

For further information,
please contact:

Professor Jugdutt (Jack) Singh

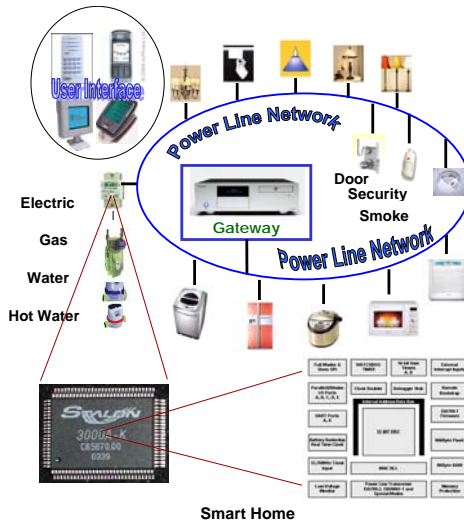
Director - Centre for Technology Infusion
 Research Professor – Micro/Nanoelectronics
 La Trobe University R&D Park
 Victoria 3086
 Australia

Email: CTI@latrobe.edu.au
 Phone: +61 3 9479 5628
 Fax: +61 3 9479 5209

*“Fostering high-tech industry
 development in ICT Sector”*

OVERVIEW

The powerline communication (PLC) technology uses AC powerlines instead of phone lines, cables or fiber optics as a medium of high speed data transfer. Traditionally, the narrowband PLC only offer a data transfer speed up to 5.4kbps. However, there is an emerging broadband over powerline (BPL), which is a type of PLC system capable of providing much higher data rates than previous PLC systems. Current BPL provides data rates of 4 - 20 Mbit/s, with the projection to increase the throughput up to 200 Mbps. PLC technology (narrowband and broadband) offers solutions for a wide range of industrial and residential applications, such as power grid management, power service management, home network, etc.



Smart Home

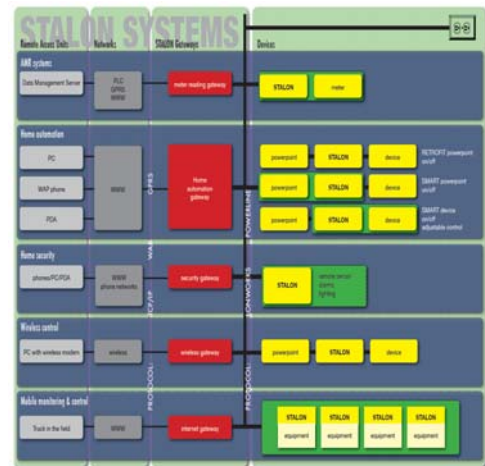
SMART HOME APPLICATION

Smart home is, in general, a dwelling incorporating a communications network that connects the key electrical appliances and services, and allows them to be remotely controlled, monitored or accessed (from within the dwelling and from outside the dwelling). Currently the best choice for builders to enable the home automation (HA) system for new houses is to install upgraded wiring during construction. However, this option is generally very inflexible and cost-prohibitive for existing houses. Fortunately, the PLC technology allows the development of automation to existing homes easily and quickly. The advantages of PLC are the already-available infrastructure, large coverage, simple to set-up, no wiring need and potential high speed (up to 200 Mbps with BPL).

STALON/SIMAC CHIP

One of the initiatives to facilitate the home automation is the development of a STALON/SIMAC chip by Semitech Innovations to allow the appliances and electrical meters communicate over the existing power lines.

The chip combines an ANSI/EIA 709.1 compliant core with an ANSI/EIA 709.2 compliant power line transceiver into a single chip. It is a highly integrated System-on-a-Chip (SoC) with onboard microprocessor, enabling it to be fully re-programmed for different devices and applications, including automatic meter reading (AMR), home automation and industrial monitoring & control systems. The STALON/SIMAC gateway collects data from respective smart meters as well as from the smart appliances via power line network. It could also send data to and receive instructions/command from the control centre and home owner at a distant location, via wireless, Internet and/or power line network.



STALON Roadmap

FUTURE DEVELOPMENT

A common problem with PLC technology, however, is electrical noise on the power line. In addition, there are home appliances and meters that are not connected to electrical wires, such as gas and water meters, in which case PLC is not an option and manufacturers turn to other communication methods, such as wireless. The new generation of PLC chip will have RF/wireless technology integrated as well to provide a complete solution for current and future smart home and industrial monitoring applications.

STALON CHIP SPECIFICATIONS

- Frequency: 73.53KHz – 131.98KHz
- Modulation type: Binary Phase-Shift Keying (BPSK) and Frequency Shift Keying (FSK) transmission
- Protocol: EIA709.2 and SIMAC Custom
- Speed: 2.7kbps – 5.4kbps

FURTHER INFORMATION

Email: CTI@latrobe.edu.au
 Website: www.latrobe.edu.au/tech-infusion