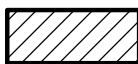




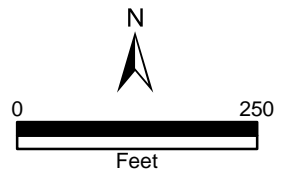
8-H-20-HZ
APPLICATION FOR CERTIFICATE OF APPROPRIATENESS



2036 Jefferson Ave. 37917
Edgewood-Park City H-1

Original Print Date: 8/7/2020
 Knoxville/Knox County Planning -- Historic Zoning Commission

Petitioner: David Grant





Staff Report - Certificate of Appropriateness Application

Knoxville Historic Zoning Commission

File Number: 8-H-20-HZ

PROPERTY LOCATION: 2036 Jefferson Ave. / Parcel ID 82 J T 002

DISTRICT: Edgewood-Park City H-1

MEETING DATE: 8/20/2020

APPLICANT: David Grant

LEVEL OF WORK: Level II. Major repair or replacement of materials or architectural elements

PROPERTY DESCRIPTION: Craftsman, c.19190.

One-and-one-half story residence with a side gable roof clad in asphalt shingles, an exterior of wood lap siding, and a brick foundation. Shed-roof dormers are centered on the front and rear roof slopes. A recessed porch extends the full length of the façade, supported by tapered wood columns on brick piers. Exterior brick masonry chimney.

► **DESCRIPTION OF WORK:**

Installation of solar panels, solar collector, and inverter. One array of Heliene 60M panels will be installed on rear shed-roof dormer. Panels will be 65.5" long by 39.4" wide and 1.6" tall, weighing approximately 48.5 lb, and be flush against the rear dormer roof slope. The panels will be black, on an existing dark-grey asphalt shingle roof. A Duda Solar Collector will be installed on the rear roof slope, to the left of the dormer. The associated inverter will be installed on the right side of the house, adjacent to existing electrical service meter. All work will occur on the house's rear roof slope and will not be visible from the public right-of-way.

► **APPLICABLE DESIGN GUIDELINES:**

Edgewood-Park City Design Guidelines, adopted by the Knoxville City Council on July 29, 1997.

Roofs

5. Do not use satellite dishes, solar collectors, modern skylights, or inappropriate structures on roof planes that are visible from the street, or install them where they interfere with decorative roof elements.

COMMENTS:

N/A

STAFF FINDINGS:

1. 2036 Jefferson Avenue is a contributing structure to the Park City National Register Historic District and the Edgewood-Park City local overlay.

2. The panels and solar collector are proposed to be installed on the rear (south) roof slope. The house features a large, steeply pitched side-gable roof with wide eave overhangs. Also, the house is set back ~45' from the street.



Staff Report - Certificate of Appropriateness Application

Knoxville Historic Zoning Commission

File Number: 8-H-20-HZ

The panels and solar collector will not be visible from the public right-of-way, and the inverter will be installed adjacent to existing electrical service equipment. The panels will be mounted parallel to the roof slope and project approximately 2" above the roof. The solar collector should be installed as flush to the roof slope as possible, and not be set at an angle from the roof pitch.

3. No historic roofing material or exterior features will be altered or removed for installation of the solar panels or associated equipment. No changes to the existing roof or siding of the house will be necessary to support the panels.

► **STAFF RECOMMENDATION:**

Staff recommends approval of the work as proposed, with the condition that the solar collector be installed to be flush with the rear roof slope instead of at an angle.

REQUEST

Level 1:

- Signs Alteration of an existing building/structure

Level 2:

- Addition to an existing building/structure

Level 3:

- Construction of new building/structure Site design, parking, plazas, landscape

See required Downtown Design attachment for more details.

- Brief description of work: _____

Level 1:

- Signs Routine repair of siding, windows, roof, or other features, in-kind; Installation of gutters, storm windows/doors

Level 2:

- Major repair, removal, or replacement of architectural elements or materials Additions and accessory structures

Level 3:

- Construction of a new primary building

Level 4:

- Relocation of a contributing structure Demolition of a contributing structure

See required Historic Zoning attachment for more details.

