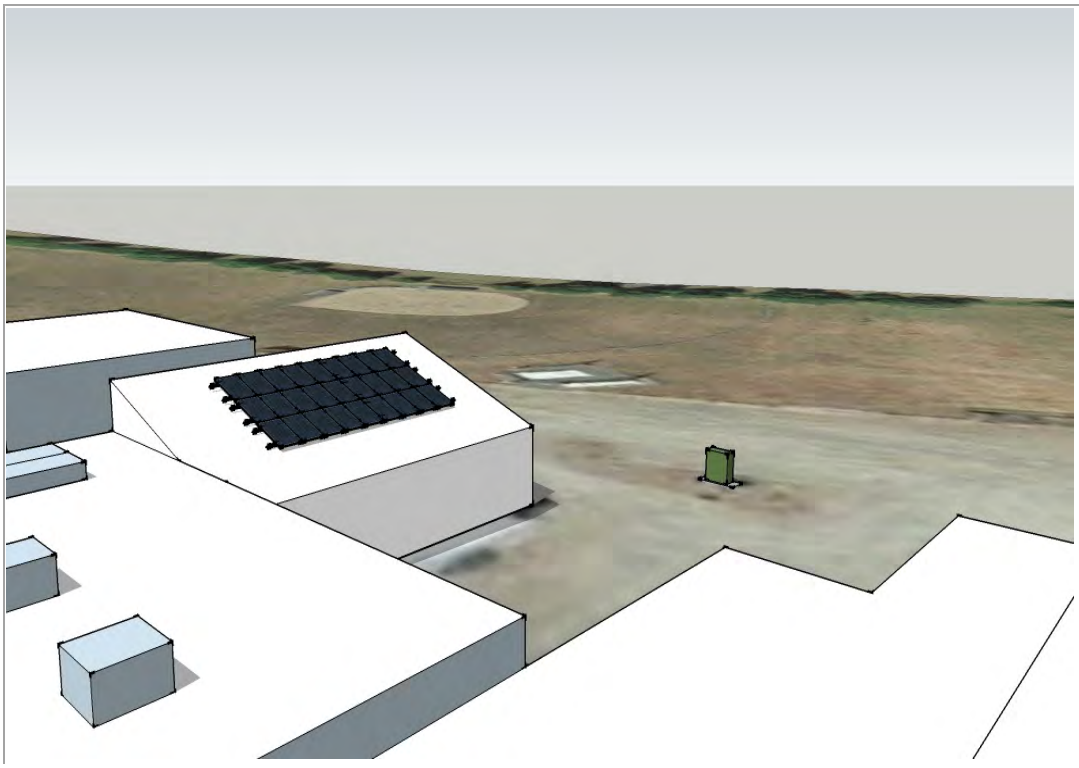


Figure 1. Potential Installation A: Band Room

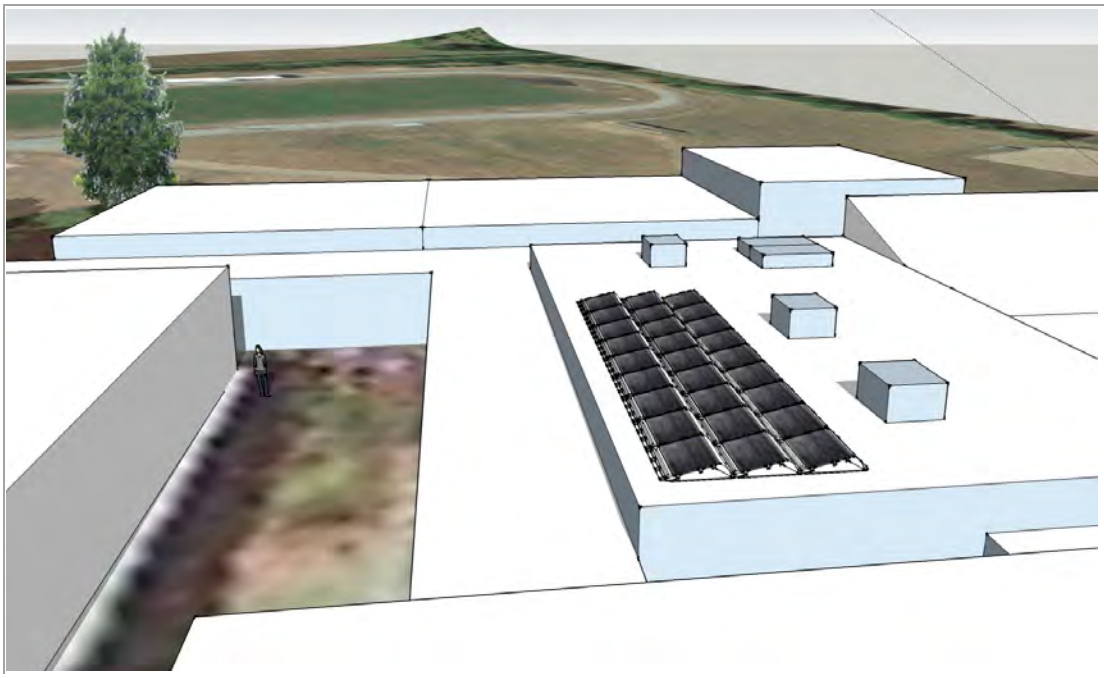


Figure 2. Potential Installation B: MultiPurposeRoom (MPR)

Exhibit C: Product Appendix

Sunmodule® SW 270 mono / 2.5 Frame

PERFORMANCE UNDER STANDARD TEST CONDITIONS (STC)*

Maximum power	P_{max}	270 Wp
Open circuit voltage	V_{oc}	38.3 V
Maximum power point voltage	V_{mpp}	32.1 V
Short circuit current	I_{sc}	8.90 A
Maximum power point current	I_{mpp}	8.42 A

*STC: 1000 W/m², 25°C, AM 1.5

PERFORMANCE AT 800 W/m², NOCT, AM 1.5

Maximum power	P_{max}	194.9 Wp
Open circuit voltage	V_{oc}	34.5 V
Maximum power point voltage	V_{mpp}	28.9 V
