



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



## 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/256Mb RAM, 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.

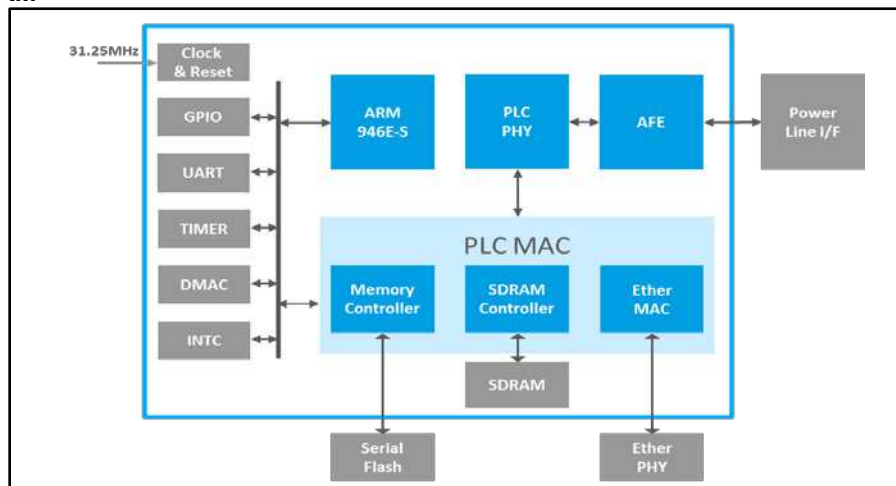
### ■ FEATURES

- 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





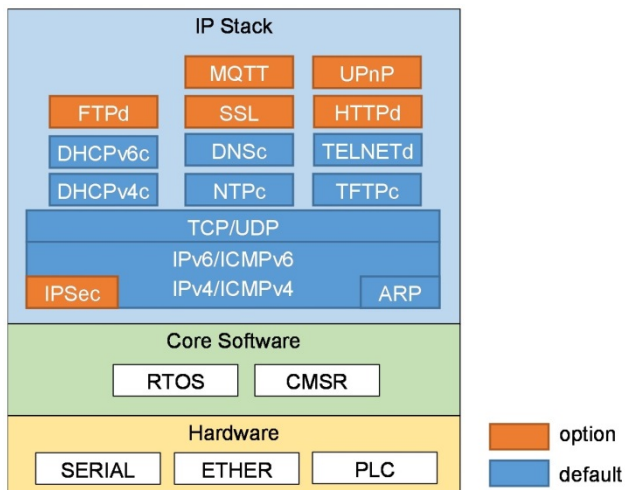
## MLKHN1501

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

### 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°C to 85°C        |
| CPU            |                  | ARM w/16 Kb Cache       | Encryption           |              | AES 128bit           |
| Memory (SDRAM) |                  | 128Mb/256Mb             | EMC                  |              | EN50561-1            |
| System Clock   |                  | 125MHz                  | Package              |              | LPGA 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

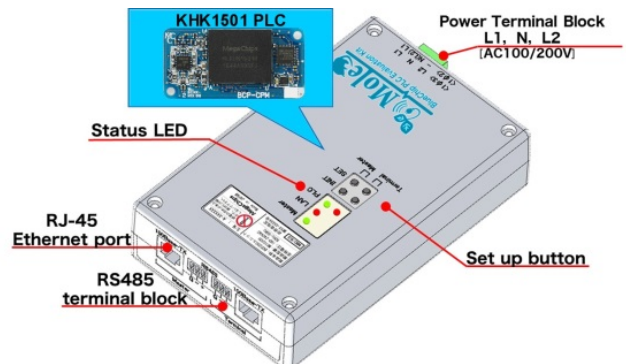
Evaluation tools

- 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.



| MegaChips Corporation   |   |  | MegaChips Technology America Corporation  |
|---|---|--|---|
| Corporate Headquarters<br>Shin-Osaka Hankyu Building<br>1-1-1 Miyahara, Yodogawa-ku<br>Osaka 532-0003, Japan<br>Tel +81-6-6399-2884 | Makuhari Office<br>1-3, Nakase,<br>Mihama-ku,<br>Chiba 261-8501, Japan<br>Tel +81-43-296-7414 | Tokyo Office<br>17-6 Ichibancho,<br>Chiyoda-ku,<br>Tokyo 102-0082, Japan<br>Tel: +81-3-3512-5083 | 2033 Gateway Place,<br>Suite 400,<br>San Jose, CA 95110, USA<br>Tel: +1 (408) 570-0555<br>E-mail: <a href="mailto:mca_sales@megachips.com">mca_sales@megachips.com</a><br><a href="http://www.megachips.com/">http://www.megachips.com/</a> |
| <a href="http://www.megachips.co.jp">www.megachips.co.jp</a>  |   |  |   |