BP SX 5
BP SX 10

5-Watt & 10-Watt
Multicrystalline Photovoltaic Modules

The smallest of BP Solar's SX™ module series, BP SX 5 and BP SX 10 photovoltaic modules operate DC loads with small to moderate energy requirements. With 36 multicrystalline cells in series, they charge 12V batteries efficiently in virtually any climate. Typical commercial applications of these modules, which generate nominal maximum power of 4.5 watts and 10 watts respectively, include remote telemetry, instrumentation systems, security sensors, and signals.

SX 5M and SX 10M

The versatile Multimount™ frame of the SX 5M and SX 10M provides great flexibility in mounting approach. Oriented parallel to the edge and back of the module, its dual channels accept the heads of 8mm or 5/16" hex bolts, allowing the module to be mounted from the side or back. Bolts may be located anywhere along the channels, a configuration which prevents them from turning during tightening and allows installation with just one wrench.

Multimount™ Frame
(shown with end caps removed)

Output of the SX 5M and SX 10M is via a 4.6m (15 foot) PVC-jacketed 1mm^2 (AWG 18-2) 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. The modules are intended for single-module applications with DC system voltage not exceeding 30 volts, and may be ordered in either 6V or 12V nominal voltage.

Universal Frame

SX 10U

The SX 10U includes a heavy-duty Universal frame and a high-capacity junction box which accepts cable or conduit and provides field-selectable dual voltage output. Optionally, this junction box can be fitted with:

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

The SX 10U junction box may be field-wired to provide 12V or 6V nominal output. Six-volt modules are intended to support 6V loads, and are not recommended as series elements in higher voltage arrays. The SX 10U meets NEC requirements for use in systems up to 600 VDC, 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 12 years;
- Freedom from defects in materials and workmanship for 2 years.

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

SX 10M and 5M

Quality and Safety

All SX 5 and 10 modules are manufactured in ISO 9001-certified factories and are:

- listed by Underwriter's Laboratories for electrical and fire safety (Class C fire rating);
- certified by TÜV Rheinland as Class II equipment.
- compliant with the requirements of IEC 61215 and 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, U only) of 5400 pascals (113 psf).

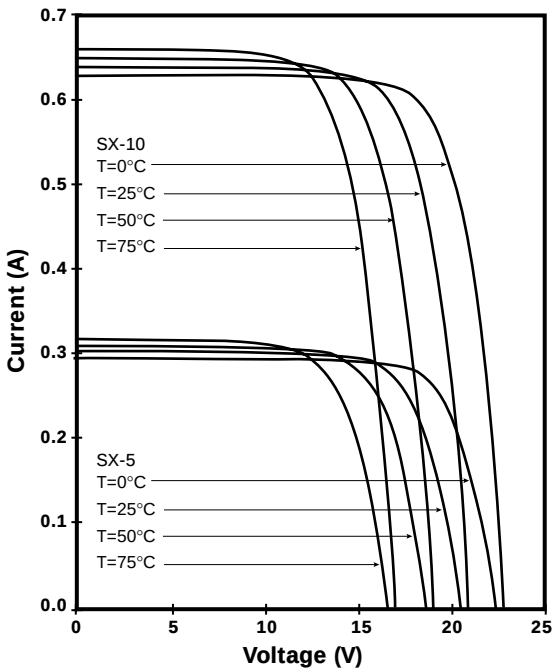
Electrical Characteristics[1]

	SX 10	SX 5
Maximum Power (P_{max})[2]	10W	4.5W
Voltage at P_{max} (V_{mp})	16.8V	16.5V
Current at P_{max} (I_{mp})	0.59A	0.27A
Warranted minimum P_{max}	9W	4W
Short-circuit current (I_{sc})	0.65A	0.3A
Open-circuit voltage (V_{oc})	21.0V	20.5V
Temperature coefficient of I_{sc}	(0.065±0.015)%/°C	
Temperature coefficient of V_{oc}	-(80±10)mV/°C	
Temperature coefficient of power	-(0.5±0.05)%/°C	
NOCT[3]	47±2ºC	

Notes

1. These data represent the performance of typical modules in 12V configuration as measured at their output, and do not include the effect of such additional equipment as diodes. 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 kW/m²(1 sun) at spectral distribution of AM 1.5 (ASTM E892 global spectral irradiance);
   - cell temperature of 25°C.
2. During the stabilization process which occurs during the first few months of deployment, module power may decrease approximately 3% from typical P_{max}.
3. 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°C, solar irradiation of 0.8 kW/m², and wind speed of 1m/s.