Short circuit current	I_{sc}	7.19 A
Maximum power point current	I_{mpp}	6.74 A

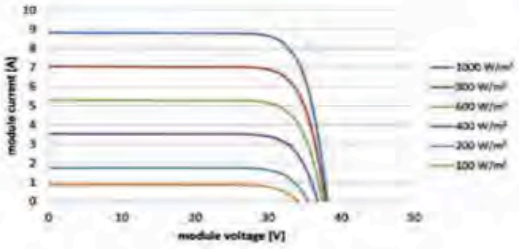
Minor reduction in efficiency under partial load conditions at 25°C: at 200 W/m², 94% (+/- 3%) of the STC efficiency (1000 W/m²) is achieved.

THERMAL CHARACTERISTICS

NOCT	46 °C
TC I_{sc}	0.004 %/K
TC V_{oc}	-0.30 %/K
TC P_{max}	-0.45 %/K
Operating temperature	-40°C to 85°C

COMPONENT MATERIALS

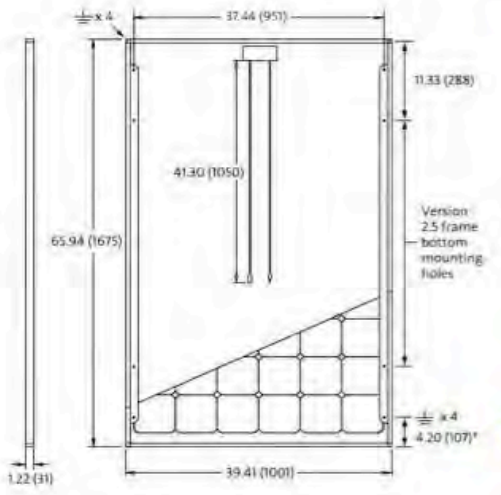
Cells per module	60
Cell type	Mono crystalline
Cell dimensions	6.14 in x 6.14 in (156 mm x 156 mm)
Front	Tempered glass (EN 12150)
Frame	Clear anodized aluminum
Weight	46.7 lbs (21.2 kg)



