

# Renewable Energy: Photovoltaic Modules



## Ekarat Solar : Compact designed 40Watts Crystalline Silicon PV modules

Ekarat Solar's compact 40 Watts PV module is produced under a stage of the art automatic assembly machines to ensure a consistency and reliability of production quality. The compact PV module is commonly used for wide range applications such as Battery charger, Street Lamppost, Garden Lamppost, Security Lighting, Electric fence charging, Telecommunications, Traffic control signals.

High efficiency module, more than 12%, is a result of solar cell's superior power output, which has been developed by our own solar cell factory. More over other component materials are also selected to comply with international standards such as IEC and TISI. These create a customer's confidence ensured with a manufacturing based 20 years limited warranty.



- Choice of Low iron tempered glass, which allows a high light transmission rate with a great robustness or Normal glass for economical application.
- EVA encapsulate sheet, back-sheet, and clear anodized aluminum frame are technically equipped to protect the module against all weather condition.
- Junction box with IP65 to ensure water proof and prolong lifetime operation.
- Special cable with connectors is offered as option for easy interconnection.

## Electrical Characteristics

Model No.	ES2040
Maximum power (Pmax)	40 W
Power tolerance	± 3%
Voltage of Pmax (Vmp)	5.67 V / 18.18 V
Current at Pmax (Imp)	1.70 A / 2.23 A
Short - Circuit current (Isc)	7.62 A / 2.35 A
Open - Circuit voltage (Voc)	7.35 V / 22.17 V
Temperature Coefficient of Voc	- 0.0816 V / °C
Temperature Coefficient of Isc	+ 1.6 mA / °C
Temperature Coefficient of power	- 0.3750 % / °C
Maximum series fuse rating	15 A
Maximum voltage system	1000 V

These data represent the performance of typical modules as measured at their out put terminals, and do not include the effect of such additional equipment as diodes or cables. The data are based on measurements made in accordance with ASTM E1036-85 corrected to SRC (Standard Reporting Conditions, also known as STC or Standard Test Conditions), which are:

- Illumination of  $1\text{kW/m}^2$  (1sun) at spectral distribution of AM1.5 (ASTME892-87 global spectral irradiance);
- Cell temperature of 25°C.

## CONTACT US: Ekarat Solar Co., Ltd.

9/291 U.M. Tower 28th Fl., Ramkhamhaeng Rd., Suanluang, Bangkok 10250 Thailand

Tel. +66 2 719 8777

e-mail info@ekarat-solar.com

Fax. +66 2 719 8760

Web site www.ekarat-solar.com

Specifications subject to technical changes

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## Mechanical Characteristics

<b>Dimension</b>	661x 428 x 38 mm.
<b>Weight</b>	3 kg.
<b>Dimension tolerance</b>	± 1 mm.
<b>Size of carton</b>	1510 x 670 x 90 mm.
<b>Junction Box</b>	Degree of protection: IP65 and compatibility with 2.5 - 4.0 mm cross section cable size.
<b>Diode</b>	Silicon or Schottky By - pass diode for every 18 cells connection.
<b>Frame</b>	Anodized Aluminum.
<b>Construction structure</b>	Front: High light transmission tempered glass with 3.20 mm thickness; Back: Weather proof back sheet material. Laminated Material: EVA.
<b>Package</b>	2 modules per carton.

## Qualification and testing

ISO 9001 for qualify management system.

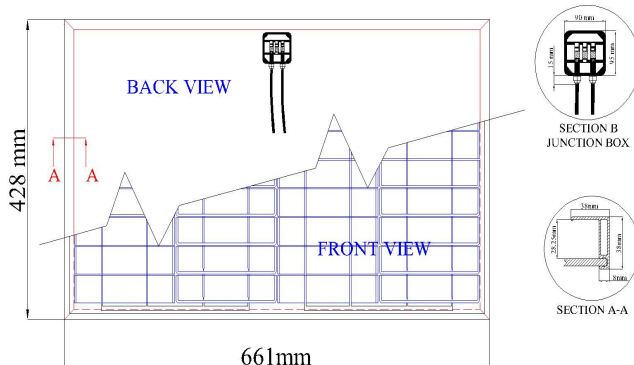
IEC 61215\* : The designed module is complied and tested according to IEC standard.

Safety Class II\* : To ensure a safety for users and installing operator of our products.

TIS 1843 : Thailand Industrial Standard equivalents to IEC 61215.

\* The prototype module (of the same production line) have been submitted for testing procedures of IEC 61215 and Safety Class II approved by TÜV institution.

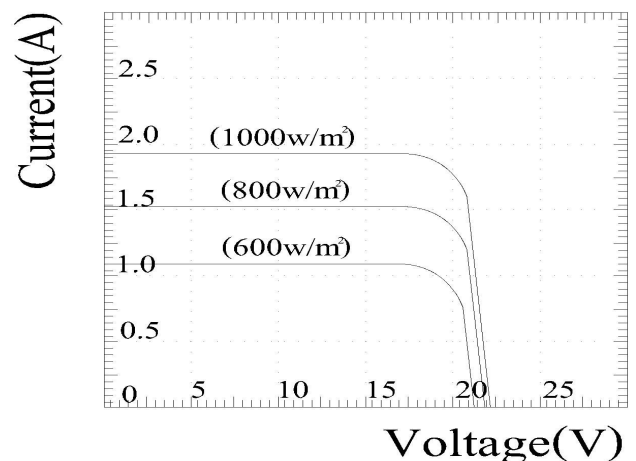
## Module drawing diagram



## IV - curves

### Irradiance

(1,000 W/m<sup>2</sup>, 800 W/m<sup>2</sup>, and 600 W/m<sup>2</sup>)



Model: 40 W

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