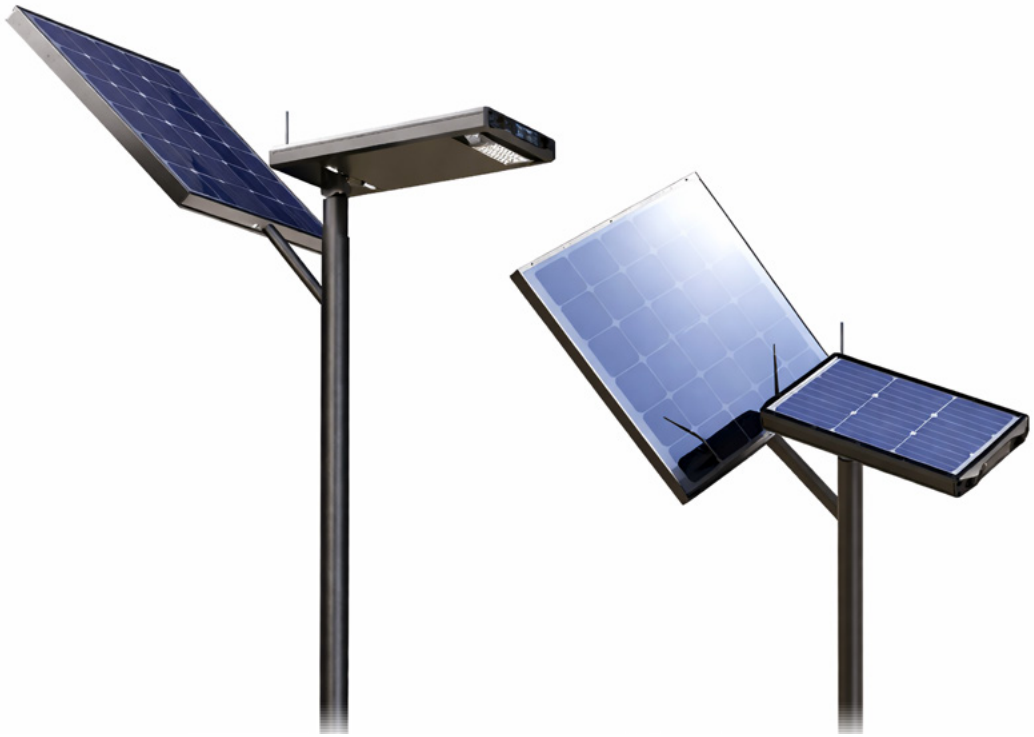
# GALAXIA™ AI2 SERIES

## MODULAR ALL-IN-TWO SOLAR AREA LIGHTING SYSTEM

### HIGH-CAPACITY MODULAR INFRASTRUCTURE



The GALAXIA All-in-Two (AI2) Series is a modular solar lighting system engineered for roadways, arterial streets, and heavy infrastructure. With all the benefits included in the AIO, the additional photovoltaic module system maximizes energy harvesting through scalable panel sizing and significantly improves LiFePO4 battery longevity through superior thermal management.

#### KEY BENEFITS

- Thermal Management & Better Battery Life
- Scalable Solar Arrays
- Modular "Plug-and-Play" Maintenance
- 10-Year Infrastructure Warranty

#### TYPICAL APPLICATIONS

- Arterial Municipal Roadways
- Regional Highways & Plazas
- Industrial Security Perimeters
- High-Latitude / Low-Sun Zones

# THE AI2 ADVANTAGE

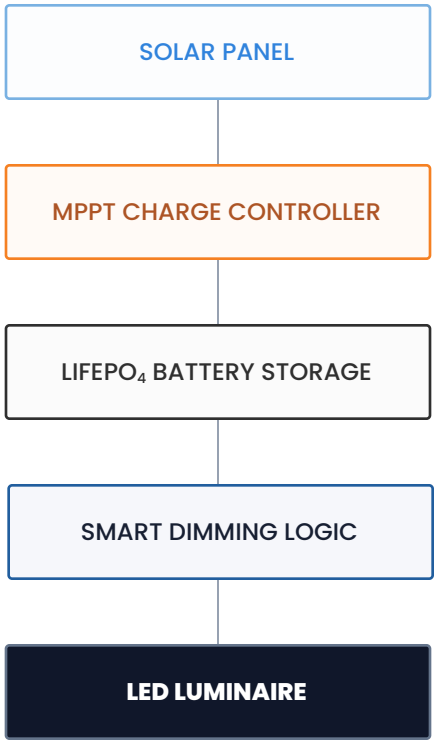
### THERMAL ISOLATION LOGIC

Unlike all-in-one systems where solar heat and LED junction heat trap the battery, GALAXIA AI2 separates the storage unit, maintaining optimal LiFePO4 operating temperatures even in extreme Southern solar zones.