SYSTEM INTEGRATION PARAMETERS

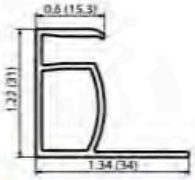
Maximum system voltage SC II		1000 V
Max. system voltage USA NEC		600 V
Maximum reverse current		16 A
Number of bypass diodes		3
UL Design Loads*	Two rail system	113 psf downward 64 psf upward
UL Design Loads*	Three rail system	170 psf downward 64 psf upward
IEC Design Loads*	Two rail system	113 psf downward 50 psf upward

*Please refer to the Sunmodule installation instructions for the details associated with these load cases.



ADDITIONAL DATA

Power sorting†	-0 Wp / +5 Wp
J-Box	IP65
Connector	MC4
Module efficiency	16.10 %
Fire rating (UL 790)	Class C



VERSION 2.5 FRAME
- Compatible with both "Top-Down" and "Bottom" mounting methods
- ⏚ Grounding Locations:
  - 4 corners of the frame
  - 4 locations along the length of the module in the extended flange†

NEW! Black & Veatch validated PAN files now available. Ask your account manager for more information.

1) Measuring tolerance traceable to TÜV Rheinland: +/- 2% (TÜV Power Controlled).
All units provided are imperial. SI units provided in parentheses.

SolarWorld AG reserves the right to make specification changes without notice.

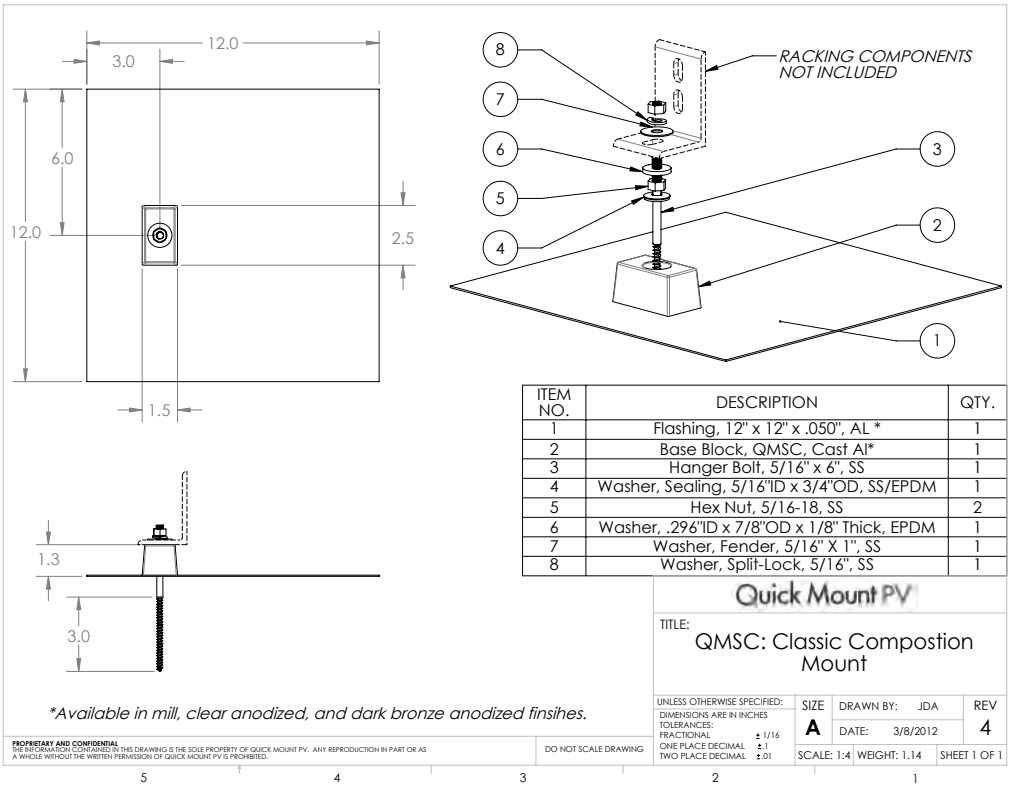
SW-01-6004US (01-2019)

Figure 1. PV Modules

Figures 2. and 3.

