MS-M50

50W Monocrystalline Photovoltaic Module | 12V System

MS-M50 is a high-efficiency monocrystalline photovoltaic module designed for 12V battery charging applications. Manufactured with Grade A monocrystalline silicon cells and advanced encapsulation technology, the MS-M50 delivers stable performance under a wide range of environmental conditions.

Its compact size (670 × 400 × 25 mm) and lightweight aluminum frame make it ideal for portable applications, off-grid systems, RVs, marine use, security devices, and small-scale residential installations. The robust construction and IP65-rated junction box ensure long-term reliability in outdoor environments, while the pre-drilled mounting holes allow quick and easy installation on various surfaces.





KEY FEATURES

Maximum Power	**50 W**
Cell Type	**Monocrystalline**
System Voltage	**12 V**
Efficiency	**~18.6%**
Warranty	**5 years product / 25 years power**

PRODUCT FEATURES

- High-efficiency Grade A monocrystalline silicon cells
- Excellent low-light performance and weak-light response
- Anti-reflective tempered glass with high light transmission
- Anodized aluminum frame for corrosion resistance
- IP65-rated junction box with bypass diodes
- Robust EVA encapsulation for long-term durability
- Wide operating temperature range (-40°C to +85°C)
- Pre-drilled mounting holes for easy installation

APPLICATIONS

- Battery charging for 12V systems
- RVs, motorhomes, caravans and boats
- Off-grid rural and remote installations
- Garden lighting and electric fences
- Security cameras and CCTV systems
- Telemetry, GPS trackers and IoT devices
- Small water pumps and aeration systems
- Educational and DIY solar projects

ELECTRICAL CHARACTERISTICS (STC)

Parameter	Symbol	Value	Unit
Maximum Power	*Pmax*	**50**	W
Maximum Power Voltage	*Vmp*	**17.8 – 18.0**	V
Maximum Power Current	*Imp*	**2.78 – 2.81**	A
Open Circuit Voltage	*Voc*	**21.6 – 22.0**	V
Short Circuit Current	*Isc*	**3.00 – 3.10**	A
Module Efficiency	η	≈ **18.6**	%
Power Tolerance	—	**± 3**	%
Maximum System Voltage	*Vmax*	**600**	V DC

TEMPERATURE COEFFICIENTS	
Coeff. of Pmax	**–0.41 %/°C**
Coeff. of Voc	**–0.31 %/°C**
Coeff. of Isc	**+0.05 %/°C**
NOCT	**45 ± 2 °C**

OPERATING CONDITIONS	
Operating Temp.	**-40°C to +85°C**
Storage Temp.	**-40°C to +85°C**
Relative Humidity	**0 – 100%**
Max. Snow Load	**5400 Pa**

MECHANICAL CHARACTERISTICS

Dimensions (L × W × H)	**670 × 400 × 25 mm**
Weight	≈ **3.7 kg**
Number of Cells	**36 (4 × 9)**
Cell Type	**Monocrystalline silicon**
Front Glass	**Tempered, anti-reflective, high transmission**
Frame	**Anodized aluminum alloy**
Encapsulant	**EVA (Ethylene Vinyl Acetate)**
Back Sheet	**TPT / Composite film, UV-resistant**
Junction Box	**IP65 with bypass diodes**
Output Cables	**4 mm² PV cable with MC4-compatible connectors**

WARRANTY

5 years limited product warranty against manufacturing defects.

10 years performance warranty: ≥ 90% of nominal power output.

25 years performance warranty: ≥ 80% of nominal power output.

CERTIFICATIONS

- IEC 61215 — Crystalline silicon PV modules
- IEC 61730 — PV module safety qualification
- CE — European conformity
- RoHS — Restriction of hazardous substances
- ISO 9001 — Quality management
- ISO 14001 — Environmental management

Standard Test Conditions (STC): *Irradiance 1000 W/m², cell temperature 25°C, AM 1.5 spectrum. Electrical specifications may vary by ± 3% from the values shown. Values measured under controlled laboratory conditions; field performance may vary based on installation, orientation, irradiance and ambient conditions.*

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