- Brief description of work: ASPHALT SINGLE ROOFING REWORK, SOLAR (PV) SYSTEM, SOLAR HOT WATER COLLECTOR - ON BACK SIDE OF HOUSE

Level 1:

- Driveways, parking pads, access point, garages or similar facilities Subdivisions

Level 2:

- Additions visible from the primary street Changes to porches visible from the primary street

Level 3:

- New primary structure
 Site-built Modular Multi-Sectional

See required Infill Housing attachment for more details.

- Brief description of work: _____

ATTACHMENTS

- Downtown Design Checklist
 Historic Zoning Design Checklist
 Infill Housing Design Checklist

ADDITIONAL REQUIREMENTS

- Property Owners / Option Holders

Level 1: \$50 • Level 2: \$100 • Level 3: \$250 • Level 4: \$500

FEE 1:

FEE 2:

FEE 3:

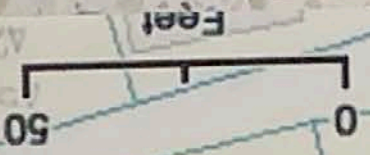
TOTAL:

DOWNTOWN DESIGN

HISTORIC ZONING

INFILL HOUSING

STAFF USE ONLY



DAVID GRANT

Polk St

2036 JEFFERSON AVE

Knoxville

28

27

26

440

19

705

80 76

49 51

75

79 25

402R1

140 22

