Solar System Specifications Guide

System Overview

Our residential solar power systems are designed to provide maximum efficiency and reliability for your home energy needs.

Technical Specifications

Solar Panels

- Type: Monocrystalline Silicon
- Power Output: 400W per panel
- Efficiency: 21.4%
- Dimensions: 1755 x 1038 x 35mm
- Weight: 20.5 kg
- Operating Temperature: -40°C to +85°C
- Warranty: 25 years performance, 12 years product

Inverter System

- Type: String Inverter with Power Optimizers
- Rated AC Power Output: 7.6kW
- Maximum Efficiency: 98.3%
- Supported Communication: WiFi, Ethernet, RS485
- Built-in Monitoring: Yes
- Warranty: 12 years standard (extendable to 20 years)

Mounting System

- Type: Rail-based Roof Mount
- Material: Aluminum and Stainless Steel
- Wind Rating: Up to 140 mph
- Roof Types Supported: Asphalt Shingle, Metal, Tile
- Warranty: 25 years

Energy Storage (Optional)

- Battery Type: Lithium-Ion
- Usable Capacity: 13.5 kWh
- Power Rating: 7kW peak / 5kW continuous
- Round Trip Efficiency: >90%
- Warranty: 10 years

Installation Requirements

Roof Requirements

- Minimum Roof Space: 24 m² per 6kW system

- Roof Pitch: 0-45 degrees
- Minimum Roof Age: <15 years recommended
- Structural Requirements: Must support 2.8 kPa load

Electrical Requirements

- Main Service Panel: 200A recommended
- Interconnection: Grid-tied with optional battery backup
- Rapid Shutdown: NEC 2017/2020 compliant
- Grounding: According to local electrical codes

Environmental Considerations

- Wind Load: 140 mph maximum
- Snow Load: 5.4 kPa maximum
- Temperature Range: -40°C to +85°C
- Humidity: 0-100% condensing

Monitoring System

Hardware

- Gateway Type: Cellular/WiFi/Ethernet
- Data Logging Interval: 5 minutes
- Local Storage: 30 days
- Power Consumption: <5W

Software Features

- Real-time Production Monitoring
- Performance Analytics
- Mobile App Support
- Email Alerts
- Remote Troubleshooting
- API Access Available

Certifications

- UL 1741 SA
- IEEE 1547
- IEC 61215
- IEC 61730
- NEC 2017/2020 Compliant
- CEC Listed

System Sizing Guidelines

Residential System Sizes

- Small Home (1-2 people): 4-6 kW
- Medium Home (2-3 people): 6-8 kW

- Large Home (4+ people): 8-12 kW
- Luxury Home: 12-20 kW

Factors Affecting Size

- Annual Energy Usage
- Roof Space Available
- Budget Constraints
- Local Utility Policies
- Future Expansion Plans

Performance Expectations

Energy Production

- Annual Production: 1,300-1,600 kWh per kW installed
- Degradation Rate: <0.5% per year
- Performance Ratio: >80%

Efficiency Factors

- Geographic Location
- Panel Orientation
- Shading
- Temperature
- Soiling
- System Age

Maintenance Requirements

Regular Maintenance

- Panel Cleaning: 2-4 times per year
- Inspection: Annual
- Inverter Check: Quarterly
- Monitoring System: Monthly

Professional Service

- Comprehensive Inspection: Annual
- Infrared Scanning: Bi-annual
- Performance Analysis: Quarterly
- System Updates: As needed