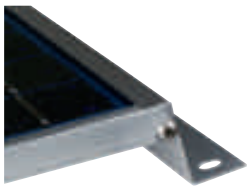




BP Solar's SX series provides cost-effective photovoltaic power for general use, operating DC loads directly or, in an inverter-equipped system, AC loads. With 60 watts of nominal maximum power, the SX 60 is well-suited to traditional applications of photovoltaics such as telecommunications, cathodic protection, remote villages and clinics, pumping, and land-based aids to navigation. Its 36 multicrystalline silicon solar cells charge batteries efficiently in virtually any climate.

The BP SX 60 is available in the D configuration, which mounts directly to many surfaces; and the U configuration, which includes the heavy-duty Universal frame and a high-volume junction box with dual-voltage output.



Direct-Mount Frame

### BP SX 60D

The Direct-Mount frame of the BP SX 60D enables mounting on many surfaces (roofs, walls, etc.) without additional mounting hardware. Its output is via a 4.6m (15-foot) PVC-jacketed 2.5 mm<sup>2</sup> (AWG 14-2) cable which terminates in a low-profile junction box on the module back. Epoxy-potted in the box, module electrical connections are sealed against corrosion and effectively strain-relieved. Output voltage is compatible with 12 VDC systems, and the module is suitable for use in systems with DC voltage up to 30 volts.



Universal Frame

### BP SX 60U

The BP SX 60U is designed primarily for industrial use and other particularly demanding applications. Its rugged Universal frame is suitable for severe duty and exceeds the requirements of all certifying agencies. It is suitable for single- or multiple-module applications with system DC voltage not exceeding

600V (U.S. NEC rating) or 1000V (per TÜV Rheinland), is certified by TÜV Rheinland as Class II equipment, and is approved by Factory Mutual Research for application in NEC Class 1, Division 2, Groups C & D hazardous locations.

### Limited Warranties

- Power output for 20 years;
- Freedom from defects in materials and workmanship for 1 year.

See our website or your local representative for full terms of these warranties.

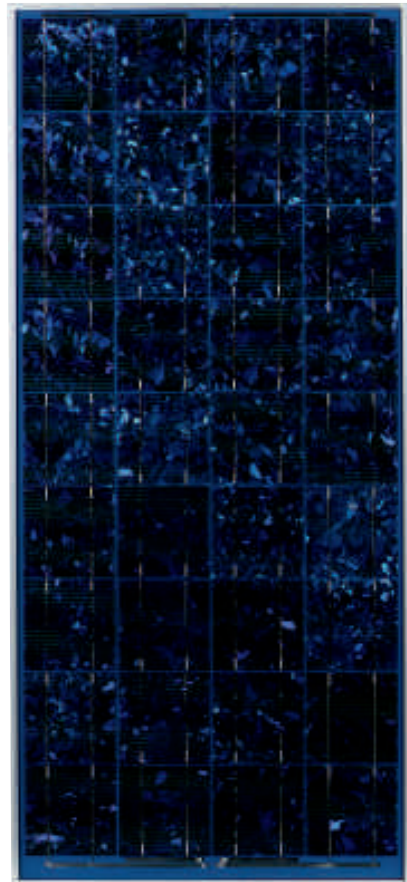
### High-Capacity Versatile Junction Box

The junction box of the BP SX 60U is raintight (IP54 rated) and accepts PG13.5 or 1/2" nominal conduit or cable fittings. Its volume (411cc, 25 cubic inches) and 6-terminal connection block enable most system array connections (putting modules in series or parallel) to be made right in the junction box.

Options include:

- blocking and bypass diodes;
- an oversize terminal block which accepts conductors up to 25mm<sup>2</sup> (AWG #4); standard terminals accept up to 6mm<sup>2</sup> (AWG #10);
- a Solarstate™ charge regulator.

Shipped in 12V configuration, BP SX 60U modules may easily be switched to 6V configuration by moving leads in the junction box. Six-volt modules are intended to support 6V loads, and are not recommended as series elements in higher voltage arrays.