8.01

2032

110 B7

90M

398

397

10

2036

2038

72 5

Jefferson Ave

2023

2021

50

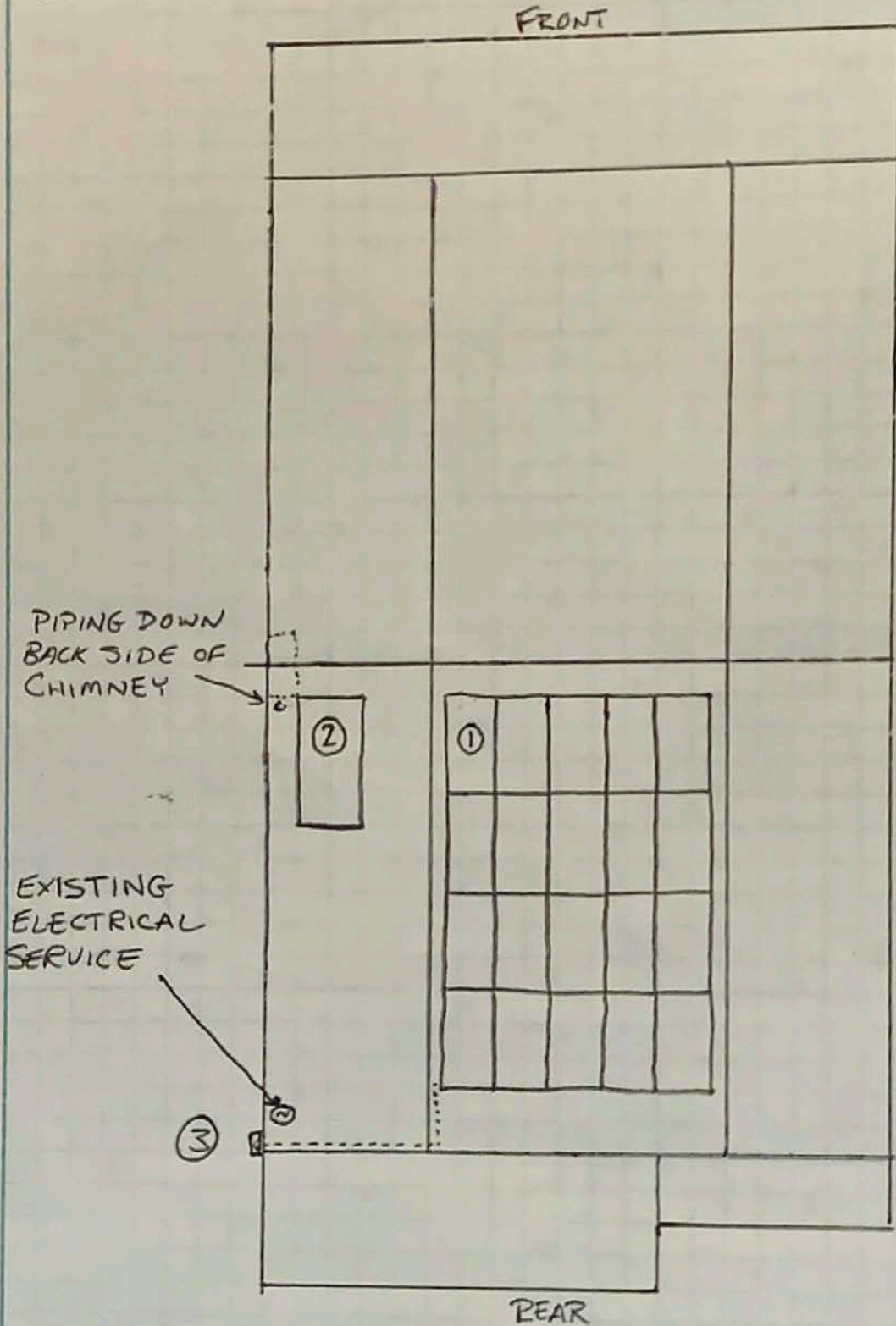
50

50

Feet

Digitizer - © KGIS 2020 - E9588AR

- ① HELIENE 320 BLACK MONO SOLAR PANEL (TYP 20) - 65.5" x 39.4" x 1.6"
- ② DUBA DIESEL SOLAR COLLECTOR - ~5' x 6'
- ③ SMA SUNNY BOY 6.0-US-41 INVERTER



NOTES:

① PANEL WEIGHT - 48.5 lbs ca.







Congratulations to
Voter 2020
Thank you for your participation in the 2020 election

Congratulations to
Voter 2020
Thank you for your participation in the 2020 election





60MBLK HOME PV

60-CELL N-TYPE MONOCRYSTALLINE HOME PV



325 Wp

MAX POWER OUTPUT

19.51%

MAX EFFICIENCY

10 YEAR

PRODUCT WARRANTY

25 YEAR

LINEAR PERFORMANCE GUARANTEE

HELIENE IS A PREMIER SOLAR MODULE MANUFACTURER, SERVICING THE GROWING SOLAR ENERGY MARKETS OF NORTH AMERICA.

COMBINING PROVEN EUROPEAN TECHNOLOGY WITH NORTH AMERICAN INGENUITY ALLOWS HELIENE TO MAKE A REAL COMMITMENT IN PROVIDING SMARTER ENERGY CHOICES FOR THE FUTURE.

