Power Line Systems—Key Features

**SIMPLE**
- No new wires or wireless set up needed
- Simple out of the box installation.
- Factory configured with custom network configuration (security & network id) per site or customer
- Auto connecting, auto healing mesh network.
- Transparent data pipeline between the operator interface (SCADA) and end devices
- Multiple communication protocols—RS232, RS485, CAN, DALI—all available in parallel

**SECURE**
- Independent of the internet or the cloud
- Independent of any third party networks
- Specialized equipment and physical proximity along with security keys are needed to access any data on the network
- Multiple layers of encryption—patented cipher stream encryption on top of industry leading 256-bit Elliptic curve cryptographic security

**RELIABLE**
- G3-PLC has an installed user base of over 50 million metering points, making it an extensively field tested technology
- G3-PLC is a global standard and is the most common power line technology in use today
- Based on the IEEE standard 1901.2 and ITU-T.G.9903, it is compliant to standards across the world
Power Line Systems—Technology

Designed from the ground up for long range, secure, reliable communications based on IEEE G3-PLC protocol

**FEATURES**

- Power Line Systems network, based on G3-PLC (ITU-T G.9903) architecture, consists of multiple NC1, NC2 or NM7 network nodes and a single network data concentrator (gateway)- DC.

- The network nodes can exist on any of the three phases of the low voltage (80 – 480VAC) side of the power grid.

- Each node can be miles out from the nearest node (depending on the number of intermediate power line branches) and maintain network connectivity.

- The data concentrator (gateway), DC, connects to one of the phases of the power grid on the low voltage side.

- Each DC can support up to 2500 network nodes.

- Each DC has the capability to communicate with the central SCADA (central management system running on a low cost panel pc) via secure ethernet, WiFi or LTE /CDMA/GSM cellular network.

- The network automatically installs and is self-healing; there is no field installation necessary other than mounting and wiring of the nodes.

- An optional LV-LV signal coupler can be used to propagate signals from multiple phases (or multiple transformer secondaries) to the all the phases in the installation.

- An optional MV-LV signal coupler can be used to extend the connectivity of the gateway across the medium voltage lines for larger industrial complexes or entire neighborhoods.

**About G3-PLC:**

- G3-PLC was developed to facilitate long range communications over harsh power line conditions.

- G3-PLC alliance was created in 2011 to support the adoption of this technology worldwide.

- The standard has now been ratified by ITU (G.9903) and IEEE (1901.2).

- This technology is being used widely for smart metering and utility side communications.

- G3-PLC is a OFDM based physical layer and is compliant with worldwide regulatory bodies such as CENELEC, ARIB and FCC.

- The standard supports IPV6 which enables the implementation of Internet-of-things protocols over power lines.
Power Line Systems—Architecture

Monitoring and control of critical infrastructure over a wide area

No new wires. No wireless infrastructure. No need for the internet or cloud connectivity.