BP SX 60U



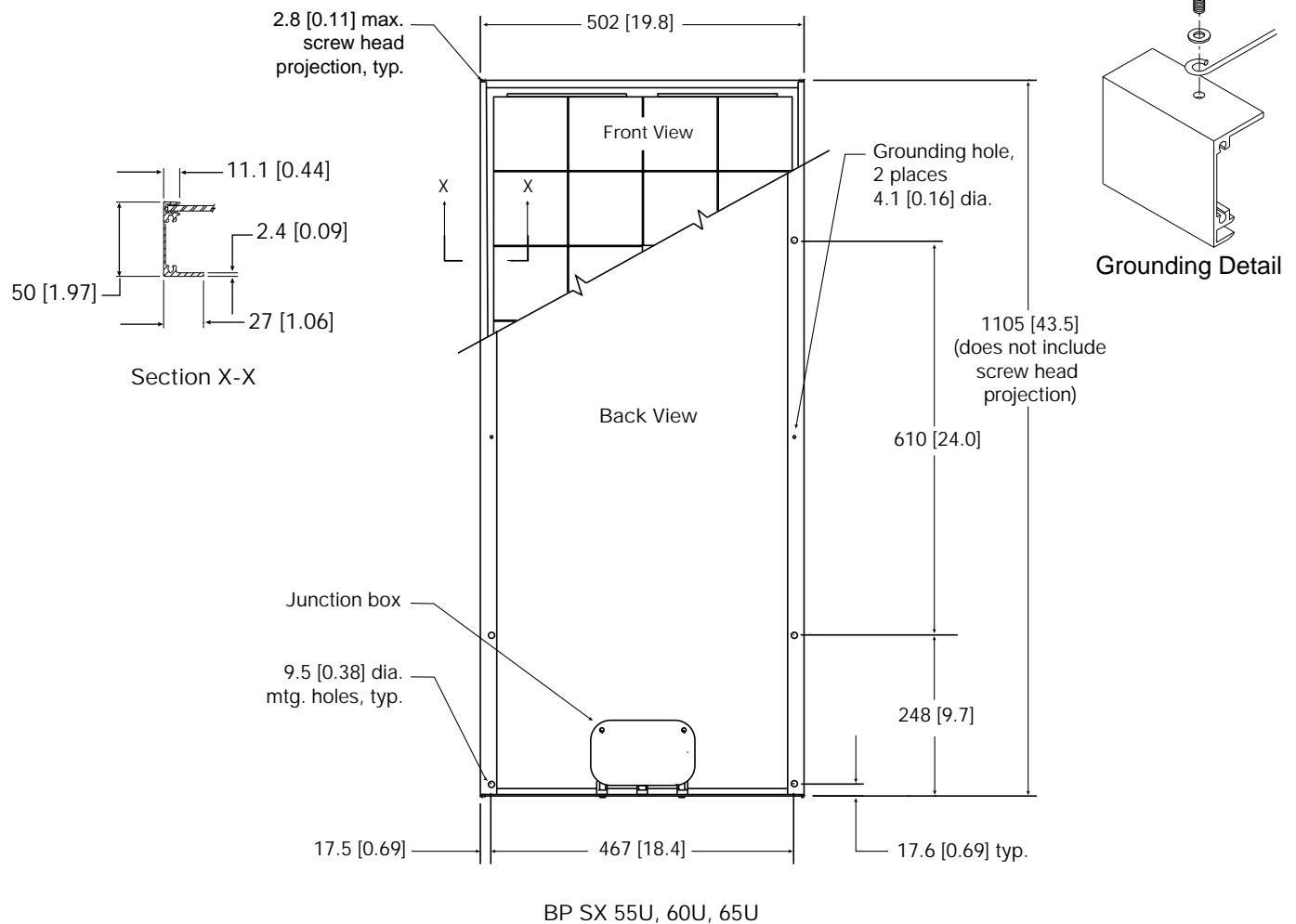
