INDUSTRIAL IOT COMMUNICATIONS

Reliable data over industrial power wiring

APPLICATION BRIEF

Industrial systems need dependable communications through facilities built from metal and concrete and filled with electrical noise. Semitech uses existing AC and DC power wiring to connect machinery, chargers, pumps, sensors, and remote assets where wireless coverage can be unreliable or ineffective.

INDUSTRIAL COMMUNICATION CHALLENGES AND SEMITECH SOLUTIONS

Industrial communication challenges

- Motors, inverters, chargers generate switching and impulse noise
- Metal and concrete obstruct and reflect wireless signals
- Long cable routes challenge coverage and maintenance
- Applications need different latency, range, and data rates

Semitech solution

Semitech tunes the PHY, MAC, and protocol to each channel. SNET provides mesh, low latency, predictable TDM access, and noise robustness. SpeedLink delivers up to 1 Mbit/s P2P, while XXR adds extreme robustness and extended range.

- ✓ SNET, SpeedLink, XXR, Serial PowerLink, and G3-PLC
- ✓ Certified G3-PLC on CEN-B where standards are required
- ✓ Semitech EVK, portable SDK, APIs, and tools

CUSTOMER BENEFITS

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

02 Overcome RF barriers
Reach equipment behind metal and concrete.

03 Tune each link
Match networking, latency, range, and data-rate needs.

04 Increase reach and speed
Use XXR for range or SpeedLink for up to 1 Mbit/s.

05 Simplify serial retrofit
Extend RS232/RS485 protocols with Serial PowerLink.

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

SEMITECH ADVANTAGES

Reliable communication in challenging environments

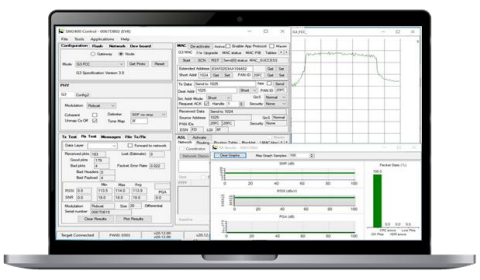
- ✓ Extreme robustness to switching and impulse noise
- ✓ Proven in chargers, irrigation, mining, and transportation

Direct engineering support through integration

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

Flexible technology and application tailored protocols

- ✓ Application-tuned PHY, MAC, and protocol options



COMPREHENSIVE EVALUATION TOOLS

FROM FACTORY FLOOR TO REMOTE ASSETS

Flexible PLC for networked, serial, and high-speed industrial links

INDUSTRIAL IOT COMMUNICATION ARCHITECTURE

Choose networked, point-to-point, serial retrofit, or standards-based communication for each industrial channel.

IRR	MINE	ROB	CHG	MAR
Irrigation	Mining systems	Robotic lines	Battery chargers	Maritime equipment

SM2400
PLC platform

SNET Networking
Mesh • low latency • predictable TDM

SpeedLink P2P
Up to 1 Mbit/s

XXR • Serial PowerLink • G3-PLC
Extended range • serial retrofit • certified CEN-B

Existing AC and DC Industrial Power Wiring
Communication through metal, concrete, distance, and electrical noise

TYPICAL INDUSTRIAL IOT USE CASES

IRR Agricultural irrigation Pumps, valves, controllers, and field sensors	**MINE Mining systems** SpeedLink P2P links where RF coverage fails	**ROB Robotic production lines** Predictable machine data and monitoring
CHG Battery chargers Connect chargers and equipment over power cables	**MAR Maritime equipment** Reliable links through metal-dense vessels and ports	**RET Industrial retrofit** Serial PowerLink for RS232/RS485 protocols

WHY SEMITECH AND HOW TO GET STARTED

Why industrial OEMs choose Semitech

- ✓ Tuned PLC modes for specific application needs
- ✓ Extreme robustness to switching and impulse noise
- ✓ More reliable than wireless among metal and concrete
- ✓ Direct engineering support through integration

Integration path

1. Characterize the power-line channel and data needs
2. Select SNET, SpeedLink, XXR, Serial PowerLink, or G3-PLC
3. Prototype on target equipment with the Semitech EVK
4. Validate performance and prepare for production

INDUSTRIAL LINKS WHERE WIRELESS FAILS

Dependable communication through hard RF barriers

PLC follows the power path into equipment where rock, steel, and concrete block or distort wireless signals.

- ✓ SpeedLink up to 1 Mbit/s for mining P2P links
- ✓ XXR for extreme noise robustness and extended range
- ✓ Serial PowerLink for transparent serial retrofit

Evaluate your Industrial IoT application with Semitech

Use the Semitech EVK to compare PLC modes on the target industrial power-line channel.

SEMITECH EVK

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