Solar Panel Technical Specifications

Overview

This document provides comprehensive technical specifications for the SolarMax Pro 400W photovoltaic modules designed for commercial and residential applications. These high-efficiency monocrystalline silicon solar panels are engineered to deliver optimal performance under various environmental conditions.

Electrical Characteristics (STC)

Parameter	Value	Unit	Tolerance
Maximum Power (Pmax)	400	W	±3%
Maximum Power Voltage (Vmp)	31.2	V	±3%
Maximum Power Current (Imp)	12.82	A	±3%
Open Circuit Voltage (Voc)	37.8	V	±3%
Short Circuit Current (Isc)	13.56	A	±3%
Module Efficiency	20.4	%	±0.3%
Power Temperature Coefficient	-0.35	%/°C	±0.05%
Voltage Temperature Coefficient	-0.28	%/°C	±0.05%
Current Temperature Coefficient	+0.048	%/°C	±0.01%

Mechanical Specifications

Dimensions (L×W×H)	2008×1002×35 mm
Weight	22.5 kg
Cell Technology	Monocrystalline Silicon
Number of Cells	144 (6×24)
Front Glass	3.2mm tempered low-iron glass
Frame Material	Anodized aluminum alloy
Junction Box	IP68 rated with MC4 connectors
Cable Length	1200mm (+) / 1200mm (-)

Performance Characteristics

The SolarMax Pro 400W modules demonstrate excellent performance across varying irradiance and temperature conditions. Peak efficiency occurs at 1000 W/m² irradiance and 25°C cell temperature (Standard Test Conditions). Performance degradation is limited to less than 0.35% per year, ensuring reliable long-term energy production.

Safety and Certifications

• IEC 61215: Design qualification and type approval for crystalline silicon PV modules
• IEC 61730: Photovoltaic module safety qualification
• UL 1703: Flat-plate photovoltaic modules and panels
• IEEE 1547: Standard for interconnecting distributed resources
• Fire Rating: Class C (UL 790)
• Wind Load: 2400 Pa (50 psf)
• Snow Load: 5400 Pa (113 psf)