HELIENE
www.heliene.com



HIGHER POWER OUTPUT USING N-TYPE CELLS
ALMOST ZERO LID



AVAILABLE IN 1000V OR 1500V SYSTEM VOLTAGE RATING



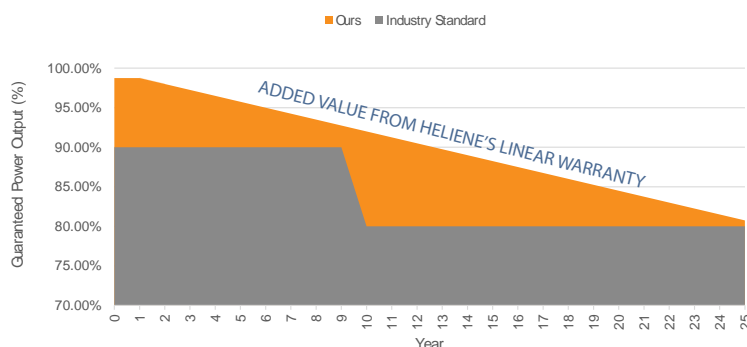
QUALITY MANAGEMENT SYSTEM FOLLOWING INTERNATIONAL STANDARD: ISO9001



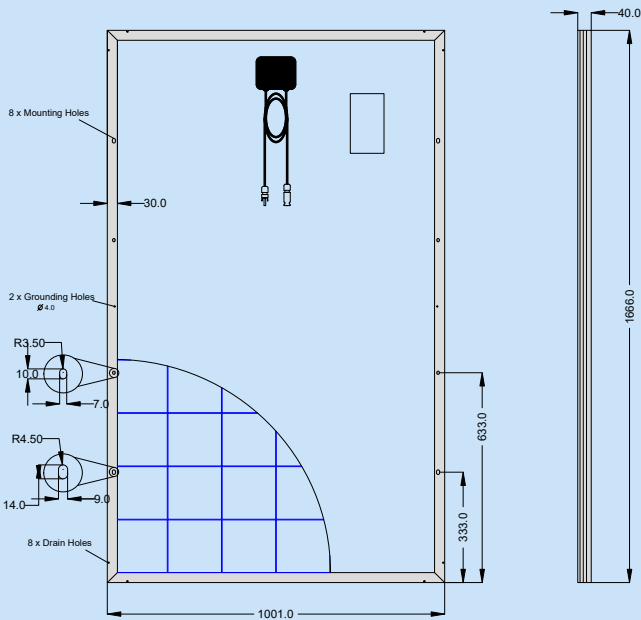
H-BLACK INTEGRATION - BLACK FRAME & BACKSHEET

LINEAR PERFORMANCE GUARANTEE

10 YEAR WORKMANSHIP WARRANTY • 25 YEAR LINEAR PERFORMANCE GUARANTEE



DIMENSIONS FOR 60M HOME PV SERIES



ELECTRICAL DATA (STC)

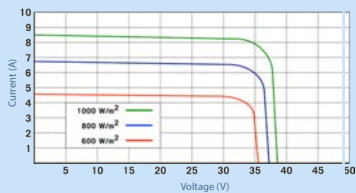
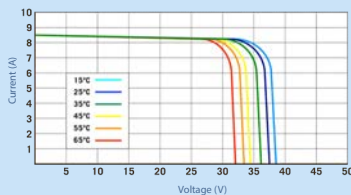
Peak Rated Power	P_{mpp} (W)	325	320
Maximum Power Voltage	V_{mpp} (V)	34.61	34.17
Maximum Power Current	I_{mpp} (A)	9.41	9.38
Open Circuit Voltage	V_{oc} (V)	40.67	40.09
Short Circuit Current	I_{sc} (A)	10.13	10.09
Module Efficiency *	Eff (%)	19.51	19.26
Maximum Series Fuse Rating	MF (A)	20	20
Power Output Tolerance		[-2/+2 %]	

STC - Standard Test Conditions: Irradiation 1000 W/m² - Air mass AM 1.5 - Cell temperature 25 °C
 * Calculated using maximum power based on full positive output tolerance [-2/+2 %]

MECHANICAL DATA

Dimensions (L x W x D)	1666 x 1001 x 40 mm (65.5 x 39.4 x 1.6 inch)
Weight*	19 kg (41.9 lbs)
Output Cables	1.0 m (39.4 inch) symmetrical cables with MC4 type connectors
Junction Box	IP-67 rated with bypass diodes
Frame	Double webbed 15 micron anodized aluminum alloy
Front Glass	Low-iron content, high-transmission PV solar glass

I-V CURVE FOR HELIENE 60M HOME PV SERIES



CERTIFICATIONS

UL Certification	ULC/ORD-C1703-1, UL1703
IEC Certification	Optional

Helienne modules are certified under the California Energy Commission (CEC) Listing Report

TEMPERATURE RATINGS

Nominal Operating Cell Temperature (NOCT)	+45°C (±2°C)
Temperature Coefficient of P_{max}	-0.38%/°C
Temperature Coefficient of V_{oc}	-0.36%/°C
Temperature Coefficient of I_{sc}	0.07%/°C

PACKAGING CONFIGURATION

Modules per box:	26 pieces
Modules per 53' trailer:	936 pieces

MAXIMUM RATINGS

Operational Temperature	-40°C - +85°C
Max System Voltage	1000V (*1500V) *Optional

WARRANTY

10 Year Manufacturer's Workmanship Warranty
25 Year Linear Power Guarantee

(Refer to product warranty page for details)

CERTIFICATIONS



SUNNY BOY 3.0-US / 3.8-US / 5.0-US / 6.0-US / 7.0-US / 7.7-US



SB3.0-1SP-US-41 / SB3.8-1SP-US-41 / SB5.0-1SP-US-41 / SB6.0-1SP-US-41 / SB7.0-1SP-US-41 / SB7.7-1SP-US-41 / SB3.0-1TP-US-41 / SB3.8-1TP-US-41 / SB5.0-1TP-US-41 / SB6.0-1TP-US-41 / SB7.0-1TP-US-41 / SB7.7-1TP-US-41



