

# Hyundai Solar Module | MF-Series |

- **Multi-crystalline Type**

HiS-M200MF | HiS-M203MF | HiS-M205MF | HiS-M208MF  
 HiS-M210MF | HiS-M213MF | HiS-M215MF

- **Mono-crystalline Type**

HiS-S213MF | HiS-S215MF | HiS-S218MF | HiS-S220MF  
 HiS-S223MF | HiS-S225MF | HiS-S228MF



## Mechanical Characteristics

Dimensions	983 mm (38.7") (W) × 1476 mm (58.11") (L) × 35 mm (1.38") (H)
Weight	Approx. 17.0 kg (37.5 lbs)
Solar cells	54 cells in series (6×9 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") Encapsulant : EVA      Back Sheet : Weatherproof film
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, IEC 61215  
 • Safety tested, 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

## I Multi-crystalline Type I

		HiS-M MF						
		200	203	205	208	210	213	215
Nominal output (Pmpp)	W	200	203	205	208	210	213	215
Voltage at Pmax (Vmpp)	V	26.9	27.1	27.1	27.1	27.3	27.4	27.6
Current at Pmax (Impp)	A	7.5	7.5	7.6	7.7	7.7	7.8	7.8
Open circuit voltage (Voc)	V	32.8	33.0	33.1	33.2	33.3	33.5	33.6
Short circuit current (Isc)	A	8.0	8.1	8.1	8.2	8.2	8.3	8.3
Output tolerance	%	+3/-0						
No. of cells & connections	pcs	54 in series						
Cell type	-	6" Multi-crystalline silicon						
Module efficiency	%	13.8	14.0	14.1	14.3	14.5	14.7	14.8
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

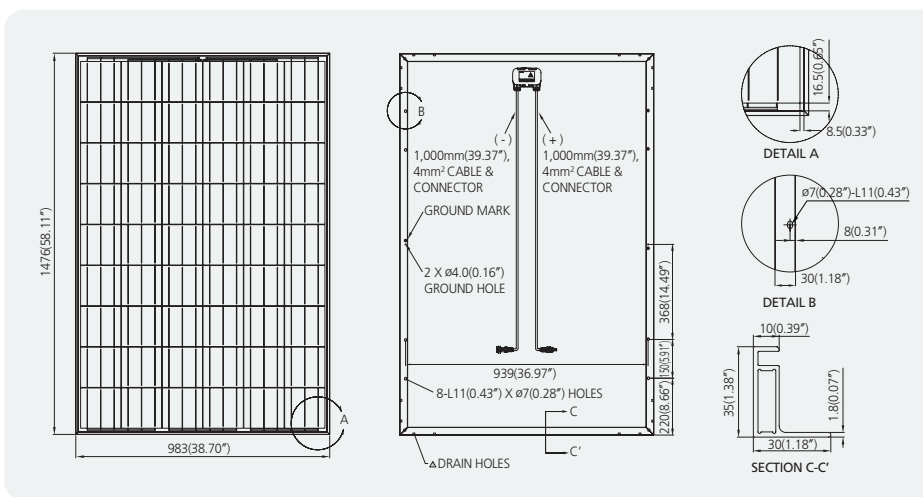
※ All data at STC (Standard Test Conditions). Above data may be changed without prior notice.

## I Mono-crystalline Type I

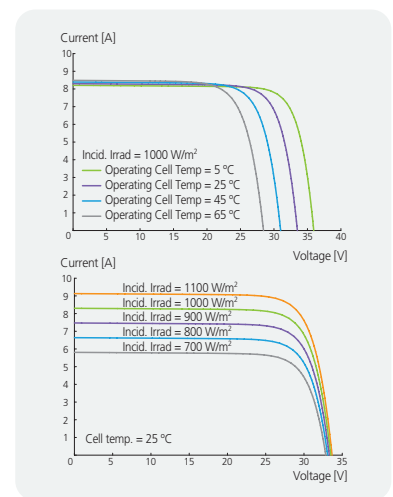
		HiS-S MF						
		213	215	218	220	223	225	228
Nominal output (Pmpp)	W	213	215	218	220	223	225	228
Voltage at Pmax (Vmpp)	V	27.0	27.3	27.6	27.6	27.6	27.8	27.9
Current at Pmax (Impp)	A	7.9	7.9	7.9	8.0	8.1	8.1	8.2
Open circuit voltage (Voc)	V	33.4	33.5	33.6	33.6	33.7	33.7	33.8
Short circuit current (Isc)	A	8.4	8.4	8.4	8.5	8.5	8.6	8.7
Output tolerance	%	+3/-0						
No. of cells & connections	pcs	54 in series						
Cell type	-	6" Mono-crystalline silicon						
Module efficiency	%	14.7	14.8	15.0	15.2	15.4	15.5	15.7
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.

## I Module Diagram I



## I I-V Curves I



## I Installation Safety Guide I

- 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

