BlueChip PLC

MLKHN1501 Single-Chip HD-PLC w/Multi-hop

GENERAL DESCRIPTION

MLKHN1501 is the world's first fully compliant IEEE 1901 HD-PLC Power line Communications (PLC) solution with "multi-hop". It delivers bi-directional, IP based, high-speed communication over AC/DC power lines, COAX and twisted pair wiring where wider bandwidths, robustness, long-range, support for larger number of nodes, and highly secure network is required.

The MLKHN1501 combines the Physical (PHY), Media-Access-Control (MAC), 128Mb SDRAM, and a fully integrated Analog-Front-End (AFE) with high precision A/D, D/A data converters and programmable gain amplifiers (PGA) in a single compact package. The modem is based on an Orthogonal Frequency Division Multiplexing (OFDM), using advanced Forward-Error-Correction (FEC) techniques to allow the most robust high-speed data communication over channels with high implosive noise such as the harsh AC power lines.

The MLKHN1501 uses ITU-T G.9905, Centralized Matrix based Source Routing (CMSR) mechanism designed specifically to provide improved robustness, extended range, and wider coverage, while putting minimum load on the network. In addition, it uses a 128-bit AES encryption engine for the highest security at every node meeting today's Internet-of-Things (IoT) requirements.

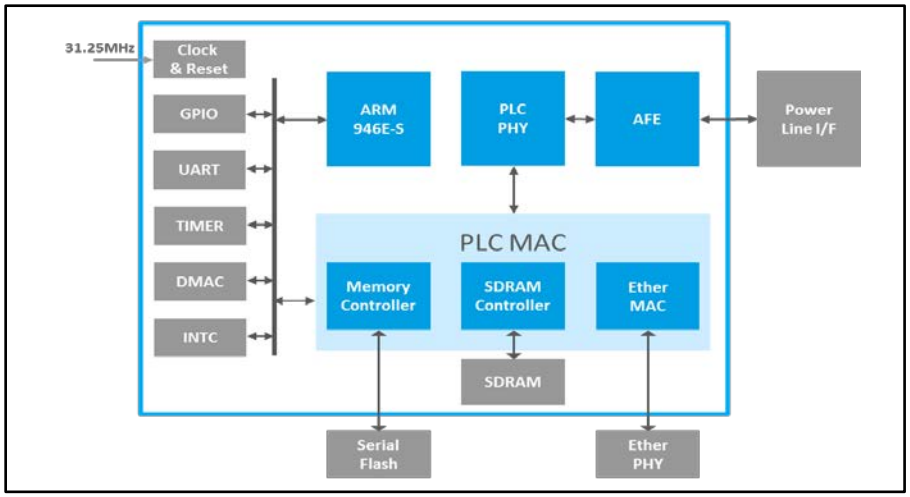
FEATURES

- Support up to 1024 nodes
- Range up to 10Km @10 hops
- Data rate up to 10Mbps (UDP/10 hops)
- Channel Access: CSMA/CA
- HD-PLC/Ethernet/RS485 bridge
  - Ethernet⇔PLC⇔Ethernet
  - RS485⇔PLC⇔RS485
- High noise immunity (0dB)
- Supports IPv4/IPv6
- Low power: 0.57W (typ)
- Meets EN50561-1 EMC requirements
- Free Topology
- Plug-and-Play
- Operating Temp: -40°C to +85°C

APPLICATIONS

- Smart Grid/AMI
- Smart Buildings/Homes
- Video Entry Systems
- Security/Surveillance
- Outdoor Lighting
- HVAC
- Industrial Automation
- Solar Power

BLOCK DIAGRAM



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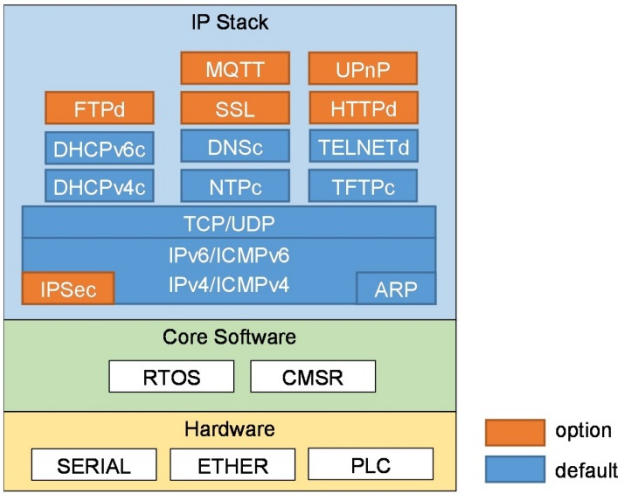
KEY SPECIFICATIONS

PLC Method	Frequency band	2-28MHz	Peripheral I/F		GPIO,UART, MII/RMII
	Modulation	Wavelet OFDM	Power Consumption	Full access	0.57W(Typ)
	PHY/MAC	IEEE1901 full compliant		Standby mode	0.12W(Typ)
	PHY Rate	240Mbps	Supply Voltage		1.2, 3.3V
	Error correction	Reed-Solomon, LDPC-CC	Operating Temp Range		-40℃ to 85℃
CPU		ARM w/16 Kb Cache	Encryption		AES 128bit
Memory (SDRAM)		128Mb	EMC		EN50561-1
System Clock		125MHz	Package		LBGA 238pin, 18x15mm

SOFTWARE DEVELOPMENT KIT



MegaChips offer various reference designs to qualified customers including schematics, layout, BoM and technical support.

Contents:

Master ROM tools

- Sample firmware
- External command sample program

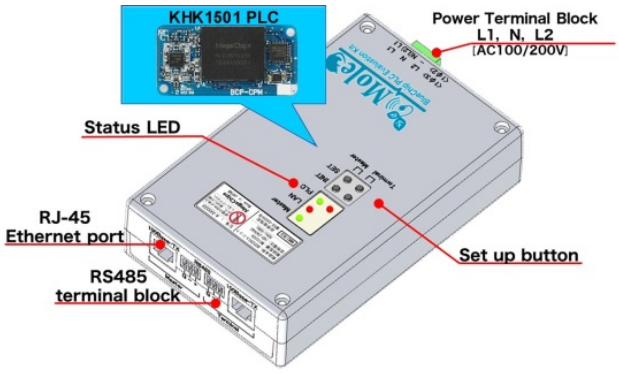
Evaluation tools

- Tool Manager
  (1) Power Control tool
  (2) Channel Monitor tool
- Net test tool

EVALUATION KIT

MegaChips offers a comprehensive set of tools to help customers shorten their design time.

Our evaluation kit includes all the hardware, software, and documentation to easily set-up and evaluate the performance of the system under various conditions and configurations. The included BlueChip PLC Network Manager helps customers to configure, monitor and manage complex networks.



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