SX 5 and 10 I-V Curves



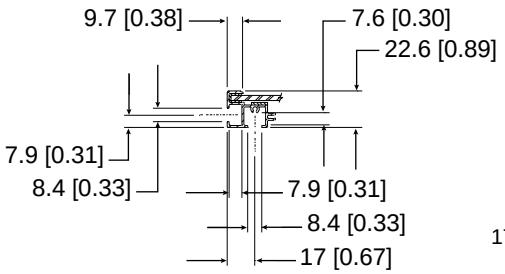
Mechanical Characteristics

Weight

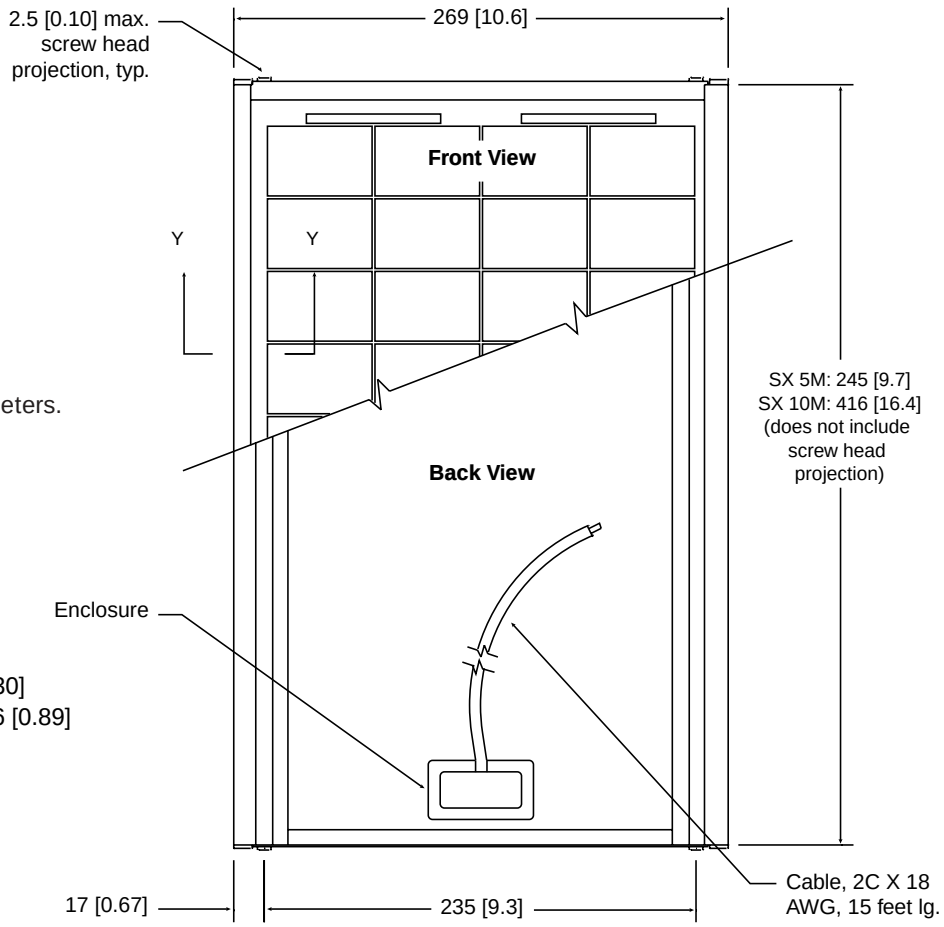
SX 10M	1.5 kg (3.3 pounds)
SX 10U	1.9 kg (4.2 pounds)
SX 5M	0.8 kg (1.7 pounds)

