

## Mitsubishi Electric Introduces High-Output Solar Panels for Major Overseas Markets

### *Larger output reduces total system cost for end users*

**London, September 10, 2009** – Mitsubishi Electric Corporation (TOKYO: 6503) announced today the launch of ten new models of photovoltaic (PV) modules – five for the European market and five for North America and Asia. The new lineup comprises modules with outputs of 210, 220, 225, 230 and 235 watts. Shipments will begin on January 15, 2010.

The new high-output modules use lead-free solder and incorporate PV cells with four bus bars. Using the new cells in combination with an increased module size achieves a power output of up to 235 watts per module. Larger output means that fewer modules are needed to build a system, helping to reduce total system cost.

The new models will be on display at the 24<sup>th</sup> European Photovoltaic Solar Energy Conference and Exhibition starting September 21, 2009 in Hamburg, Germany, and also at Solar Power International 2009 on October 27, 2009 in Anaheim, California, USA.

### **Product Overview**

Product	Representative model	Cell type	Maximum power rating	Module efficiency	Price	Shipping date
High-Output Lead-free Solder Photovoltaic Module	PV-TJ235GA6 (for Europe)	Polycrystalline silicon	235W	14.3%	Quoted upon consultation	January 15, 2010
	PV-UJ235GA6 (for North America /Asia)	Polycrystalline silicon	235W	14.3%	Quoted upon consultation	January 15, 2010

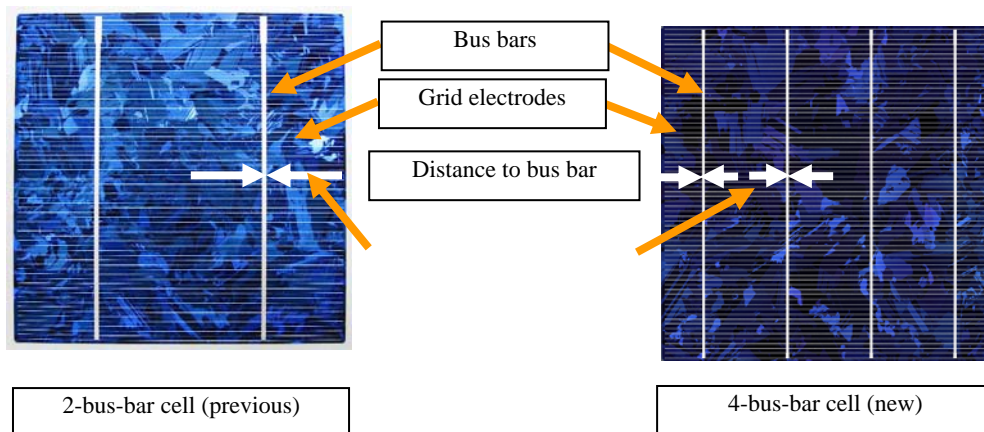
### **Background**

The global PV systems market has been rapidly expanding due to increasing environmental concerns, as demonstrated by worldwide efforts to reduce carbon dioxide emissions to prevent global warming. This is especially the case in Europe, where many countries have adopted a Feed-in Tariff system, and in the United States, which has recently seen an expansion in government subsidies, and where there are many large PV plants built mainly for the purpose of receiving returns on investments. As a result of these global developments, there is a growing demand for PV modules with higher output.

### **Main Features**

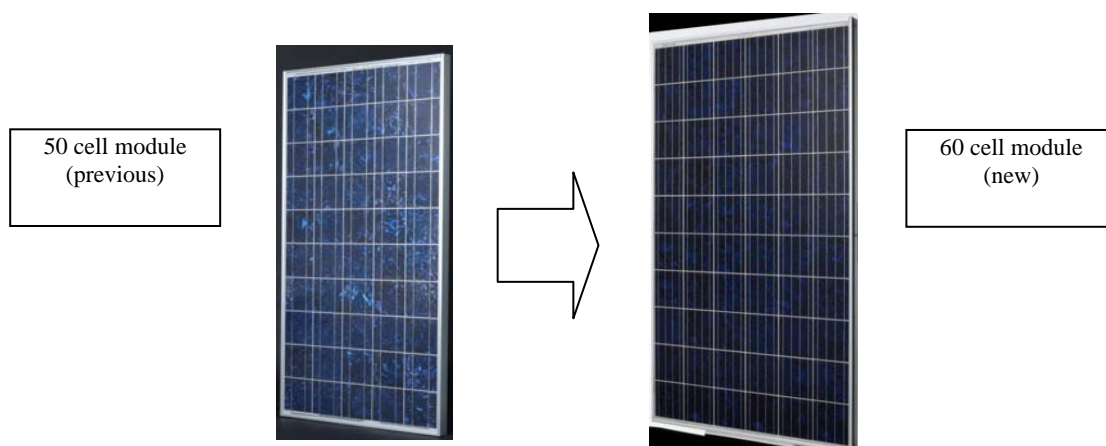
#### **1) Use of four bus bars increases output from each PV cell**