### PHOTOMETRIC ACCURACY

Utilizing Philips LED cores, the system produces 150–190 lm/W. Type II and Type III distributions allow for high uniformity and pole spacings up to 5 times the mounting height.

## SYSTEM ARCHITECTURE




SYSTEM YIELD EFFICIENCY

**90%**

# TECHNICAL SPECIFICATIONS

## • LED LUMINAIRE & OPTICS

| | |
|---|---|
| System Efficacy | 150–190 lm/W |
| LED Chipset | Philips |
| Power Consumption | 20W / 40W / 60W / 80W / 100W |
| Color Temp (CCT) | 27K / 30K / 40K / 50K |
| Light Distribution | Type II, Type III |
| Color Rendering (CRI) | ≥ 70 (80 opt.) |
| Lifespan (LM80) | 100,000 Hours |
| Luminaire Warranty | 10 Years |

## • BATTERY

| | |
|---|---|
| Battery Chemistry | $LiFePO_4$ |
| Cycle Life (80% DOD) | ≥ 3,000 Cycles |
| Management | Passive Cell Balancing |
| Expected Life | 8-15 Years Typical |
| Battery Warranty | 8 Years |

## • SOLAR PANEL

| | |
|---|---|
| Technology | Monocrystalline Silicon |
| Panel Efficiency | 90% |
| Orientation | Top-Integrated Luminaire (AIO) |
| Panel | Pole-Mounted Adjustable Tilt |
| Solar Warranty | 20 Years |

## • MECHANICAL & MOUNTING

| | |
|---|---|
| Housing Material | ADC12 + 6063 Extrusion |
| Finish Color | Black std. (Sliver or Custom opt.) |
| Hardware | Stainless Steel |
| Mounting Type | Slip Fitter (SF) |
| Wind Load Rating | 127 mph |
| Ingress / Impact | IP65 / IK10 |
| Operating Temp | -22°F to 140°F |

## • MPPT CONTROLLER

| | |
|---|---|
| Tracking Efficiency | > 99% |
| Control System | MPPT std. (Wireless Zigbee opt.) |
| Dimming | 4-Step Programmable |
| System Safeties | Over-charge / Deep-discharge |
| MPPT Warranty | 8 Years |

- **Wireless Control Available: Monitoring, GPS tracking, Alerts**
- **Motion Sensor Available**

Specifications represent standard configurations and are subject to final engineering and site-specific conditions.
Custom configurations are available upon request.

# ENGINEERING SIZING BASIS

## CUSTOM SIZING EXAMPLE (GALAXIA-AI2-100 @ SMART PROFILE)

| | |
|---|---|
| LED Power (Max) | 100W |
| *Smart Profile (3h 100% \| 3h 50% \| 6h 10%)* | 12 Hours |
| Integrated PIR Motion Sensor | Included / Active |
| Daily Energy Consumption | 510 Wh |
| Required Battery Storage (1 Nights @ 80% DoD) | (510 Wh × 2) ÷ 0.8 = 1275 Wh |
| Actual Battery Supplied (Optimized) | 1280 Wh (25.6V 50Ah) |
| Required Solar Generation (Zone C) | 510 Wh / Day |
| CA/TX Irradiance Sizing (510Wh x 2 ÷ 5.67h ÷ 90% panel eff) | 199.88W Required |
| **Standard Solar Module Selected** | 200W Panel |

RESULT: CONFIGURED FOR 2-DAY AUTONOMY. BATTERY MATCHES MUNICIPAL SAFETY STANDARDS.