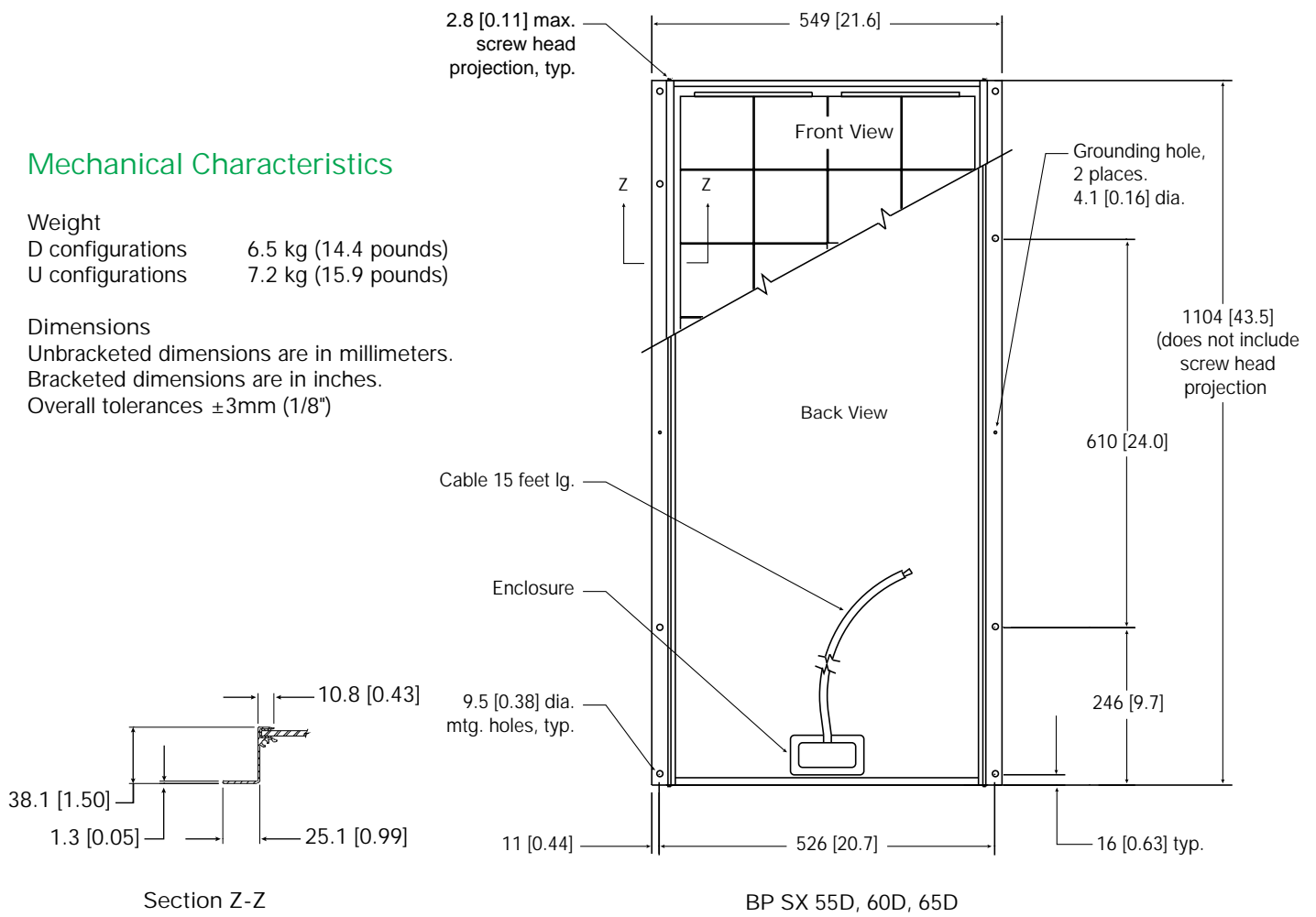
## Mechanical Characteristics