Examples of TPO Booted PV Mounts.

Classic Composition Mount | QMSC



ITEM NO.	DESCRIPTION	QTY.
1	Flashing, 12" x 12" x .050", AL *	1
2	Base Block, QMSC, Cast Al*	1
3	Hanger Bolt, 5/16" x 6", SS	1
4	Washer, Sealing, 5/16"ID x 3/4"OD, SS/EPDM	1
5	Hex Nut, 5/16-18, SS	2
6	Washer, .296"ID x 7/8"OD x 1/8" Thick, EPDM	1
7	Washer, Fender, 5/16" X 1", SS	1
8	Washer, Split-Lock, 5/16", SS	1

*Available in mill, clear anodized, and dark bronze anodized finsihes.

Quick Mount PV

TITLE: QMSC: Classic Compostion Mount

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16, ONE PLACE DECIMAL ± .1, TWO PLACE DECIMAL ± .01

SIZE A | DRAWN BY: JDA | DATE: 3/8/2012 | REV 4 | SCALE: 1:4 | WEIGHT: 1.14 | SHEET 1 OF 1

DO NOT SCALE DRAWING

5 4 3 2 1

Lag pull-out (withdrawal) capacities (lbs) in typical lumber:

	Lag Bolt Specifications		
	Specific Gravity	5/16" shaft per 3" thread depth	5/16" shaft per 1" thread depth
Douglas Fir, Larch	.50	798	266
Douglas Fir, South	.46	705	235
Engelmann Spruce, Lodgepole Pine (MSR 1650 f & higher)	.46	705	235
Hem, Fir	.43	636	212
Hem, Fir (North)	.46	705	235
Southern Pine	.55	921	307
Spruce, Pine, Fir	.42	615	205
Spruce, Pine, Fir (E of 2 million psi and higher grades of MSR and MEL)	.50	798	266

Sources: American Wood Council, NDS 2005, Table 11.2 A, 11.3.2 A

Notes:

1) Thread must be embedded in a rafter or other structural roof member.
2) See IBC for required edge distances.

IMPORTANT: To maintain waterproofing it is important that the aluminum flashing (item 1) is properly placed under one full course above the mounting block with at least some of the flashing extending up under the course above that as well. See instructions on back.

Quick Mount PV®
RESPECT THE ROOF®

Figure 4. Typical Positively-Attached Module Footings

Figures 5 - 8. Examples of Ballasted PV Racking

Renusol CS60

Ballasted Mounting System For Flat Roof Applications

TECHNICAL SPECIFICATIONS

Product Name	Renusol CS60 10° Tilt Angle	Renusol CS60 15° Tilt Angle
Image & Dimensions		
System	Ballasted flat roof system compatible with optional roof anchoring	
Materials	100% Recycled HMWPE (High Molecular Weight Polyethylene)	
Roof pitch range	0° to 5°	
Product Weight	19 lbs	
Ballast Size	Optimized for 4" x 8" x 16" block but gravel, bricks or pavers can be used	
Ventilation	Slots on top, bottom and sides	
Module Type	For PV modules with aluminum frames	
Size Range	Up to 1020mm wide and up to 1685mm long	
Orientation	Landscape	
Wind testing	Wind tunnel tested in accordance with ASCE 7-05 & 7-10	
Warranty	25 years	
Training	On-site upon request	
Support	Telephone, email and on-site. Engineering provided.	

About Renusol

Renusol America is a leading innovator in flat-roof and pitch-roofed mounting systems for Solar PV modules in the US solar industry. Renusol America provides sales, service, and customer support from its headquarters in Atlanta, Georgia and operates full-scale ware-house and distribution facilities across the country. In 2011 Renusol America introduced the groundbreaking, American-made Renusol CS60 – the first one piece mounting system for PV panels - combining a heritage of German engineering with American innovation and production. The company is part of the CentroSolar Group, a publicly traded company on the German stock exchange, and is a wholly owned subsidiary of Renusol GmbH, a market leader in Europe with more than 600MW of solar power mounted on Renusol systems.

