

# MEISEN Solar Lighting Installation Guide & Technical Specifications

Standard Technical Reference Manual for Contractors & Construction Teams | Comprehensive Distribution Standards

Official Website: [www.meisen.com](http://www.meisen.com) • Applicable Products: Solar Street Lights, Solar Flood Lights, Solar Garden Lights

To ensure high stability, optimal luminous efficacy, and maximum lifespan of MEISEN solar lighting products across diverse environments, this installation manual has been established. Installation teams must carefully verify field terrain, solar irradiation levels, and core technical metrics before executing installation.

## 1. Cross-Scenario Lighting Installation Matrix

Application Scenario	Recommended Fixture Type	Suggested Height	Suggested Spacing	Recommended LED Power	Core Technical Highlights & Preventative Standards
Highways	Solar Street Light	8m - 12m	30m - 40m	100W - 200W	Requires bilateral symmetrical or staggered layout. Solar panels must face true South, with a tilt angle adjusted based on local latitude + 5°. Foundation must meet local wind load ratings, complemented by high-standard grounding.
Urban Roads	Solar Street Light	6m - 9m	25m - 30m	60W - 120W	Incorporate composite lighting distribution for both sidewalks and vehicular lanes. Strictly avoid shade from high-rise structures and urban trees. Smart dimming via scheduling or motion sensors is highly recommended.
Rural Roads	Solar Street Light	4m - 6m	20m - 25m	30W - 60W	Single-sided installation is preferred for budget efficiency. Deploy high-efficacy, low-consumption LED modules. Integrated lithium battery designs are recommended for rapid deployment and anti-theft security.
Villa Walls	Solar Flood / Wall Light	2.5m - 4m	As per coverage needs	20W - 50W	Split-type architecture is highly recommended. Route solar panel wiring to roofs or high walls with zero obstruction. Tilt the luminaire head down by 35° - 45° to avoid direct glare entering interior windows.

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Rural House Walls	Solar Flood Light	3m - 5m	8m - 12m	30W - 100W	Ideal for large-scale courtyard floodlighting. Ensure solar PV panels stay completely clear of roof eave water lines or structural blockages. Configure remote controls so users can toggle between continuous or motion-sensor modes.
Parks & Resorts	Solar Garden Light	3m - 5m	10m - 15m	15W - 40W	Prioritize fixture aesthetics and integration with the landscape. Warm color temperatures (3000K-4000K) are recommended to improve visual comfort. Space fixtures away from dense tree canopies to secure direct sunlight.
Docks & Ports	Solar Street/Flood Light	6m - 10m	20m - 30m	100W - 200W	<b>Critical Marine Environment:</b> Fixtures, mounting brackets, and fasteners must utilize 316 stainless steel combined with C5-grade industrial anti-corrosion/anti-salt-mist coatings. Concrete basements must be reinforced against typhoons.
Villa Backyards	Solar Garden/Spike Light	0.5m - 3m	5m - 10m	5W - 30W	Focus on clean ambient atmosphere. Use diffuse reflection or low-glare distribution rather than intensive beams. IP65 or higher ingress protection rating is required to resist automated backyard irrigation irrigation.

## 2. Solar Panel Tilt & Azimuth Orientation Rules

### 1. Azimuth Angle Setting (Orientation)

In the Northern Hemisphere, solar PV panels must face **True South**; in the Southern Hemisphere, they must face **True North**. Construction sites must be audited using a compass or digital orientation sensor, ensuring deviation from True South does not exceed  $\pm 5^\circ$ . Otherwise, total daily generation efficiency can decline by 10% to 15%.

### 2. Tilt Angle Optimization (Angle)

The optimal tilt angle depends heavily on local geographic latitude. The foundational rules are as follows:

- **Low Latitude Regions (0° - 15°):** Installation Tilt Angle = Local Latitude  $\times$  1.0
- **Mid Latitude Regions (15° - 25°):** Installation Tilt Angle = Local Latitude + 5°
- **High Latitude Regions (Above 25°):** Installation Tilt Angle = Local Latitude + 10° or 15° (Optimized for maximizing winter solar capture)

## 3. Core Technical Engineering Precautions

### 1. Shadow Mitigation (Zero-Shadow Principle)

Even minor shading from foliage, utility lines, or bird droppings on a single solar cell can trigger the "hot-spot effect," causing a severe dip in aggregate system output. Surrounding tree branches must be trimmed prior to installation, and fixtures must not be deployed directly behind CCTV cameras or large traffic signboards.

### 2. Battery Storage Integrity & Waterproofing

MEISEN fixtures utilize high-performance built-in Lithium Iron Phosphate (LiFePO<sub>4</sub>) batteries or specialized underground gel batteries. For underground setups, the enclosure must be hermetically sealed against water ingress, and a gravel drainage bed must be constructed at the pit base to promote groundwater dissipation and prevent long-term immersion.

### 3. Intelligent Controller Setting & Calibration

Factory default programs usually feature automated photocell sensing (Dusk-to-Dawn). Before project handover, use the MEISEN dedicated engineering remote control to configure multi-stage power-down profiles based on project contracts (e.g., first 4h at 100% output, next 4h at 50%, and 30% from midnight until dawn) to ensure robust system autonomy through consecutive overcast or rainy days.

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MEISEN Solar Lighting delivers high-performance green energy illumination for global engineering projects. For technical support, visit our official website: [www.meisen.com](http://www.meisen.com) or reach out to your Key Account Project Manager.