

# Hyundai Solar Modu | MG-Series |

## ◆ Multi-crystalline Type

HiS-M223MG | HiS-M225MG | HiS-M228MG | HiS-M  
 HiS-M233MG | HiS-M235MG | HiS-M238MG

## ◆ Mono-crystalline Type

HiS-S235MG | HiS-S238MG | HiS-S240MG | HiS-S243  
 HiS-S245MG | HiS-S248MG | HiS-S250MG



## Mechanical Characteristics

Dimensions	983 mm (38.7" ) (W) × 1645 mm (64.76" ) (L) × 35 mm
Weight	Approx. 19.0 kg (41.9 lbs)
Solar cells	60 cells in series (6×10 matrix)
Output cables	4 mm <sup>2</sup> (12AWG) cables with polarized weatherproof connectors, IEC certified, Length 1.0 m (39.4" )
Junction box	IP65, weatherproof, IEC certified
Bypass diodes	3 bypass diodes to prevent power decrease by partial shade
Construction	Front : High transmission low-iron tempered glass, 3.2 mm (0.126" )
Frame	Clear anodized aluminum alloy type 6063

## High Quality

- ◆ IEC 61215(Ed.2) and IEC 61730 by TÜV Rheinland
- ◆ Output power tolerance +3/-0%
- ◆ ISO 9001:2000 and ISO 14001:2004 Certified
- ◆ Advanced Mechanical Test (5,400 Pa) Passed (IEC)

## Limited Warranty

- ◆ 5 years for product defect
- ◆ 10 years for 90% of warranted min. power
- ◆ 25 years for 80% of warranted min. power

## Fast and Inexpensive Mounting

- ◆ Delivered ready for connection
- ◆ Pre-confectioned cables
- ◆ IEC certified and weatherproof connectors
- ◆ Integrated bypass diodes



◆ Qualified, IEC61215  
 IEC 61730  
 ◆ Periodic inspection



## ※ Important Notice on Warranty

The warranties apply only to the PV modules with Hyundai Heavy Industries Co., Ltd.'s logo (shown below) and product serial number on it.

# Electrical Characteristics

## | Multi-crystalline Type |

		HiS-M ◆◆◆ MG						
		223	225	228	230	233	235	238
Nominal output (Pmpp)	W	223	225	228	230	233	235	238
Voltage at Pmax (Vmpp)	V	30.0	30.0	30.0	30.1	30.3	30.3	30.4
Current at Pmax (Impp)	A	7.4	7.5	7.6	7.7	7.7	7.8	7.8
Open circuit voltage (Voc)	V	36.8	37.1	37.1	37.1	37.3	37.4	37.4
Short circuit current (Isc)	A	8.0	8.2	8.2	8.2	8.2	8.3	8.3
Output tolerance	%	+3/-0						
No. of cells & connections	pcs	60 in series						
Cell type	-	6" Multi-crystalline silicon						
Module efficiency	%	13.8	13.9	14.1	14.2	14.4	14.5	14.7
Temperature coefficient of Pmpp	%/K	-0.43	-0.43	-0.43	-0.43	-0.43	-0.43	-0.43
Temperature coefficient of Voc	%/K	-0.32	-0.32	-0.32	-0.32	-0.32	-0.32	-0.32
Temperature coefficient of Isc	%/K	0.056	0.056	0.056	0.056	0.056	0.056	0.056

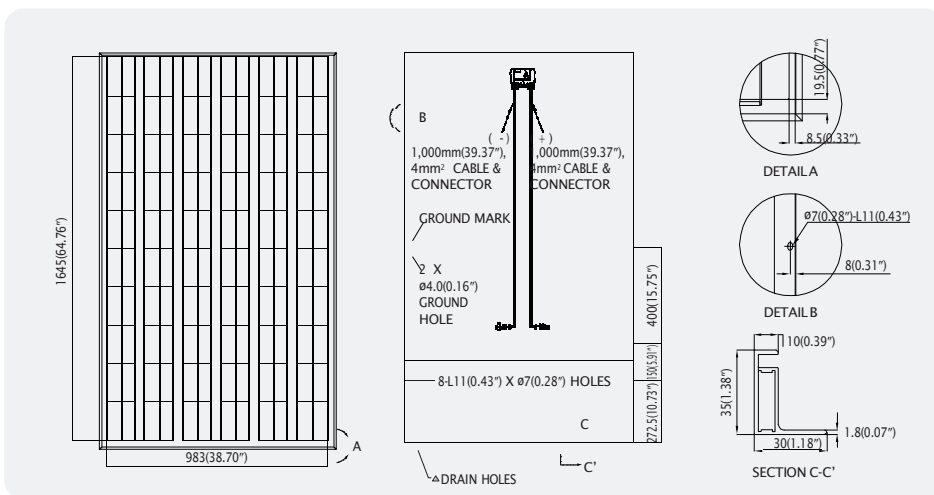
※ All data at STC (Standard Test Conditions). Above data may be changed without prior notice.

## | Mono-crystalline Type |

		HiS-S ◆◆◆ MG						
		235	238	240	243	245	248	250
Nominal output (Pmpp)	W	235	238	240	243	245	248	250
Voltage at Pmax (Vmpp)	V	29.8	29.8	30.1	30.1	30.3	30.3	30.5
Current at Pmax (Impp)	A	7.9	8.0	8.0	8.1	8.1	8.2	8.2
Open circuit voltage (Voc)	V	37.0	37.0	37.3	37.3	37.4	37.5	37.5
Short circuit current (Isc)	A	8.4	8.5	8.5	8.6	8.6	8.7	8.7
Output tolerance	%	+3/-0						
No. of cells & connections	pcs	60 in series						
Cell type	-	6" Mono-crystalline silicon						
Module efficiency	%	14.5	14.7	14.8	15.0	15.2	15.3	15.5
Temperature coefficient of Pmpp	%/K	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44
Temperature coefficient of Voc	%/K	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34
Temperature coefficient of Isc	%/K	0.052	0.052	0.052	0.052	0.052	0.052	0.052

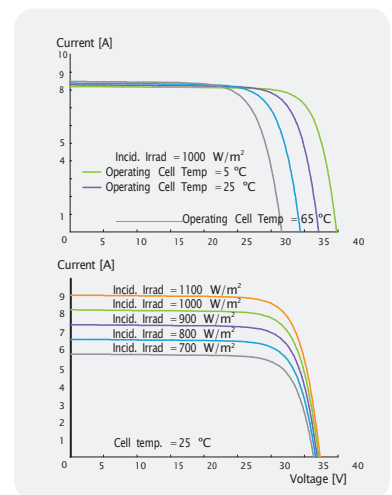
※ All data at STC (Standard Test Conditions). Above data may be changed without prior notice.

## | Module Diagram |



(unit : mm, inch)

## | I-V Curves |



## | Installation Safety Guide |

- Only qualified personnel should install or perform maintenance.
- Be aware of dangerous high DC voltage.
- Do not damage or scratch the rear surface of the module.
- Do not handle or install modules when they are wet.

Nominal Operating Cell Temperature	46 °C ± 2
Operating Temperature	-40 - 85 °C
Maximum System Voltage	DC 1,000 V (IEC)
Maximum Reverse Current	15 A