## CONFIGURATION GROUP MATRIX

| LED LOAD | SOLAR MODULE | BATTERY CAPACITY | ENERGY STORAGE | AUTONOMY DAYS | REC. POLE HEIGHT |
|---|---|---|---|---|---|
| **20W** | **40W** | 12.8V 20Ah | **256 Wh** | 2 Nights | 12 - 15 ft |
| **40W** | **80W** | 12.8V 40Ah | **515 Wh** | 2 Nights | 20 - 25 ft |
| **60W** | **120W** | 12.8V 60Ah | **768 Wh** | 2 Nights | 25 - 30 ft |
| **80W** | **160W** | 25.6V 40Ah | **1024 Wh** | 2 Nights | 30 - 35 ft |
| **100W** | **200W** | 25.6V 50Ah | **1280 Wh** | 2 Nights | 35 - 40 ft |

MANDATORY NOTE:

The values above represent standard factory configurations designed to meet or exceed a minimum 2-night autonomy target. Autonomy calculations are based on a 12-hour nightly profile: 3h @ 100%, 3h @ 50%, 6h @ 10% (5.1 equivalent full-load hours). Solar sizing assumes 5.38 peak sun hours (PSH) and typical system losses. Battery capacities are nominal; actual performance varies with DoD, temperature, and site-specific conditions.

Motion sensor activates 100% during occupancy, then returns to preset level.

As a direct manufacturer, we provide full system customization to meet project-specific environmental requirements.

