

HD-PLC LON Platform

Build faster control networks,
with more nodes and less costs,
using your existing wiring infrastructure.

Your customers will enjoy faster, lower cost deployments and smarter applications. And you'll love how easy it is to upgrade to HD-PLC with MegaChips and Gesytec.

THE SMART CHOICE FOR SMART BUILDINGS

The smart building market is moving fast. You need a communications technology that meets the bandwidth demands of today's highly converged networks and the budget requirements of project owners.

HD-PLC, the new LonMark standard for high-speed networks, gives you that with megabits of data over up to several kilometers of wiring (AC/DC powerlines, twisted-pair, coax, phone lines, etc.). Packed with innovations, HD-PLC from MegaChips brings big performance advantages—and cost savings—to modern smart building networks. It's a technology that puts you one step ahead in a fast-moving market.

HD-PLC ADVANTAGES

- + Blazing-fast megabit speeds over existing wiring reduces deployment cost
- + Multi-hop/mesh networking capability supports up to 1024 nodes over several kilometers of wiring and enhances robustness
- + IP-based free-topology simplifies network design and deployment
- + AES-128 encryption secures each node in the network
- + Ethernet and serial bridging simplifies integration of devices and networks
- + Low power consumption reduces total energy footprint

TWO INTERNATIONAL STANDARDS. ONE POWERFUL SOLUTION.



Based on the IEEE 1901 and ITU-T G.9905 international standards for high-speed communication, HD-PLC uniquely combines a high-frequency range (2MHz to 28MHz) with wavelet-based OFDM modulation to achieve PHY speeds up to 240Mbps over powerline channels. This gives device makers and system integrators a powerful solution that breaks through both cost barriers and bandwidth bottlenecks.

HD-PLC is an open standard supported by multiple vendors. Unlike other protocols that limit you to a single vendor's products, HD-PLC gives you the flexibility to select from multiple vendors with products ranging from discrete transceiver chips to fully integrated SoC's.

MegaChips is proud to offer the world's first fully integrated, IEEE 1901-compliant HD-PLC SoC with multi-hop (MLKHN1501). This powerful chip combines a state-of-the-art AFE with baseband, PHY, MAC layers, and SDRAM into a compact package to deliver fast, bidirectional, IP-based communication over any wire.

Built for demanding industrial applications, the modem uses advanced broadband techniques to achieve the most robust data communication possible over channels subject to high impulsive noise, interference and cable losses. The inclusion of multi-hop technology provides an added layer of robustness by enabling any node to act as a repeater.

MegaChips' HD-PLC SoC supports up to 1024 nodes in any network configuration, giving system integrators all the benefits of a free topology that they enjoy with other LonWorks protocols. Plus, it offers a host of features like built-in mesh networking, dynamic traffic routing, AES-128 encryption, and a network bridging functionality that make system integration fast and easy.

| | |
|------------------------------|---|
| Protocol IPv4/IPv6 | IPv4/IPv6 |
| Max. number of nodes | 1,024 |
| Max. number of hops | 10 |
| Throughput (without hopping) | 90 Mbps |
| Throughput (with multi-hop) | > 10 Mbps |
| Latency | 20 ms |
| Message throughput | > 200 p/s |
| Encryption | AES128 |
| Security | Whitelisting of devices |
| Physical layers supported | AC/DC power lines, twisted-pair, coax, Ethernet cabling and others |
| Operating temperature | -40°C to +85°C |

THE SMART WAY TO GET STARTED WITH HD-PLC

MegaChips has partnered with Gesytec to make it easy for you to upgrade to HD-PLC. Our HD-PLC LON Platform includes all the hardware, software and documentation you need to evaluate and design HD-PLC into your LON products.

COMPLETE HARDWARE SOLUTION SPEEDS TIME TO MARKET

At the heart of the platform is a standard MegaChips EVK running the HD-PLC and LON stacks. To this, Gesytec has connected an ARM Cortex M0-based CPU board to provide additional I/O and run the application-specific code. This simple partitioning enables you to run your application without interfering with device communications. It also gives you the flexibility to choose the right CPU for your application.



The platform is built to meet a wide range of application requirements. It includes 32KB SRAM, 256KB Flash, 1 ADC, 2 DACs, 8 analog I/O, 8 digital I/O, and UART/I2C/SPI/CAN interfaces. It can be powered from 100V to 240V AC, and provides PLC channels supporting up to 240V AC/DC communications.

The complete hardware solution is available as a module for low- and mid-volume products. It can also be licensed as a turnkey design for higher volume opportunities.

EASYLON PROTOCOL STACK (EPOS) MAKES LON DEPLOYMENT EASY

Developed by Gesytec, EPOS makes it easy to integrate new HD-PLC systems into LonWorks control networks. Thanks to the proven EPOS LON stack, the HD-PLC LON Platform acts as a standard LON device that can be managed by the LON tools you already know and love, including LonMaker for Windows and other third-party software.

EPOS is a full-featured LON protocol stack based on the ISO/IEC 14908 international standard. The HD-PLC

LON Platform uses IP-based communications (IPv4 or IPv6 multicasting) to encapsulate LON packets as UDP messages. This approach reduces overhead while enabling HD-PLC to act as a standard LON physical channel, like the well-known TP/FT-10 for twisted-pair or the old PLT-10 for power line.

A license for the EasyLON IP driver is included so that you can easily connect the HD-PLC LON platform to a Windows PC using its Ethernet port. EPOS comes with an XIF2Code generator that makes it easy to design the device interface and export a C framework for the host CPU to operate the I/O. A separate UART is available for diagnostics using an ST-Link debugger.

BCPM SUITE ACCELERATES DESIGN

The MegaChips BCPM Suite gives you the tools you need to quickly get to market. The SDK simplifies evaluation with tools for power control, channel monitoring, net test, and more. The included Network Manager makes it easy to configure, monitor, and manage complex networks.

HD-PLC LON PLATFORM

HARDWARE

- + 2 Evaluation Kits
- + 2 Breakout Boards
- + ST Link v2 USB Debugger

SOFTWARE

- + Megachips BCPM Suite
- + EPOS XIF2Code Generator
- + EPOS API for Cortex M0
- + EasyLON IP Driver for ISO/IEC 14908-8
- + EasyLON Analyzer License

SMARTER COMMUNICATIONS FOR A SMARTER WORLD



“We’re very excited to combine the LonMark Protocol Standard with the HD-PLC media to provide a high-performance solution for control networking applications. Network designers, owners, and users will benefit from greater choices, performance, and design flexibility.”

+ Ron Bernstein, CEO, LonMark International

LOOKING TOWARDS A SMARTER FUTURE

As more sensors and systems are integrated throughout the built environment, system integrators will need to adopt communications technologies capable of delivering the bandwidth and security demanded by today’s smart cities and buildings. LonMark’s adoption of HD-PLC for high-speed, multi-node networks provides a clear path to a smarter future.

Even more solutions are on their way. HD-PLC is a truly open standard, and multiple LonMark members are developing solutions to address this market. Additionally, Gesytec, MegaChips, and others are working on bringing the benefits of HD-PLC to BACnet, KNX, and other industrial automation protocols. Designers of smart city and building applications have plenty to look forward to.

LEARN MORE

Download the HD-PLC whitepaper, view data sheets, and sign up for updates at:

www.megachips.com/HD-PLC

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www.gesytec.de/