**INTEGRATED SUNSPEC
RAPID SHUTDOWN**



Value-Added Improvements

- Superior integration with SMA's MLPE Power+ Solution
- World's first Secure Power Supply* now offers up to 2,000 W
- Full grid management capabilities ensure a utility-compliant solution for any market

Reduced Labor

- New Installation Assistant with direct access via smartphone minimizes time in the field
- Advanced communication interface with fewer components creates 50% faster setup and commissioning

Unmatched Flexibility

- SMA's proprietary OptiTrac™ Global Peak technology mitigates shade with ease
- Multiple independent MPPTs accommodate hundreds of stringing possibilities

Trouble-Free Servicing

- Two-part enclosure concept allows for simple, expedited servicing
- Equipped with SMA Smart Connected, a proactive service solution that is integrated into Sunny Portal

SUNNY BOY 3.0-US / 3.8-US / 5.0-US / 6.0-US / 7.0-US / 7.7-US

Reduce costs across your entire residential business model

The residential PV market is changing rapidly. Your bottom line matters more than ever—so we've designed a superior residential solution to help you decrease costs at every stage of your business operations. The Sunny Boy 3.0-US/3.8-US/5.0-US/6.0-US/7.0-US/7.7-US join the SMA lineup of field-proven solar technology backed by the world's #1 service team, along with a wealth of improvements. Simple design, improved stocking and ordering, value-driven sales support and streamlined installation are just some of the ways that SMA helps your business operate more efficiently. And, Sunny Boy's superior integration with the innovative Power+ Solution means installers have even more flexibility in addressing their toughest challenges. Finally, SMA Smart Connected will automatically detect errors and initiate the repair and replacement process so that installers can reduce service calls and save time and money.

Technical data	Sunny Boy 3.0-US		Sunny Boy 3.8-US		Sunny Boy 5.0-US	
	208 V	240 V	208 V	240 V	208 V	240 V
Input (DC)						
Max. PV power	4800 Wp		6144 Wp		8000 Wp	
Max. DC voltage			600 V			
Rated MPP voltage range	155 - 480 V		195 - 480 V		220 - 480 V	
MPPT operating voltage range			100 - 550 V			
Min. DC voltage / start voltage			100 V / 125 V			
Max. operating input current per MPPT			10 A			
Max. short circuit current per MPPT			18 A			
Number of MPPT tracker / string per MPPT tracker			2/1		3 / 1	
Output (AC)						
AC nominal power	3000 W	3000 W	3330 W	3840 W	5000 W	5000 W
Max. AC apparent power	3000 VA	3000 VA	3330 VA	3840 VA	5000 VA	5000 VA
Nominal 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	60 Hz / 50 Hz					
Max. output current	14.5 A	12.5 A	16.0 A	16.0 A	24.0 A	24.0 A
Power factor (cos φ)	1					
Output phases / line connections	1 / 2					
Harmonics	< 4 %					
Efficiency						
Max. efficiency	97.2 %	97.6 %	97.3 %	97.6 %	97.3 %	97.6 %
CEC efficiency	96.2 %	96.3 %	96.4 %	96.7 %	96.7 %	96.9 %
Protection devices						
DC disconnect device / DC reverse polarity protection			● / ●			
Ground fault monitoring / Grid monitoring			●			
AC short circuit protection			●			
All-pole sensitive residual current monitoring unit (RCMU)			●			
Arc fault circuit interrupter (AFCI)			●			
Protection class / overvoltage category			I / IV			
General data						
Dimensions (W / H / D) in mm (in)	535 x 730 x 198 (21.1 x 28.5 x 7.8)					
Packaging dimensions (W / H / D) in mm (in)	600 x 800 x 300 (23.6 x 31.5 x 11.8)					
Weight / packaging weight	26 kg (57 lb) / 30 kg (66 lb)					
Temperature range: operating / non-operating	-25°C ...+60°C / -40°C ...+60°C					
Environmental protection rating	NEMA 3R					
Noise emission (typical)	39 dB(A)					
Internal power consumption at night	< 5 W					
Topology / Cooling concept	Transformerless / Convection					
Features						
Ethernet ports			2			
Secure Power Supply			●*			
Display (2 x 16 characters)			●			
2.4 GHz WLAN / External WLAN antenna			●/○			
Cellular (4G / 3G) / Revenue Grade Meter			○/○**			
Warranty: 10 / 15 / 20 years			●/○/○			
Certificates and approvals	UL 1741, UL 1741 SA incl. CA Rule 21 RSD, UL 1998, UL 1699B Ed. 1, IEEE1547, FCC Part 15 (Class A & B), CAN/CSA V22.2 107.1-1, HECO Rule 14H, PV Rapid Shutdown System Equipment					
● Standard features ○ Optional features – Not available						
NOTE: US inverters ship with gray lids. Data at nominal conditions * Not compatible with the SunSpec Rapid Shutdown functionality **Standard in SBX.X-1TP-US-41						
Type designation	SB3.0-1SP-US-41 / SB3.0-1TP-US-41		SB3.8-1SP-US-41 / SB3.8-1TP-US-41		SB5.0-1SP-US-41 / SB5.0-1TP-US-41	