Dimensions

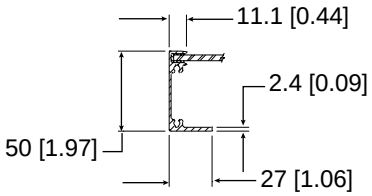
Unbracketed dimensions are in millimeters.
Bracketed dimensions are in inches.
Overall tolerances ±3mm (1/8")



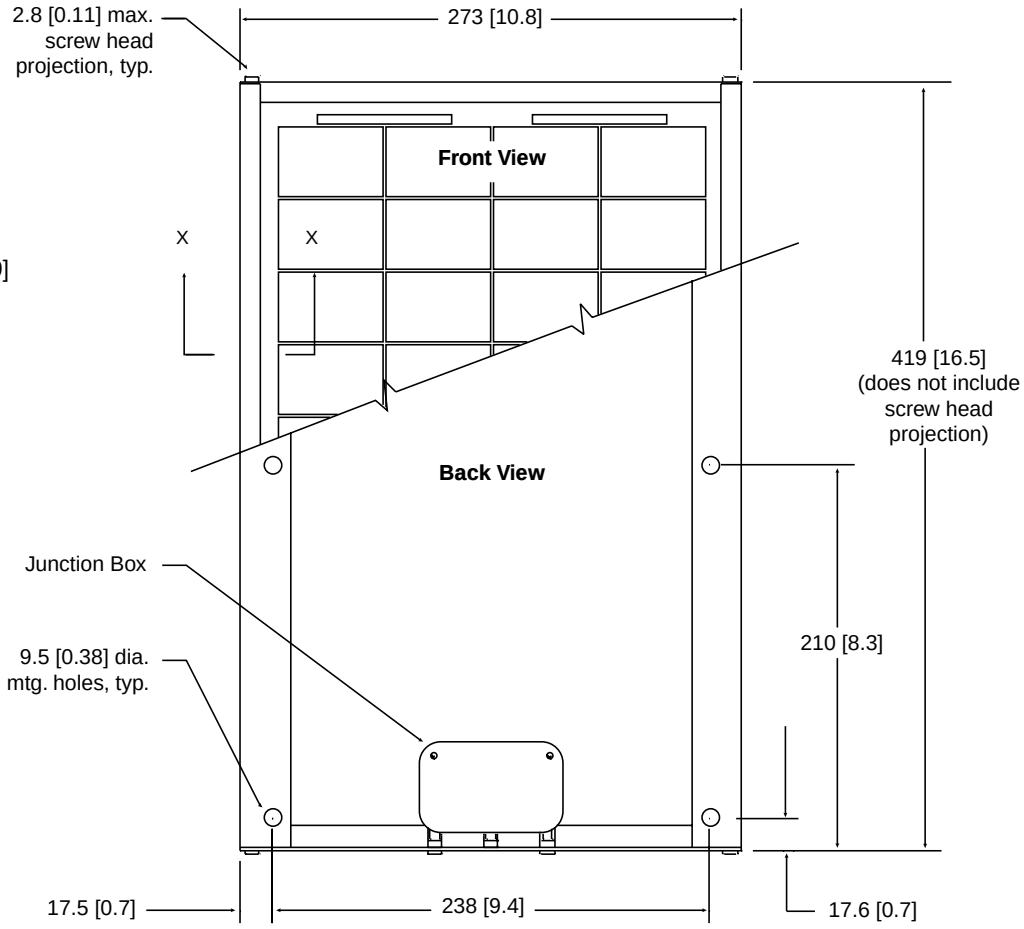
Section Y-Y



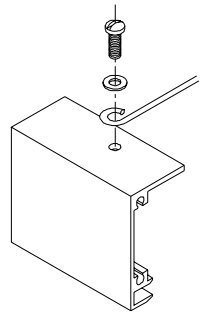
SX 5M, SX 10M



Section X-X



SX 10U



Grounding Detail

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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** or may be obtained from your local representative.

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