Renusol
Solar Mounting Systems

Renusol America Inc.
1292 Logan Circle NW, Atlanta, GA 30318
www.renusolamerica.com
+1 877 847 8919

FAQs

Are roof protection mats required?
The Renusol CS60 has no sharp edges that contact the roof. Slip sheets may be required if it is needed to increase the friction coefficient.

Is grounding required?
The Renusol CS60 base is made of non-conductive material and requires no grounding.

Is anchoring required?
Projects in seismic areas or modules mounted in high wind zones may require roof anchoring. The Renusol CS60 is designed to easily attach to these anchors.

What material can be used as ballast?
It is recommended to use solid concrete block commonly found at local building supply companies.

Was wind analysis done by computer simulation or physical testing?
Physical testing in a wind tunnel was performed in accordance with ASCE to ensure the Renusol CS60 performs well in the field.

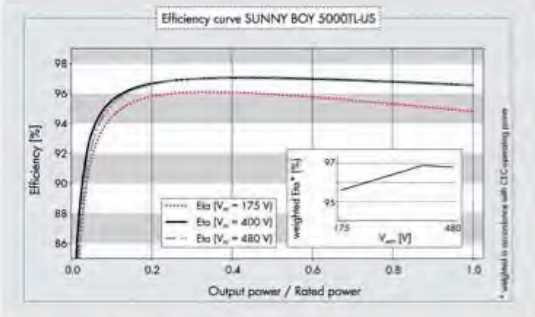
Is the material UV resistant?
The Renusol CS60 base is made of recycled HMWPE (High Molecular Weight Polyethylene) with UV stabilizing agents that give it excellent UV resistant characteristics.

How long is the warranty?
The warranty period is 25 years. See "Renusol America 25-year Limited Product Warranty" for full details.

How many have been installed to date?
Over 1,000,000 modules have been installed with this type of product through our parent company in Europe. The first large scale installations began in 1996.

