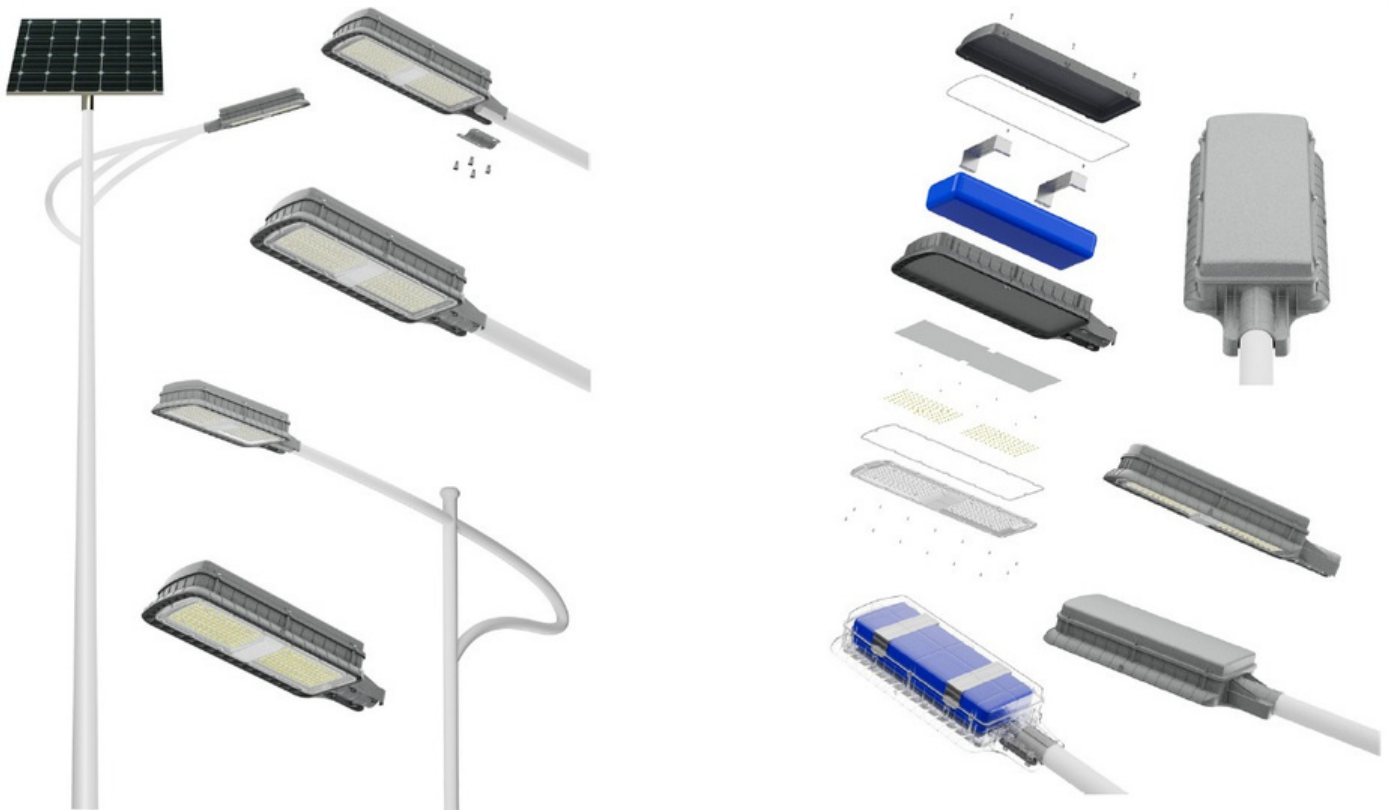


Overview

AI INTERCONNECTED SOLAR STREETLIGHTS

PRODUCT DESCRIPTION

The **DCNSmartStreetLights** adaptive solar street light eliminates the safety risks inherent to traditional schedule-based dimming. Instead of arbitrarily reducing lumen output after midnight to save battery, this advanced solution uses a predictive motion network. By integrating a **24GHz FMCW Radar front-end** with a **BLE Mesh backhaul**, the system maintains a minimum energy draw during idle periods while guaranteeing instantaneous, 100% illumination for any approaching pedestrian or vehicle.



SYSTEM ARCHITECTURE & DETECTION LOGIC

The platform operates on an advanced **"Forward-Trigger" model** designed to completely eliminate dark spots ahead of transit:

- **Pre-Positioned Sensor Node:** A dedicated external radar/mesh pole is positioned 20 meters before the primary lighting array.
- **Detection Zone:** Equipped with a 24GHz FMCW Radar, providing a highly stable 30-meter detection radius immune to temperature or ambient light fluctuations.
- **Group Wake-Up:** Upon motion confirmation, the sensor node broadcasts an instantaneous "Wake" command via local BLE Mesh to all luminaires within its designated group.
- **Synchronized Transition:** The entire group ramps simultaneously from sleep brightness to 100% luminosity, ensuring users traverse a fully illuminated corridor with zero shadow lag.

AI INTERCONNECTED SOLAR STREETLIGHTS

KEY PERFORMANCE FEATURES

- **Detection Technology:** 24 GHz FMCW Radar — completely immune to false triggers caused by wind, heat shifts, or small animals.
- **Sensor Placement:** Pre-positioned 20 meters before the first luminaire via an external node configuration.
- **Expansive Coverage:** 30-meter detection radius yields a maximum coverage diameter of 60 meters per sensor node.
- **Robust Protocol:** BLE Mesh 5.0 provides secure, low-energy, and robust group synchronization across multiple poles.
- **Dimming Logic:** Adaptive "On-Demand" operation balancing configurable sleep states with instantaneous 100% trigger outputs.
- **Idle Management:** Operates at a low preset baseline (5% to 30% brightness) during unoccupied periods to protect long-term battery reserves.

