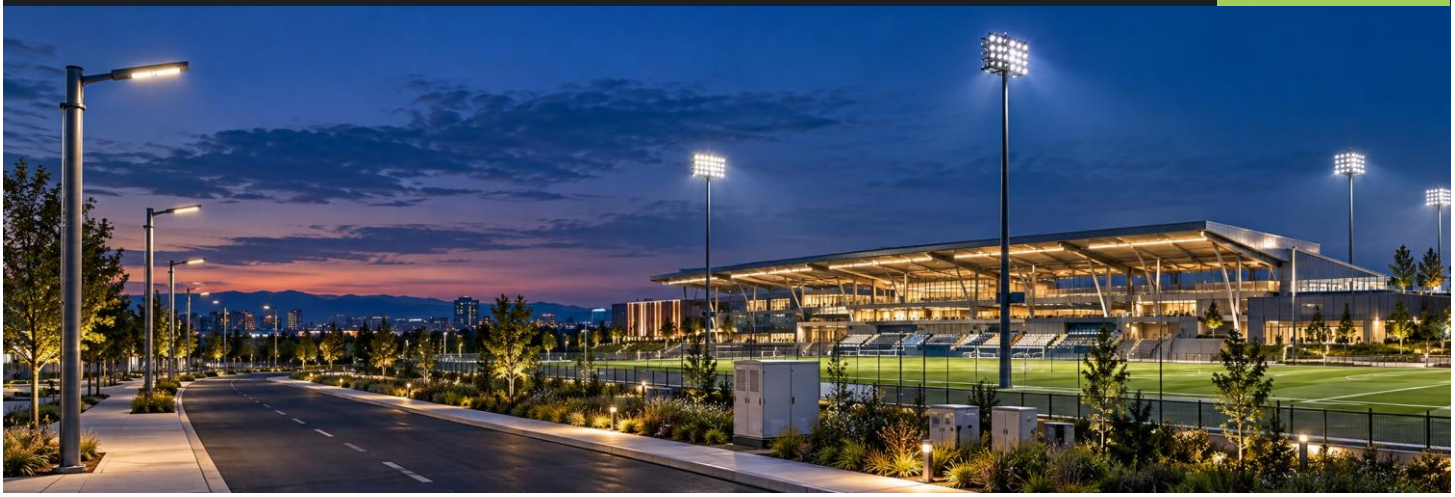
SMART LIGHTING COMMUNICATIONS

Reliable control over existing lighting power wiring

APPLICATION BRIEF



Distributed lighting systems need dependable control, monitoring, and coordinated operation without separate data cabling. Semitech PLC connects luminaires and controllers over existing AC or DC power wiring, avoiding RF interference while supporting individual and group control.

SMART LIGHTING CHALLENGES AND SEMITECH SOLUTIONS

Smart lighting communication challenges

- LED drivers and switching supplies create variable line noise
- Separate data wiring increases installation and retrofit cost
- Metal, concrete, and outdoor topology weaken RF coverage
- Commands and fixture health data must arrive predictably

Semitech solution

The SM2400 platform supports SNET and PowerLink. SNET provides mesh, low latency, and predictable TDMA timing. PowerLink offers transparent serial communication over existing lighting wiring.

- ✓ SNET mesh or PowerLink serial transport
- ✓ Low latency and predictable timing for coordinated control
- ✓ Semitech EVK, portable SDK, APIs, and tools

CUSTOMER BENEFITS

01 Reuse lighting wiring
Carry control and status over existing AC or DC conductors.

02 Avoid RF blind spots
Communicate where structures and distance weaken wireless links.

03 Coordinate lighting
Use low-latency, predictable timing for synchronized operation.

04 Monitor fixture health
Collect status, diagnostics, alarms, and operating data.

05 Scale across the site
Use adaptive PHY and multi-hop routing for broader coverage.

06 Work with specialists
Tune networking and firmware with Semitech engineers.

SEMITECH ADVANTAGES

Reliable communication in challenging environments

- ✓ Noise-adaptive operation on lighting power lines
- ✓ Proven in commercial venue lighting deployments

Direct engineering support through integration

- ✓ Comprehensive evaluation tools, reference designs, and customer board reviews

Flexible technology and application tailored protocols

- ✓ SNET and PowerLink tailored to application requirements

COMPREHENSIVE EVALUATION TOOLS

FROM INDIVIDUAL LIGHTS TO SITEWIDE CONTROL

PLC networking for venue, outdoor, and safety-critical lighting

SMART LIGHTING COMMUNICATION ARCHITECTURE

Connect luminaires, zones, sensors, controllers, and management systems over the installed lighting power network.

LUM	ZONE	CTRL	SNS	NOC
Luminaires	Lighting zones	Controllers	Sensors	Management system

SM2400
PLC platform

SNET Networking
Mesh • TDMA • CSMA-CA

PowerLink
Transparent serial transport

SM2400 Lighting Platform
Low latency • predictable timing • custom OFDM firmware

Existing AC and DC Lighting Power Wiring
Control, status, and diagnostics over the same conductors

TYPICAL SMART LIGHTING USE CASES

VEN Venue lighting
Individual and group color, intensity, and health control

ST Street lighting
Remote dimming, schedules, status, and fault reporting

EM Emergency lighting
Supervision and coordinated operation of safety fixtures

AIR Airfield lighting
Safety-focused wired control without RF dependence

POOL Pool and aquatic lighting
Group scenes and monitoring around water facilities

SITE Industrial and campus lighting
Parking, tunnel, warehouse, and perimeter systems

WHY SEMITECH AND HOW TO GET STARTED

Why lighting OEMs choose Semitech

- ✓ Wired control reduces RF interference and security exposure
- ✓ Noise-adaptive operation on lighting power lines
- ✓ Low latency and predictable timing for coordinated operation
- ✓ Direct engineering support through integration

Integration path

1. Define fixture count, groups, latency, and health data
2. Characterize the lighting power-line channel
3. Prototype SNET networking with the Semitech EVK
4. Validate scenes, monitoring, coverage, and production design

AIRFIELD LIGHTING SECURITY AND SAFETY

Wired control without RF dependence

PLC keeps commands and fixture health data on installed power wiring, reducing RF interference and wireless security exposure while supporting safety-critical timing and fault visibility.

- ✓ Low latency and predictable timing for coordinated commands
- ✓ Reduced RF interference and wireless security exposure
- ✓ Continuous fixture status and diagnostics

Evaluate your Smart Lighting application with Semitech

Use the Semitech EVK to compare SNET and PowerLink on the target lighting power-line channel.

SEMITECH EVK

LEARN MORE