MLKHN1500 is the world's first fully compliant IEEE 1901 HD-PLC Power line Communications (PLC) solution delivering 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 MLKHN1500 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 data communication over poor channels, especially in environments with high implosive noise such as the harsh AC power lines. Security is provided by a 128-bit AES encryption engine meeting today's Internet-of-Things (IoT) requirements.

Evaluation boards, reference design, Software Development Kits (SDK) and Hardware Development Kits (HDK) are now available to help speed up your evaluation and development projects.

FEATURES

- Channel Access: CSMA/CA
- HD-PLC/Ethernet/RS485 bridge
  - Ethernet⇔PLC⇔Ethernet
  - RS485⇔PLC⇔RS485
- High noise immunity (0dB)
- Low power: 0.57W (typ)
- Supports IPv4/IPv6
- 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
**MLKHN1500**

**Single-Chip HD-PLC**

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### KEY SPECIFICATIONS

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<th>PLC Method</th>
<th>Frequency band</th>
<th>Peripheral I/F</th>
<th>Power Consumption</th>
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<td></td>
<td>2-28MHz</td>
<td>GPIO, UART, MII/RMII</td>
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| Modulation   | Wavelet OFDM   | Power Consumption       |                   |
|              |                | Full access             | 0.57W(Typ)        |

| PHY/MAC      | IEEE1901 full compliant | Power Consumption       |                   |
|              |                            | 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            | EMC                      | EN50561-1        |

| System Clock  | 125MHz           | Package                  | LBGA 238pin, 18x15mm |

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### 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

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### 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.