### Weight

D configurations 6.5 kg (14.4 pounds)  
 U configurations 7.2 kg (15.9 pounds)

### Dimensions

Unbracketed dimensions are in millimeters.  
 Bracketed dimensions are in inches.  
 Overall tolerances  $\pm 3\text{mm}$  (1/8")



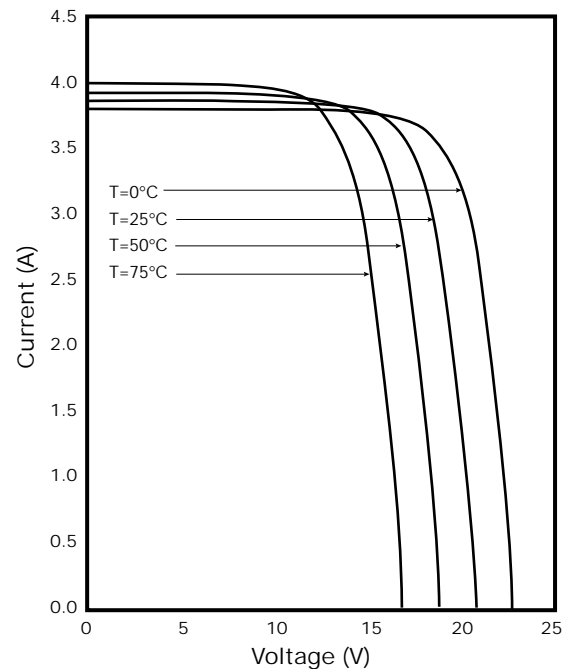
## Electrical Characteristics<sup>1</sup>

	BP SX 55	BP SX 60	BP SX 65
Maximum power ( $P_{max}$ ) <sup>2</sup>	55W	60W	65W
Voltage at $P_{max}$ ( $V_{mp}$ )	16.5V	16.8V	17.2V
Current at $P_{max}$ ( $I_{mp}$ )	3.33A	3.56A	3.77A
Guaranteed minimum $P_{max}$	50W	55W	60W
Short-circuit current ( $I_{sc}$ )	3.69A	3.87A	4.06A
Open-circuit voltage ( $V_{oc}$ )	20.6V	21.0V	21.5V
Temperature coefficient of $I_{sc}$	$(0.065 \pm 0.015)\%/^{\circ}C$		
Temperature coefficient of $V_{oc}$	$-(80 \pm 10)mV/^{\circ}C$		
Temperature coefficient of power	$-(0.5 \pm 0.05)\%/^{\circ}C$		
NOCT <sup>3</sup>	$47 \pm 2^{\circ}C$		

## Notes

- These data represent the performance of typical modules in 12V configuration as measured at their output terminals, and do not include the effect of such additional equipment as diodes or cables. The data are based on measurements made in accordance with ASTM E1036 corrected to SRC (Standard Reporting Conditions, also known as STC or Standard Test Conditions), which are:
  - illumination of  $1 \text{ kW/m}^2$  (1 sun) at spectral distribution of AM 1.5 (ASTM E892 global spectral irradiance);
  - cell temperature of  $25^{\circ}C$ .
- During the stabilization process which occurs during the first few months of deployment, module power may decrease approximately 3% from typical  $P_{max}$ .
- The cells in an illuminated module operate hotter than the ambient temperature. NOCT (Nominal Operating Cell Temperature) is an indicator of this temperature differential, and is the cell temperature under Standard Operating Conditions: ambient temperature of  $20^{\circ}C$ , solar irradiation of  $0.8 \text{ kW/m}^2$ , and wind speed of  $1 \text{ m/s}$ .

## BP SX 60 I-V Curves



## Quality and Safety

All BP SX 60 modules are manufactured in ISO 9001-certified factories, certified by PowerMark Corporation, and compliant with the requirements of IEC 61215, including:

- repetitive cycling between -40°C and 85°C at 85% relative humidity;
- simulated impact of 25mm (one-inch) hail at terminal velocity;
- a “damp heat” test, consisting of 1000 hours of exposure to 85°C and 85% relative humidity;
- a “hot-spot” test, which determines a module’s ability to tolerate localized shadowing (which can cause reverse-biased operation and localized heating);
- static loading, front and back, of 2400 pascals (50 psf); front loading (e.g. snow) of 5400 pascals (113 psf, U only).



bp solar

This publication summarizes product warranty and specifications, which are subject to change without notice and should not be used as the definitive source of information for final system design. Additional warranty and technical information may be found on our website [www.bpsolar.com](http://www.bpsolar.com) or may be obtained from your local representative.



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