External WLAN antenna
EXTANT-US-40



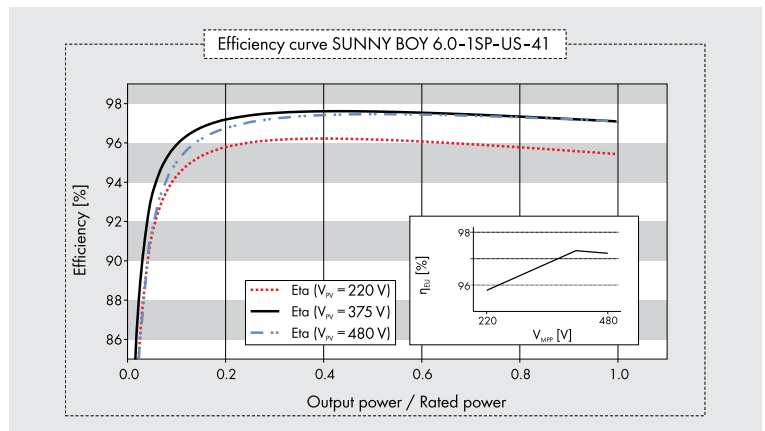
SMA Rooftop
Communication Kit
ROOFCOMMKIT-P2-US



Revenue Grade
Meter Kit
RGM05KIT-US-10



Cellular Modem Kit
CELLMODKIT-US-10



Technical data	Sunny Boy 6.0-US		Sunny Boy 7.0-US		Sunny Boy 7.7-US	
	208 V	240 V	208 V	240 V	208 V	240 V
Input (DC)						
Max. PV power	9600 W _p		9940 W _p		10905 W _p	
Max. DC Voltage			600 V			
Rated MPP Voltage range	220 - 480 V		245 - 480 V		270 - 480 V	
MPPT operating voltage range			100 - 550 V			
Min. DC voltage / start voltage			100 V / 125 V			
Max. operating input current per MPPT			10 A			
Max. short circuit current per MPPT			18 A			
Number of MPPT tracker / string per MPPT tracker			3 / 1			
Output (AC)						
AC nominal power	5200 W	6000 W	6660 W	7000 W	6660 W	7680 W
Max. AC apparent power	5200 VA	6000 VA	6660 VA	7000 VA	6660 VA	7680 VA
Nominal 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	60 Hz / 50 Hz					
Max. output current	25.0 A	25.0 A	32.0 A	29.2 A	32.0 A	32.0 A
Power factor (cos φ)	1					
Output phases / line connections	1 / 2					
Harmonics	< 4 %					
Efficiency						
Max. efficiency	97.3 %	97.7 %	97.3 %	97.9 %	97.3 %	97.5 %
CEC efficiency	96.7 %	96.9 %	96.4 %	96.8 %	96.4 %	96.8 %
Protection devices						
DC disconnect device / DC reverse polarity protection			● / ●			
Ground fault monitoring / Grid monitoring			●			
AC short circuit protection			●			
All-pole sensitive residual current monitoring unit (RCMU)			●			
Arc fault circuit interrupter (AFCI)			●			
Protection class / overvoltage category			I / IV			
General data						
Dimensions (W / H / D) in mm (in)			535 x 730 x 198 (21.1 x 28.5 x 7.8)			
Packaging Dimensions (W / H / D) in mm (in)			600 x 800 x 300 (23.6 x 31.5 x 11.8)			
Weight / packaging weight			26 kg (57 lb) / 30 kg (66 lb)			
Temperature range: operating / non-operating			-25°C ...+60°C / -40°C ...+60°C			
Environmental protection rating			NEMA 3R			
Noise emission (typical)	39 dB(A)				45 dB(A)	
Internal power consumption at night			< 5 W			
Topology / Cooling concept	Transformerless / Convection		Transformerless / Fan			
Features						
Ethernet ports			2			
Secure Power Supply			● *			
Display (2 x 16 characters)			●			
2.4 GHz WLAN / External WLAN antenna			●/○			
Cellular (4G / 3G) / Revenue Grade Meter			○/○**			
Warranty: 10 / 15 / 20 years			●/○/○			
Certificates and approvals	UL 1741, UL 1741 SA incl. CA Rule 21 RSD, UL 1998, UL 1699B Ed. 1, IEEE1547, FCC Part 15 (Class A & B), CAN/CSA V22.2 107.1-1, HECO Rule 14H, PV Rapid Shutdown System Equipment					
● Standard features ○ Optional features – Not available						
NOTE: US inverters ship with gray lids. Data at nominal conditions * Not compatible with the SunSpec Rapid Shutdown functionality **Standard in SBX.X-1TP-US-41						
Type designation	SB6.0-1SP-US-41 / SB6.0-1TP-US-41		SB7.0-1SP-US-41 / SB7.0-1TP-US-41		SB7.7-1SP-US-41 / SB7.7-1TP-US-41	