Figure 9. Typical Ballasted Racking Specs

Technical data	Sunny Boy 3000TL-US		Sunny Boy 4000TL-US		Sunny Boy 5000TL-US	
	208 V AC	240 V AC	208 V AC	240 V AC	208 V AC	240 V AC
Input (DC)						
Max. DC power (@ cos φ = 1)	3200 W		4200 W		5300 W	
Max. DC voltage	600 V		600 V		600 V	
MPP voltage range	175 – 480 V		175 – 480 V		175 – 480 V	
Min. DC voltage / start voltage	125 / 150 V		125 / 150 V		125 / 150 V	
Max. input current / per MPP tracker	18 A / 15 A		24 A / 15 A		30 A / 15 A	
Number of MPP trackers / strings per MPP tracker	2 / 2					
Output (AC)						
AC nominal power	3000 W		4000 W		4550 W	5000 W
Max. AC apparent power	3000 VA		4000 VA		4550 VA	5000 VA
Nominal AC voltage / adjustable	208 V / ●	240 V / ●	208 V / ●	240 V / ●	208 V / ●	240 V / ●
AC voltage range	183 – 229 V	211 – 264 V	183 – 229 V	211 – 264 V	183 – 229 V	211 – 264 V
AC grid frequency; range	60 Hz / 59.3 – 60.5 Hz		60 Hz / 59.3 – 60.5 Hz		60 Hz / 59.3 – 60.5 Hz	
Max. output current	15 A		20 A		22 A	
Power factor (cos φ)	1		1		1	
Output phases / line connections	1 / 2		1 / 2		1 / 2	
Harmonics	< 4%		< 4%		< 4%	
Efficiency						
Max. efficiency	96.8%	97.1%	96.8%	97.2%	96.8%	97.1%
CEC efficiency	96%	96.5%	96%	96.5%	96%	96.5%
Protection devices						
DC disconnection device	●					
DC reverse-polarity protection	●					
Ground fault monitoring / Grid monitoring	● / ●					
AC short circuit protection	●					
All-pole sensitive residual current monitoring unit	●					
Arc fault circuit interrupter (AFCI) compliant to UL 1699B	●					
Protection class / overvoltage category	I / IV					
General data						
Dimensions (W / H / D) in mm (in)	490 / 519 / 185 (19.3 / 20.5 / 7.3)					
DC Disconnect dimensions (W / H / D) in mm (in)	187 / 297 / 190 (7.4 / 11.7 / 7.5)					
Packing dimensions (W / H / D) in mm (in)	617 / 597 / 266 (24.3 / 23.5 / 10.5)					
DC Disconnect packing dimensions (W / H / D) in mm (in)	370 / 240 / 280 (14.6 / 9.4 / 11.0)					
Weight / DC Disconnect weight	24 kg (53 lb) / 3.5 kg (8 lb)					
Packing weight / DC Disconnect packing weight	27 kg (60 lb) / 3.5 kg (8 lb)					
Operating temperature range	-40 °C ... +60 °C (-40 °F ... +140 °F)					
Noise emission (typical)	≤ 25 dB(A)		< 25 dB(A)		< 29 dB(A)	
Internal consumption at night	< 1 W		< 1 W		< 1 W	
Topology	Transformerless		Transformerless		Transformerless	
Cooling concept	Convection		Convection		Convection	
Electronics protection rating	NEMA 3R		NEMA 3R		NEMA 3R	
Features						
Secure Power Supply	●		●		●	
Display: graphic	●		●		●	
Interfaces: RS485 / Webconnect	o/o		o/o		o/o	
Interface: ZigBee	o		o		o	
Warranty: 10 / 15 / 20 years	●/o/o		●/o/o		●/o/o	
Certificates and permits (more available on request)	UL 1741, UL 1998, UL 1699B, IEEE1547, FCC Part 15 (Class A & B), CAN/CSA C22.2 107.1-1					
NOTE: US inverters ship with gray lids						
Type designation	SB 3000TL-US-22		SB 4000TL-US-22		SB 5000TL-US-22	



Accessories


Speedwire/Webconnect interface SWDM-US-10


RS485 interface DM-485CB-US-10


Fan kit FANKIT02-10

● Standard feature o Optional feature – Not available
Data at nominal conditions

Toll Free +1 888 4 SMA USA
www.SMA-America.com

SMA America, LLC

Figure 10. Inverter

SMA

SUNNY SENSORBOX

Technical data	Sunny SensorBox
Communication	
Data logger communication	RS485 to Sunny WebBox, RS485 to Sunny Boy Control
Interfaces	
Sunny WebBox and Power Injector	1 x SMACOM / spring terminals
Max. communication range	
RS485	1200 m (3937 ft)
Power supply	
Power supply	RS485 Power Injector
Input voltage	100 V – 240 V AC, 50 / 60 Hz
Power consumption	< 1 W
Environmental conditions in operation	
Ambient temperature	-25 °C ... +70 °C (-13 °F ... +158 °F)
Protection rating (as per EN 60529)	IP65
General data	
Dimensions (W / H / D) in mm (in)	120 / 50 / 90 (5 / 2 / 3.5)
Weight	500 g (1102 lb)
Mounting location	outdoor
Deployment options	mounting plate, roof bracket
Language versions (manual)	German, English, French, Italian, Spanish, Dutch, Czech, Portuguese, Greek
Features	
Operation	via the Sunny WebBox interface
Warranty: 5 years	●
Certificates and approvals	www.SMA-Solar.com
Accessories	
Mounting plate	○
Roof bracket	○
Wind sensor	○
Wall mounting bracket for wind sensor	○
PT100 ambient temperature sensor	○
PT100 module temperature sensor	●
RS485 Power Injector	●
SMA Power Injector with *Bluetooth*®	○

● Standard features ○ Optional features – Not available

Communication with the Sunny WebBox via RS485

Continuous **monitoring** of generator performance in Sunny Portal

Measurement of radiation and module temperature (plus optional measurement of ambient temperature and wind speed)

