

Light-weight Solar Cell Module, Hane[®] Module



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[1. Introduction]

Initiatives to make a shift of power consumed by businesses to renewable energy such as Renewable Energy 100% (RE100) have been active worldwide. Also in Japan, the efforts to consume the electricity produced by photovoltaic power generation in-house have been spread across the country, as an environmental measure or to secure electricity for disasters and power failure or reduce cost for purchasing energy. Toyo Aluminium developed and released a light-weight solar cell module, Hane[®] Module to respond to such needs from the market in spring of 2018.

[2. Hane[®] Module]

Hane[®] Module is of compact design with 48 monocrystal silicon cells, an area of about 1.32 m². Its thickness was reduced by the proprietary technology of Toyo Aluminium, achieving the light weight (6 kg/m²) that is about half the weight of an existing crystal-based module. In addition to reduction in thickness and weight, the module also achieves high power of 230 to 240 W per piece. What is expected from the characteristics of reduced weight and thickness of this module is the advantage that the module is easy to install onto the roofs of plants and warehouses and the walls of buildings and large facilities where it was difficult to install solar cell modules because of their load bearing capacities. As shown in Fig. 1, we also developed frames dedicated for corrugated roofs and so suggest provision and sales of a module and frame as a package.



Fig. 1 Installation of the module onto corrugated roof

Hane[®] Module passed the performance and safety tests conducted by the German certification authority VDE in accordance with IEC 61215 and 61730: 2016 and granted the module certification. The product is designed to have excellent fire-proofing and load bearing performance to endure severe environmental conditions such as strong wind or snow so that the safe and reliable use of the product can be ensured.

[3. ENESTAND^{TM*}]

As one of applications, we developed and launched the car port ENESTANDTM equipped with Hane[®] Module as shown in Fig. 2 in coordination with Sky Japan Co., Ltd. The light-weight and thin module enables the design of a structure with only two cantilever columns, allowing the product to feature the stylish appearance that has never seen before. The product can be installed in a location with a limited space and it is thus expected to use it for wide range of applications such as parking lots, bicycle parking areas, promenades, public squares, and bus stops.

(* ENESTANDTM is a registered trademark of Sky Japan Co.,Ltd.)



Fig. 2 Example of installation of ENESTAND™

[4. Conclusion]

This report introduces the characteristics of the light-weight solar cell module, Hane® Module. We work on developing products featuring not only light weight and high output power but also ensuring reliable and safe use. We aim to contribute to the environmental society by continuously developing and offering products and services to meet new market needs, including in-house consumption of energy produced by photovoltaic power generation.

List of Hane® Module specifications

Model	TYM230HANE-G
Nominal maximum output Pmax	230.0 W
Nominal maximum output power voltage Vpm	25.9 V
Nominal maximum output power current Ipm	9.13 A
Nominal open-circuit voltage Voc	32.1 V
Short-circuit current Isc	9.77 A
Module conversion efficiency Eff	17.4%
Operating temperature range	-40 °C - +85 °C
Maximum system voltage	1000 VDC
Maximum fuse rating	20 A
Output tolerance	0 - +3%
Module unit weight	8 kg
Outer dimensions (width*length*height)	994×1327×26 mm
Cell type	Monocrystal PERC, 6 inch
Cell size	156.75×156.75 mm
Number of cells	48 pcs (6×8)
Connector	MC-4
Cable	TUV, 4 mm ² , 12AVG, 1 m long
JBOX	IP67-rated
Front material	Highly permeable/antireflective surface coating/tempered glass
Back material	White back board
Frame	Black rubber frame

* The indicated figures are those obtained under the standard testing conditions specified in JIS C 8918 including: air mass (AM) 1.5, irradiance of 1000 W/m², and cell temperature of 25°C.