By increasing the number of bus bars from two to four, the internal resistance in each PV cell has been reduced, increasing individual cell output by 3 percent compared to those used in Mitsubishi Electric's previous models. To use four bus bars, however, each bus bar needs to be narrowed so that the cell can collect enough sunlight, which makes it difficult to connect each cell in the interconnecting wire soldering process with automated equipment. Mitsubishi Electric has overcome this difficulty by developing a high-quality graphic sensing technology that increases the accuracy in cell alignment.



### **2) Larger module size delivers greater module output**

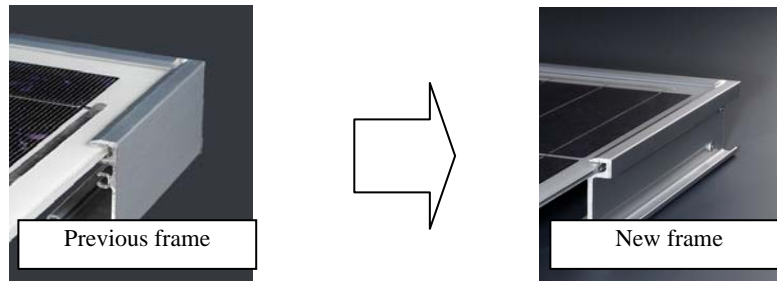
By increasing the number of cells used in each module from 50 to 60 in addition to the use of four-bus-bar cells, module output power increased by up to 24 percent per module compared to Mitsubishi Electric's 190-watt module. As a result, the number of modules needed to build a system can be reduced, saving on installation parts and labour costs.



### **3) Optimised frame design withstands a load of 5400Pa based on IEC static load test**

The newly designed frame can endure force of approximately double that of Mitsubishi Electric's previous models. Even with their larger size, the new models have passed the IEC static load test of 5400Pa, which is

a standard for PV module performance established by the International Electrotechnical Commission. The new frame has also been designed to facilitate a wider variation of installation methods.



#### 4) 4-layer junction box

Mitsubishi Electric has developed a 4-layer junction box based on the company's current triple-layer junction box design, increasing the module's overall safety and reliability. UL V-0 certified potting material, a metal barrier cover, and a plastic resin cover were used to cover the electrified area inside the junction box. In the new design, a 4th layer, an extremely heat-resistant and flame-retardant sheet, was added to the inside of the metal cover.



#### 5) 100% lead-free solder

Like previous Mitsubishi Electric PV modules, the new models continue to use only 100-percent lead-free solder, which has less environmental impact than traditional PV modules.

### Main Specifications

Product		High Power Output Lead-free Solder Photovoltaic Module				
Model	Europe model	PV-TJ 235GA6	PV-TJ 230GA6	PV-TJ 225GA6	PV-TJ 220GA6	PV-TJ 210GA6
	North America /Asia model	PV-UJ 235GA6	PV-UJ 230GA6	PV-UJ 225GA6	PV-UJ 220GA6	PV-UJ 210GA6
Cell type		Polycrystalline Silicon				
Number of cells		60 (10 x 6)				
Maximum power rating [Pmax]		235W	230W	225W	220W	210W
Tolerance of max. power rating		+/-3%				

Maximum power voltage (Vmp)	30.5V	30.2V	30.0V	29.7V	29.2V
Maximum power current (Imp)	7.71A	7.62A	7.50A	7.39A	7.19A
Maximum system voltage	Europe Model: 1,000V North America/Asia Model: 600V				
Weight	20.0kg				
Dimensions	1,658 x 994 x 46mm				
Module conversion efficiency	14.3%	14.0%	13.7%	13.3%	12.7%
Certifications	Europe Model: IEC 61215 Second Edition, IEC 61730 (Pending) North America /Asia Model: IEC 61215 Second Edition, IEC 61730, UL 1703 (Pending)				

Ends

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#### **About Mitsubishi Electric**

With over 80 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. The company recorded consolidated group sales of 3,665.1 billion yen (US\$ 37.4 billion\*) in the fiscal year ended March 31, 2009. For more information visit <http://global.mitsubishielectric.com>

\*At an exchange rate of 98 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2009.