ALTERNATIVE ENERGY COMMUNICATIONS

Reliable networking across solar and wind power systems

APPLICATION BRIEF

Alternative energy systems need dependable data exchange across electrically noisy, distributed assets. Semitech combines adaptive PLC technology with SNET and XXR to connect microinverters, solar farms, wind turbines, storage systems, and site controls over existing AC and DC power wiring.

ALTERNATIVE ENERGY COMMUNICATION CHALLENGES AND SEMITECH SOLUTIONS

Alternative energy communication challenges

- Inverter switching noise changes power-line channel conditions
- Large sites require communications over long distances
- Metal structures and site topology can limit wireless coverage
- Distributed devices need predictable monitoring and control

Semitech solution

Semitech uses existing energy wiring for resilient data communications. SNET provides agile, predictable microinverter networking and can be more reliable than wireless. XXR adds extended range and channel agility for switching-noise conditions.

- ✓ SNET for microinverter networks
- ✓ XXR for long-distance, noise-agile links
- ✓ SM2400 EVK, portable SDK, APIs, and tools

CUSTOMER BENEFITS

01 Reuse power wiring
Carry data over existing AC and DC conductors.

02 Network microinverters
Use SNET for scheduled, predictable communication.

03 Improve link reliability
Use wired PLC where wireless coverage is inconsistent.

04 Extend site reach
Use XXR for long-distance energy assets.

05 Adapt to switching noise
Maintain links as inverter noise conditions change.

06 Work with specialists
Apply evaluation tools and direct engineering support.

SEMITECH ADVANTAGES

Reliable communication in challenging environments

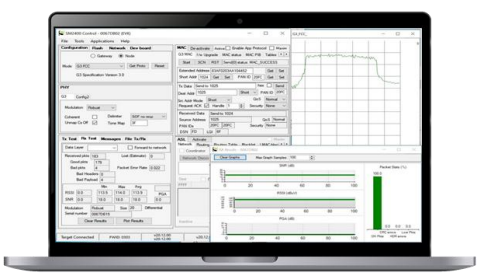
- ✓ More reliable than wireless in RF-challenged installations
- ✓ Extended range across large energy sites

Direct engineering support through integration

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

Flexible technology and application tailored protocols

- ✓ SNET, XXR, and custom firmware on one SM2400 platform



COMPREHENSIVE EVALUATION TOOLS

FROM DISTRIBUTED GENERATION TO SITE CONTROL

A common communications platform for solar, wind, and storage assets

ALTERNATIVE ENERGY COMMUNICATION ARCHITECTURE

Use SNET for networked control and XXR for long-distance links across existing energy-system wiring.

MI	INV	BESS	WT	SITE
Microinverters	Solar inverters	Energy storage	Wind turbines	Site control

SM2400
PLC platform

SNET Networking
Microinverters • predictable access • mesh routing

Point-to-Point XXR
Extended-range links

Adaptive PLC Modem
Channel agility • switching-noise resilience

Existing AC and DC Energy Wiring
Communication across arrays, turbines, storage, and site equipment

TYPICAL ALTERNATIVE ENERGY USE CASES

MI Microinverter networks
Scheduled monitoring and control across the array

SF Solar farm monitoring
Long-distance links between distributed equipment

INV Inverter communications
Status, alarms, configuration, and diagnostics

WT Wind turbine systems
Tower, nacelle, and site-level equipment links

BESS Battery storage
PCS, battery racks, and energy-management interfaces

SITE Plant control
Weather stations, meters, and supervisory systems

WHY SEMITECH AND HOW TO GET STARTED

Why energy OEMs choose Semitech

- ✓ SNET for agile, predictable microinverter networks
- ✓ More reliable than wireless in RF-challenged installations
- ✓ XXR for extended range and switching-noise agility
- ✓ Direct engineering support through integration

Integration path

1. Select SNET networking or Point-to-Point XXR
2. Prototype the application with the Semitech EVK
3. Evaluate communication on the target energy wiring
4. Validate distance, noise tolerance, and production readiness

SNET MICROINVERTER NETWORKING

Predictable communications across the array

SNET coordinates distributed microinverters over existing power wiring, reducing dependence on RF coverage across metal-dense solar installations.

- ✓ Scheduled access for predictable traffic
- ✓ Adaptive operation as channel conditions change
- ✓ Wired links that can outperform wireless reliability

Evaluate your Alternative Energy application with Semitech

Use the Semitech EVK to compare SNET and XXR across the target power-line channel.

SEMITECH EVK

LEARN MORE