POWER+ SOLUTION

The SMA Power+ Solution combines legendary SMA inverter performance and intelligent DC module-level electronics in one cost-effective, comprehensive package. This means that you can achieve maximum solar power production for your customers while also realizing significant installation savings.

NEW! This rapid shutdown solution fulfills UL 1741, NEC 2014, and NEC 2017 requirements and is compatible with the power line-based SunSpec Rapid Shutdown communication signal over DC wires, making it the most simple and cost-effective rapid shutdown solution on the market.

Visit www.SMA-America.com for more information.





SIMPLE, FLEXIBLE DESIGN

Speed the completion of customer proposals and maximize the efficiency of your design team with the Sunny Boy-US series, which provides a new level of flexibility in system design by offering:

- » Hundreds of stringing configurations and multiple independent MPPTs
- » SMA's proprietary OptiTrac™ Global Peak shade mitigation technology
- » Diverse application options including on- and off-grid compatibility



VALUE-DRIVEN SALES ENABLEMENT

SMA wants to enable your sales team by arming them with an abundance of feature/benefit support. Show your customers the value of the Sunny Boy-US series by utilizing:

- » Secure Power Supply, now with 2,000 W of opportunity power in the event of a grid outage, as an increased value-add or upsell opportunity
- » SMA's 35 year history and status as the #1 global inverter manufacturer instills homeowners with peace of mind and the long-term security they demand from a PV investment
- » An economical solution for shade mitigation and the challenges of complex roofs



IMPROVED STOCKING AND ORDERING

Ensure that your back office business operations run smoothly and succinctly while mitigating potential errors. The Sunny Boy-US series can help achieve cost savings in these areas by providing:

- » An integrated DC disconnect that simplifies equipment stocking and allows for a single inverter part number
- » All communications integrated into the inverter, eliminating the need to order additional equipment



STREAMLINED INSTALLATION AND COMMISSIONING

Expedite your operations in the field by taking advantage of the new Sunny Boy's installer-friendly feature set including:

- » Direct access via smartphone and utilization of SMA's Installation Assistant, which minimizes time/labor spent in the field and speeds the path to commissioning
- » Simple commissioning and monitoring setup in a single online portal
- » New! Advanced communication interface with fewer components allows for 50% faster commissioning



SUPERIOR SERVICE

SMA understands the factors that contribute to lifetime PV ownership cost, that's why the Sunny Boy-US series was designed for maximum reliability and backstopped by an unmatched service offering. Benefit from:

- » SMA Smart Connected, a proactive service solution integrated into Sunny Portal that automatically detects errors and initiates the repair and replacement process
- » The #1 service team in the PV industry, as recognized by IMS research, with experience servicing an installed base of more than 55 GW