ADVANCED CONTROLLER CUSTOMIZATION (VIA ANDROID APP)

Unlike conventional solar systems with rigid factory timers, the DCN Smart Connect controller allows complete on-site customization of individual poles within a network via a secure local mobile app:

- **Per-Pole Overrides:** Configure specific luminaires to hold a permanent fixed brightness level independent of shared motion triggers.
- **Hold Time Adjustments:** Define the exact duration (seconds or minutes) that lights remain at 100% output after the last detected motion.
- **Granular Dimming Floors:** Set exact minimum sleep baselines and maximum ceiling brightness outputs to conform perfectly with municipal lighting codes.
- **Transition Dynamics:** Independently calibrate the Dim-Down Speed (fading out) and Brightening Speed (ramping up) for smooth human visual adaptation.

THE SAFETY & EFFICIENCY BREAKTHROUGH

Standard solar controllers rely on static time schedules that arbitrarily drop visibility (e.g., dimming to 70% at midnight, 50% at 02:00 AM, and 30% at 04:00 AM) compromising commuter safety for battery longevity.

The DCN Adaptive Controller eliminates this compromise by maintaining an ultra-efficient, low-draw idle state until an asset user is physically present. Because the system triggers the entire grouped array to 100% brightness **before** the user arrives, safety is maximized while power consumption is limited strictly to periods of active occupancy.

AI INTERCONNECTED SOLAR STREETLIGHTS

TECHNICAL SPECIFICATIONS

OPTICAL PERFORMANCE PARAMETERS

System Power Nominal	30W / 60W / 100W Options
Luminous Flux Output	6,600 Lumens (at 30W configuration)
Luminous Efficacy	90% Efficient optical delivery
Correlated Color Temp (CCT)	6500K Industrial Cool White
Beam Angle Distribution	120° Primary Optic (Average Beam Angle 50%: 165.0° Variable)

ELECTRICAL & MECHANICAL PARAMETERS

Hybrid Input Support	220-240V AC 50/60Hz
Power Factor (PF)	>0.92 (@220V & full load conditions)
Total Harmonic Distortion	<15% (@220V & full load conditions)
Surge Protection Device	Independent SPD: Line-to-Line 10KV Line-to-Ground 10KV Precision
Chassis Architecture	Lens Diffuser, Aluminum Housing
Housing Finish & Style	Industrial Grey Bottom-Entry & Side-Entry Connections Compatible

• Storage Environmental Rating

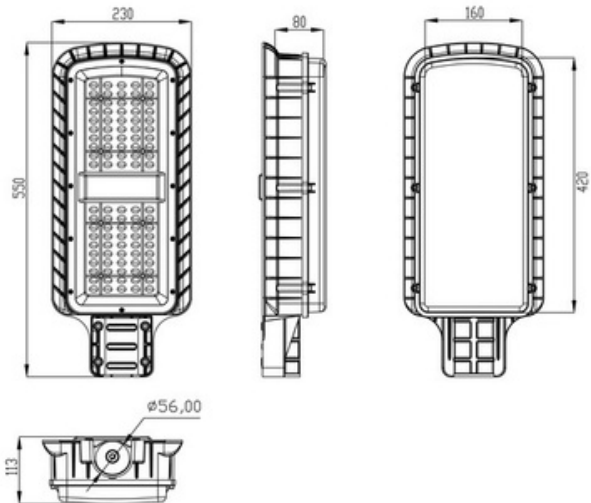
SYSTEM & STORAGE PARAMETERS

Native Low Voltage DC Battery	High-Capacity 50 AH 12V DC Storage Module
Dimming Control Method	Pulse Width Modulation (PWM) dimming electronics
Chassis Physical Dimensions	530mm × 230mm × 80mm (Lens Window: 420mm × 160mm, Pole Entry: Ø56.00mm) -40°C to +55°C
Operating Temperature	
Storage Temperature	-40°C to +80°C
Lumen Maintenance (L70)	50,000 Hours operational lifecycle @ 35°C baseline
System Factory Warranty	5 Years

All specifications and information are subject to change without prior notice. Information is provided for reference purposes only and does not constitute a warranty or contractual commitment.

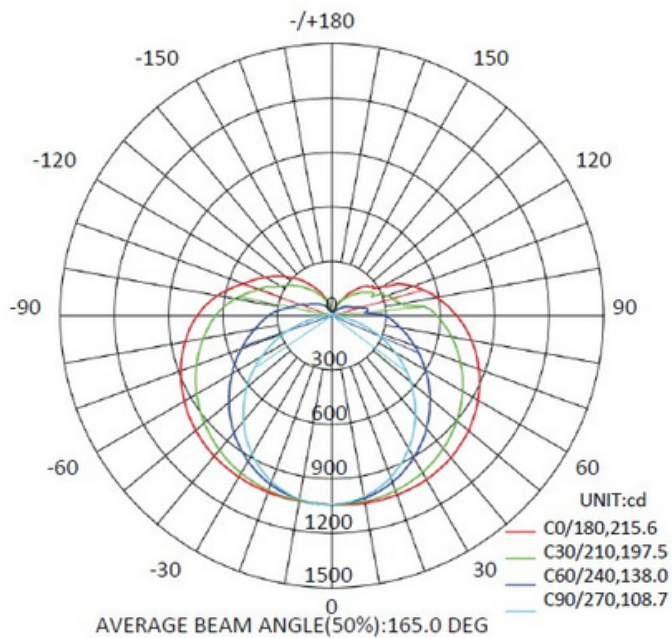
AI INTERCONNECTED SOLAR STREETLIGHTS

Dimensions (Unit: mm)



Photometrics
LightDistribution Curve

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



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