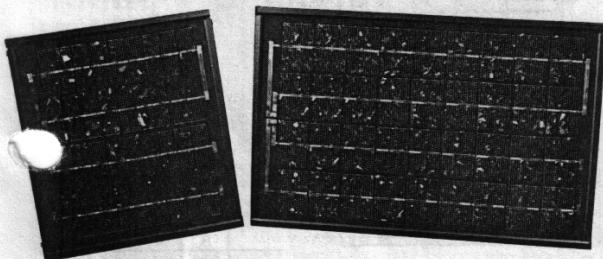


# MSX-10 & MSX-5 Photovoltaic Modules



**MEGA™** SX-10 and **MEGA** SX-5 photovoltaic modules are designed to operate DC loads with small to moderate energy requirements. Part of Solarex' **MEGA** series, the **MEGA** SX-10 and -5 generate 10 watts and 4.5 watts peak power, respectively, at Standard Test Conditions (STC). They generate sufficient voltage to charge 6V or 12V batteries efficiently in virtually any climate.



Typical commercial applications include remote telemetry, instrumentation systems, security sensors, signals, and navigation aids. They are also well-suited to small electrical jobs around the home or farm, such as powering radios and portable communications equipment.

These modules are designed primarily for use in single-module systems, but may be interconnected to provide increased current or voltage as required. They are easily mounted to a broad range of surfaces using Solarex mounting kits or user-fabricated supports.

## INDIVIDUALLY TESTED, LABELED AND WARRANTED

All photovoltaic manufacturing processes produce modules whose electrical characteristics vary slightly from one unit to another. Therefore, the electrical characteristics listed on the reverse of this sheet are those of **typical**, or production-average units.

Unlike any other manufacturer, Solarex tests each finished module in a solar simulator and labels it with its **actual** output—peak power, and voltage and current at peak power—at STC. Furthermore, each module is covered by our five-year limited warranty, which guarantees:

- that no module will generate less than its guaranteed minimum power when purchased;
- continued power (at least 90% of guaranteed minimum) for five years.

Contact Solarex' Marketing Department for full terms and limitations of this warranty.

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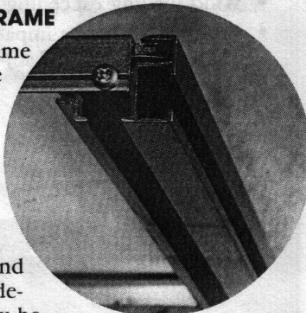
## COMPLETE AND READY FOR USE

These modules consist of 36 semicrystalline silicon solar cells configured as two series strings of 18 cells each, and are factory-wired to provide output voltages compatible with, depending on the model ordered, either 6V or 12V systems. Output is via a rugged sealed junction box with a polyethylene-jacketed output cable. The cable and junction box are virtually identical to those supplied by Solarex for U.S. Coast Guard applications, and give reliable service in extremely harsh environments.

As an option, a blocking diode—to prevent battery discharge under low-light conditions—is prewired to the output cable, allowing the module to be directly connected to a battery in certain types of systems. If the system requires regulation, Solarex' Solarstate™ regulator is recommended.

## UNIQUE MULTIMOUNT FRAME

The new Multimount™ frame is the most versatile in the industry and provides tremendous flexibility in mounting approach. Oriented parallel to the edge and the back of the module, its dual channels accept the heads of 5/16 inch or 8 mm hex bolts, and allow the module to be side- or rear-mounted. Bolts may be located anywhere along the channels, (shown here with end caps removed) which prevents them from turning during tightening and allows installation with just one wrench.



## PROVEN MATERIALS AND CONSTRUCTION

The materials used in these modules reflect Solarex' more than a decade of experience with solar modules and systems installed in virtually every climate on Earth.

- Semicrystalline silicon solar cells: efficient, attractive, stable.
- Modules are rugged and weatherproof: cell strings are laminated between sheets of ethylene vinyl acetate (EVA) and tempered glass.
- Tempered glass superstrate: self-cleaning, highly transmissive (low iron content), stable, impact-resistant.
- Framed with corrosion-resistant, bronze-anodized extruded aluminum: strong, attractive framing compatible with Solarex mounting hardware and many other mounting approaches.

