PPC’s Broadband Powerline System
Generation 4

Utilities are placing ever-higher demands on communications technology to operate their business. Digitalisation has become part of core strategy, and data-driven business models are becoming the norm. Daily, retrospective data readings are no longer adequate.

Sophisticated communications are needed everywhere in the grid; at the lowest cost for daily reads in smart metering, and at the highest performance for real-time network management and customer services.

The 4th generation of our BPL system fulfils the need for stable, high performance communications for smart metering and smart grids, combined with the low cost of powerline.

BPL now offers the best availability and accessibility to applications anywhere in the power network. It can be installed on the network by the utility, transforming the power grid itself into an Ethernet communications platform.

Broadband data transmission from devices to utilities’ data centres, eliminating the need for intermediate storage in concentrators, enables two-way communications with customers and also allows end-to-end encryption using advanced security standards such as TLS.

The advantages of a BPL system

Robust: The broad frequency bandwidth (approximately 1,000 OFDM carrier frequencies) offers maximum robustness against interference, with plenty of bandwidth for Big Data applications.

High availability: the BPL network automatically adapts to grid conditions, enabling easy automation and operation. Dynamic routing and repeating in meshed networks ensure maximum availability.

Plug and Play: Gateways are quickly and easily installed using standard tools without local configuration. The rest is done through meshed networks.

Remotely manageable: PPC’s Network Management System (NMS) enables detailed monitoring and status analysis of each individual BPL connection (channel and network analysis) as well as integration with existing systems thanks to SNMPv3.

Cost efficient: BPL is the most cost effective communications solution in major roll out scenarios, and provides an easily scalable platform with low operating costs.

With the development of the German standard Smart Meter Gateway, PPC has become a leader in the field of smart meter data security and privacy.
The latest advance in BPL communications technology

RUGGED BPL MODEMS

Rugged BPL modems are designed for the tough conditions of LV and MV distribution grids (overvoltage category IV). Their design is made for live line installations.

Optional Ethernet (RJ45) and BNC interfaces enable the connection of backbone or MV couplers as well as RTUs or other measurement and control devices.

- Extended operational temperature: -40 to +75°C
- Wide range power supply: 230 – 400 V AC
- Different protection levels up to IP65

DIRECT CURRENT BPL MODEM

Designed for data transfer over medium voltage grids, for substation monitoring, and substation automation.

- Power Supply: 24–60V direct current for connection with uninterruptable power supply (UPS) or the stations bus of secondary substations

COMPACT BPL MODEMS

Compact BPL modems in DIN rail casing have been developed to be fitted into meter cabinets (over voltage category III) for smart metering. Integrated Ethernet, RS-485, Wireless-M-Bus or ZigBee interfaces can easily connect meters of all manufacturers and types.

- Small size, only 6 HP wide
- Integrated short range interface for connection of all types of meters or other applications

METER INTEGRATED BPL MODULES

Small BPL modules designed to fit into standard meters enable future proof metering in real-time. With BPL inside, meters automatically become part of a Smart Grid and meter data is immediately available in the backend systems. Prepayment or remote disconnect functionality can easily be implemented.

MEDIUM VOLTAGE SOLUTIONS

For underground cables and overhead lines, medium couplers allow data transmission on 12kV – 24kV networks.
Cost–effective solutions to smart metering and smart grid communications challenges

Our technology has been used in projects internationally by Siemens, Kahramaa (Qatar), British Gas, E.ON, Western Power Distribution, RWE, EnBW and most leading German utilities.

BPL has formed the basis of major smart city and smart grid development projects and has won numerous awards as a solution for renewable energy and clean technology.

BPL network for Siemens and Kahramaa

In the face of massive growth (with population doubling in under a decade) manual monthly readings were no longer viable.

The solution; installation of a fully automated smart metering infrastructure incorporating broadband powerline communications.

- Meters in locations not readily accessible (on roofs, in gardens)
- Meshed network in low voltage network of 600 MV/LV substations
- 28,000 meters read remotely
- Middle East’s most extensive BPL installation

An alternative to grid expansion for SAG and Mainova

SAG iNES is a solution to avoid grid expansion by exploiting available capacity in the low and medium voltage grids. The entire in feed and load flow situation is controlled in real time, and deviations can be fixed to achieve continuous balance with the minimum of intervention or downtime.

- Secure and autonomous operations at the mid- and low-voltage level
- Retro-Fit of existing grid structures for optimal use
- Cost–effective alternative to conventional grid expansion
- Modular design can be expanded at any time

Smart City Mannheim with IBM and MVV Energie

Modellstadt Mannheim (Moma) conducted a 4-year live study to build a stable smart grid and measure consumer engagement in the energy marketplace as it adjusted to the increasing availability of distributed renewables.

- 120,000 households and businesses connected with BPL, 1,000 field test customers
- ‘Energy Butler’ enabled automated as well as manual responses to price fluctuations