

BP Solar's MSX series is a premium line of PV modules with a 25-year performance warranty, tightly controlled electrical parameters, and labeling showing each module's tested electrical characteristics. Providing 120 watts of nominal maximum power, the MSX 120 is used primarily in large battery-equipped PV systems or—through an inverter—to provide AC power directly to a load. Typical applications include grid-supplemental residential and commercial systems, telecommunications, remote villages and clinics, pumping, and land-based navigation aids. Its attractive bronze-anodized frame also suits it well for architectural applications.

This product is available as a framed module or an unframed laminate, in 12V or 24V nominal configurations, with either:

- Dual high-volume junction boxes which allow on-site 12V/24V selection by rewiring (MSX 120);
- Installation-speeding DC-rated polarized connectors (MSX 120MC).

Proven Materials and Construction

BP Solar's quarter-century of field experience shows in every aspect of these module's construction and materials:

- 72 multicrystalline silicon solar cells configured as one series string or two 36-cell series strings (bypass diodes are included);
- Cells are laminated between sheets of ethylene vinyl acetate (EVA) and high-transmissivity low-iron 3mm tempered glass;
- Frame strength exceeds requirements of certifying agencies.



Weatherproof Connectors

MSX 120MC output is via heavy-duty (4mm²/AWG #12) output cables with polarized weatherproof DC-rated connectors which provide reliable low-resistance connections, eliminate wiring errors, and speed installation. Asymmetrical cables enable side-by-side or end-to-end module placement in arrays.

High-Capacity Versatile Junction Box

The junction boxes of the MSX 120 are raintight (IP54 rated) and accept PG13.5 or 1/2" nominal conduit or cable fittings. Their volume (411cc, 25 cubic inches) and 6-terminal



Bronze Anodized Universal Frame

connection blocks enable most system array connections (putting modules in series or parallel) to be made right in the boxes. Options include:

- an oversize terminal block which accepts conductors up to 25mm² (AWG #4); standard terminals accept up to 6mm² (AWG #10);
- a Solarstate™ charge regulator.

Products with junction boxes may be rewired to provide 12V or 24V output.

Limited Warranties

- Power output for 25 years;
- Freedom from defects in materials and workmanship for 5 years.

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

Individually Tested and Labeled

Each module tested and labeled with its actual output—voltage, current, and power at maximum power point (P_{max})—at Standard Test Conditions and Standard Operating Conditions.



BP MSX 120

MSX 120 laminates also qualify for the above listings and certifications; MSX 120MC laminates are UL-recognized. MSX 120 modules and laminates with junction boxes are also certified by PowerMark Corporation and approved by Factory Mutual Research for application in NEC Class 1, Division 2, Groups C & D hazardous locations.



Quality and Safety

MSX 120 and MSX 120MC modules are manufactured in our ISO 9001-certified factories, listed by Underwriter's Laboratories for electrical and fire safety (Class C fire rating), certified by TÜV Rheinland as Class II equipment, and comply 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).

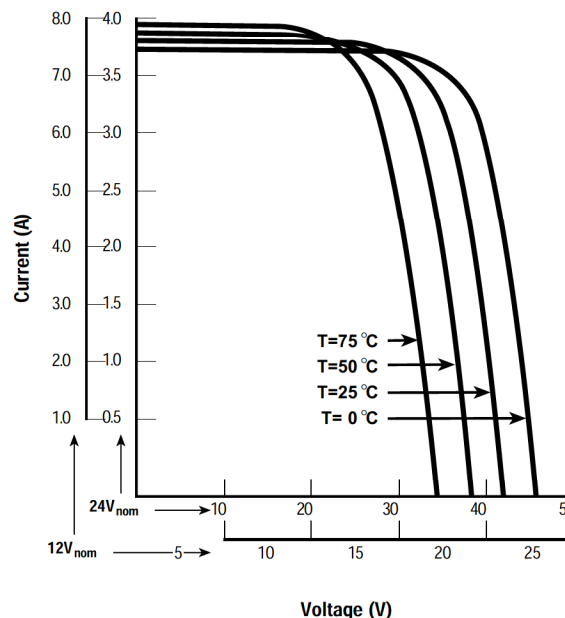
Electrical Characteristics¹

	MSX 120	MSX 110 ⁴
Maximum power ($P_{\max}$) ²	120W	110W
Voltage at $P_{\max}$ (V_{mp})	33.7V	33.6V
Current at $P_{\max}$ (I_{mp})	3.56A	3.3A
Minimum $P_{\max}$	114W	105W
Short-circuit current (I_{sc})	3.87A	3.6A
Open-circuit voltage (V_{oc})	42.1V	41.6V
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±2°C	
Maximum system voltage	600V (U.S. NEC rating) 1000V (TÜV Rheinland rating)	
Maximum series fuse rating	20A	

Notes

1. These data represent the performance of typical MSX 110 and MSX 120 products in 24V configuration. 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 1 m/s.
4. The power of solar cells varies in the normal course of production; the MSX 110 is assembled using cells of slightly lower power than the MSX 120.