## SAFETY APPROVED

These modules have been approved by Factory Mutual Research for application in NEC Class 1, Division 2, Group D hazardous locations.



## OPTIONS

- Protective aluminum backplate (MSX-10 only)
- Mounting hardware kits
- Blocking diode

## RELIABILITY AND ENVIRONMENTAL SPECIFICATIONS

These modules are subjected to intense quality control during manufacture and rigorous testing before shipment. They meet or exceed JPL Block V test criteria, including the following tests, with no performance degradation:

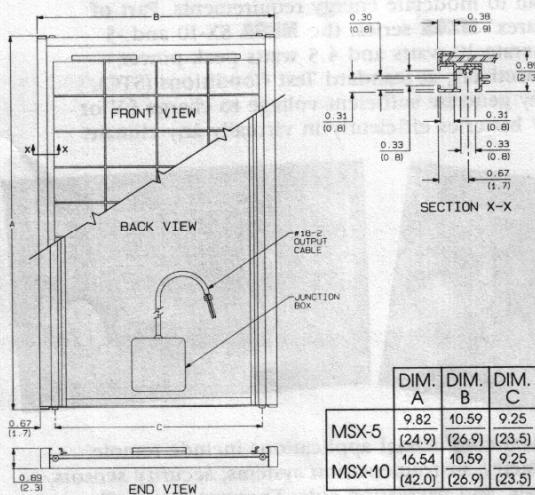
- Repetitive cycling between  $-40^{\circ}\text{C}$  and  $90^{\circ}\text{C}$ ;
- Repetitive cycling between  $-40^{\circ}\text{C}$  and  $85^{\circ}\text{C}$  at 85% relative humidity;
- Wind loading exceeding 125 mph;
- Surface withstands impact of one-inch hail at terminal velocity (52 mph) without breakage.

## MECHANICAL CHARACTERISTICS

**Output cable:** 15 feet long, AWG 18-2, polyethylene jacketed

**Weight:** MSX-10 3.3 pounds (1.5 kg)  
MSX-5 1.7 pounds (0.77 kg)

**Dimensions:** Dimensions in brackets are in centimeters  
Unbracketed dimensions are in inches



## TYPICAL ELECTRICAL CHARACTERISTICS<sup>1</sup>

### 12-VOLT CONFIGURATION<sup>2</sup>

	MSX-10	MSX-5
Typical peak power ( $P_{\text{p}}$ )	10W	4.5W
Voltage @ peak power ( $V_{\text{pp}}$ )	17.5V	17.5V
Current @ peak power ( $I_{\text{pp}}$ )	0.57A	0.26A
Guaranteed minimum peak power	9W	4W
Short-circuit current ( $I_{\text{sc}}$ )	0.6A	0.28A
Open-circuit voltage ( $V_{\text{oc}}$ )	21.4V	21.4V
Temperature coefficient of current	0.5 mA/ $^{\circ}\text{C}$	0.275 mA/ $^{\circ}\text{C}$
Approximate effect of temperature on power	$-0.37\%/\text{ }^{\circ}\text{C}$	$-0.37\%/\text{ }^{\circ}\text{C}$
Temperature coefficient of voltage	..... $-72 \text{ mV}/^{\circ}\text{C}$ .....	..... $-72 \text{ mV}/^{\circ}\text{C}$ .....
NOCT	45°C	45°C

### NOTES:

<sup>1</sup> These data represent the performance of typical modules as measured at their output terminals, and do not include the effect of such additional equipment as diodes and cabling. The data are based on measurements made at Standard Test Conditions (STC), which are:

- Illumination of  $1 \text{ kW/m}^2$  (1 sun) at spectral distribution of AM 1.5
- Cell temperature of  $25^{\circ}\text{C}$  or as otherwise specified (on curves).

<sup>2</sup> Electrical characteristics of modules wired in the nominal 6V configuration may be found by using the 6V scales on the I-V curves. For more exact values, divide the 12V voltage characteristics in the table by 2 and multiply the 12V current characteristics by 2. Power values are unchanged.

### I-V Characteristics