# U.S. SOLAR DESIGN ZONES

ZONE A – NORTHERN / LOW SUN

**2.4 sun hours.** Conservative winter baseline for northern states.

*Design approach: Largest panel and battery reserve.*

ZONE B – CENTRAL / MODERATE SUN

**3.3 sun hours.** Balanced winter design basis for central U.S. applications.

*Design approach: Balanced solar and battery sizing.*

ZONE C – SOUTHERN / HIGHER SUN

**4.4 sun hours.** Reliable winter design basis for southern states.

*Design approach: Optimized panel size with high recharge margin.*

ZONE D – EXTREME CONDITIONS

**1.5 sun hours.** Project-specific baseline for Alaska, mountain regions, etc.

*Design approach: Maximum custom engineering basis.*

## FACTORY-SET DIMMING SCHEDULE

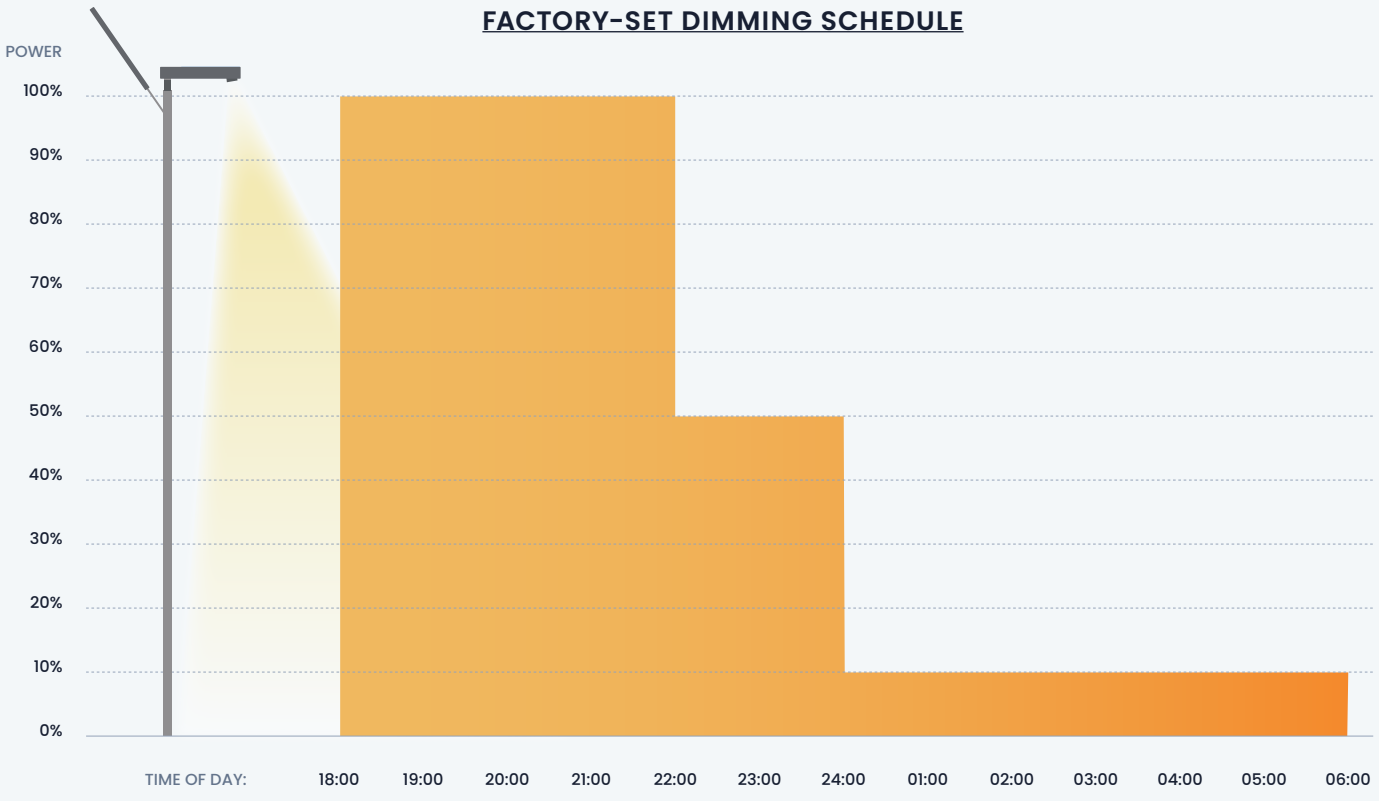
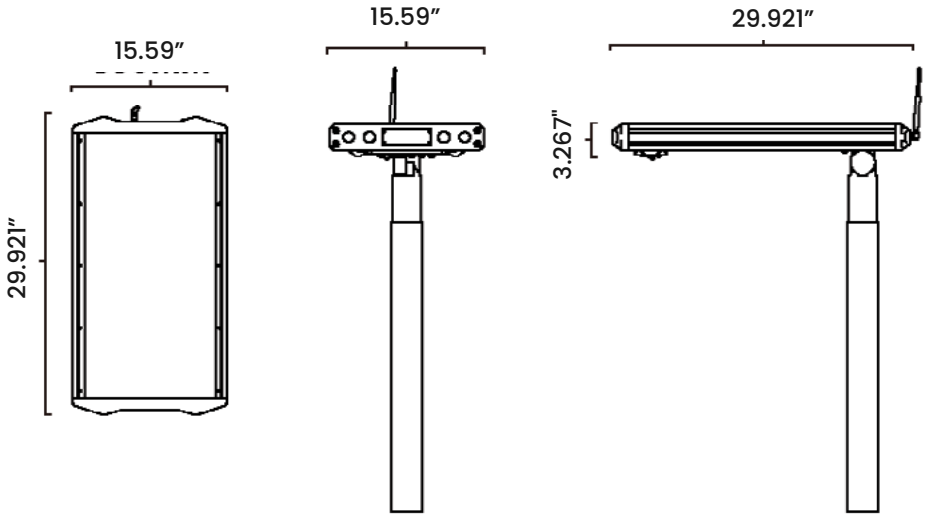
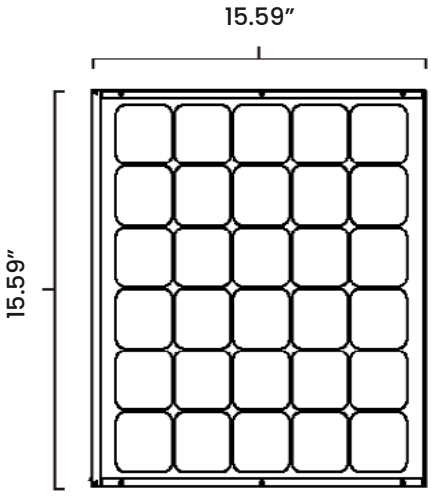



Chart metrics for reference only, custom schedule set as required.

# DIMENSIONS

## GALAXIA-AI2 (INDEPENDENT SOLAR PANEL)



# ORDERING INFORMATION

| SERIES | WATTAGE | CCT | OPTICS | FINISH | MOUNTING | OPTIONS |
|---|---|---|---|---|---|---|
| GALAXIA-AI2 | 20W<br>40W<br>60W<br>80W<br>100W | 27K<br>30K<br>40K (Standard)<br>50K | T2 (Type II)<br>T3 (Type III) | BLK (Black)<br>SLV (Silver) | SF (Slip Fitter) | NONE (Standard)<br>MOT (Motion Sensor)<br>SMC (Smart Control)<br>MON (Monitor) |

Note: Recommended 100W standard configurations.

**EXAMPLE PART NUMBER** GALAXIA - AI2 - 40W - 40K - T2 - BLK - SF - MOT | QTY: 20

**FIXTURE SCHEDULE**

| TYPE | PART NUMBER | QTY |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

Final configuration shall be verified against project-specific electrical and photometric requirements.

Custom configurations are available upon request.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