MSX 120 I-V Curves



Mechanical Characteristics

Weight

MSX 120, MSX 120MC 13.0 kg (28.6 pounds)

Dimensions

Framed modules: See drawing

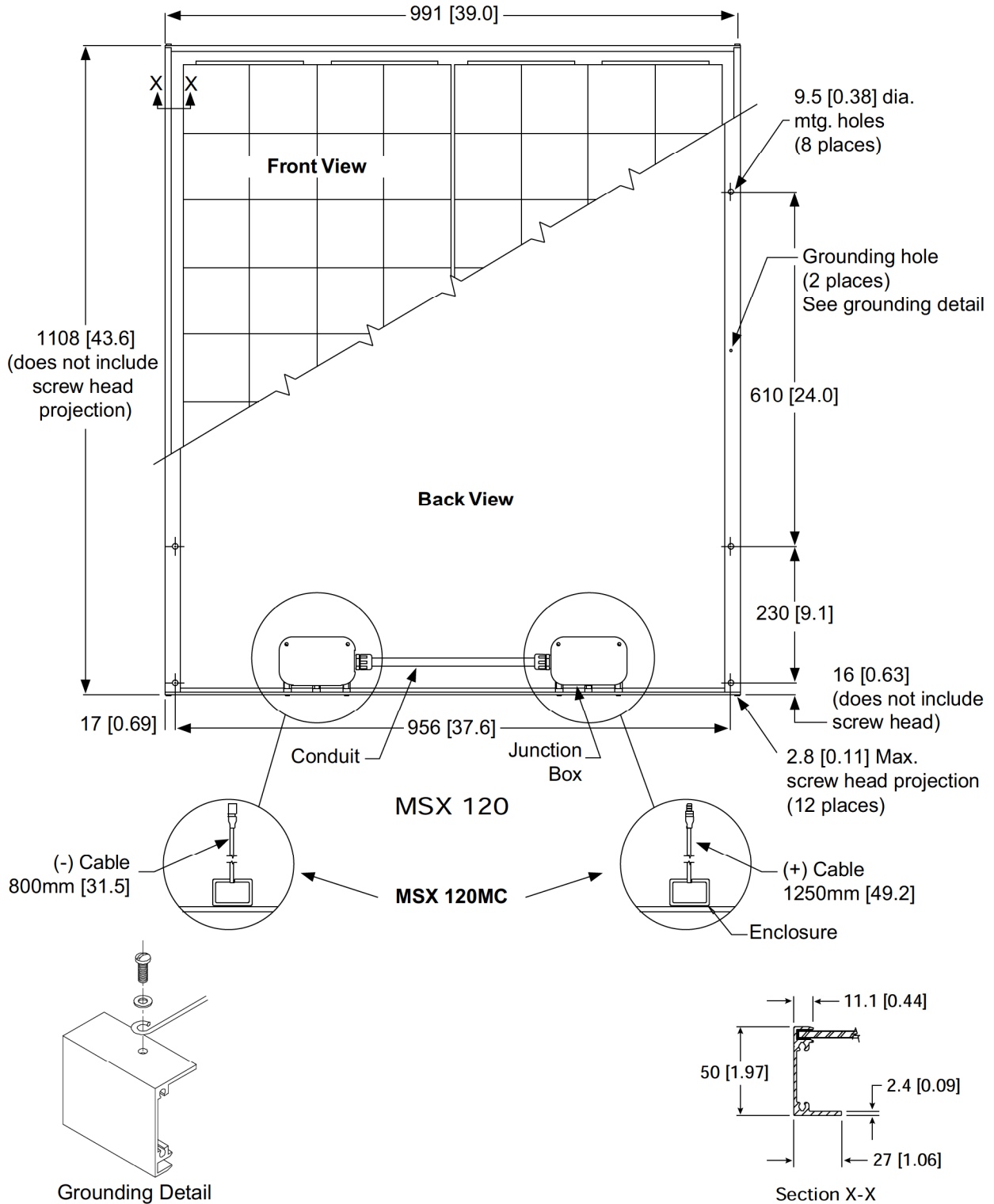
MSX 120 laminate: 1097 [43.2] x 981 [38.6] x 48 [1.9]

MSX 120MC laminate: 1097 [43.2] x 981 [38.6] x 18 [0.7]

Unbracketed dimensions are in millimeters.

Dimensions in brackets are in inches.

Overall tolerances $\pm 3\text{mm}$ (1/8")





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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