Easy installation; data transmission and energy supply via a common cable

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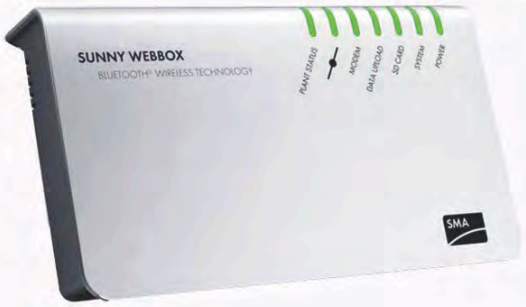
Figure 11. Weather Monitoring

SUNNY WEBBOX

Remote monitoring and
maintenance of large solar power plants



Technical data	Sunny WebBox	Sunny WebBox with *Bluetooth*
Communication		
Inverter communication	RS485, 10/100 Mbit Ethernet (only for Sunny Central)	*Bluetooth*
PC-communication	10/100 Mbit Ethernet	10/100 Mbit Ethernet
Modem	Analog (optional), GSM (optional)	Analog* (optional), GSM (optional)*
Connections		
Inverter	1x SMACOM	See inverter communication
Ethernet	10/100 Mbit, RJ45	10/100 Mbit, RJ45
Max. number of SMA devices		
RS485 / Ethernet	50 / 50	–/–
Bluetooth	–	1 master: 50 / 2 masters: 25
Max. communication range		
RS485 / Ethernet	1200 m / 100 m (3937 ft / 328 ft)	–/–
Bluetooth (unobstructed)	–	Up to 100 m (328 ft)** (can be extended with an SMA *Bluetooth* Repeater)
Power supply		
Power supply	external plug-in power supply	external plug-in power supply
Input voltage	100 V – 240 V AC, 50 / 60 Hz	100 V – 240 V AC, 50 / 60 Hz
Power consumption	Typ. 4 W/ max. 12 W	Typ. 4 W/ max. 12 W
Environmental conditions in operation		
Ambient temperature	-20 °C ... +65 °C (-4 °F ... +149 °F)	
Relative humidity	5% ... 95%, non-condensing	5% ... 95%, non-condensing
Memory		
Internal	8 MB in a ring memory configuration	12.5 MB in a ring memory configuration
External	optional SD card 128 MB/512 MB/1 GB/2 GB	optional SD card 128 MB/512 MB/1 GB/2 GB
General data		
Dimensions (W / H / D) in mm (in)	255 / 130 / 57 (10 / 5 / 2)	
Weight	750 g (2 lb)	
Mounting location	indoors	indoors
Installation options	DIN rail installation, wall mounting, tabletop device	DIN rail installation, wall mounting, tabletop device
Status display	LEDs	LEDs
Language versions (software, manual)	German, English, French, Greek, Italian, Korean, Dutch, Portuguese, Spanish, Czech	
Features		
Operation	Integrated Web server (Internet browser)	Integrated Web server (Internet browser)
Warranty: 5 years	●	●
Certificates and approvals	www.SMA-Solar.com	www.SMA-Solar.com
Accessories		
Sunny SensorBox	connection via RS485 Power Injector	connection via SMA Power Injector with *Bluetooth*
SMA *Bluetooth* Repeater	–	For extending the maximum *Bluetooth* communication range
Sunny Matrix	o	o
SD card 128 MB/512 MB/1 GB/2 GB	o	o
Outdoor GSM antenna	o	o*
GSM data card	o	o*
RS485 communication cables	o	–

● Standard features o Optional features – Not available

* Analog and GSM modem as well as corresponding accessories not available for first version of Sunny WebBox with *Bluetooth*

** Up to 50 m (165 ft) with SMA *Bluetooth*® Piggy-Back. Required for Sunny Boy 3000-US / 3800-US / 4000-US / 5000-US / 6000-US / 7000-US / 8000-US and 8000TL-US / 9000TL-US / 10000TL-US

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Figure 12. Energy Monitoring