INT6000 HomePlug® AV High-Speed Powerline Solution

Benefits

Intellon’s High-Speed HomePlug AV Powerline Solution is the highly integrated INT6000 HomePlug AV MAC/PHY transceiver. The INT6000 high-speed IC enables network devices that are fully compatible with the HomePlug AV specifications and capable of delivering up to 200 Mbps over the power line.

The INT6000 provides a highly integrated and optimized solution for high-speed powerline networking adapters and embedded products. It offers the higher bandwidth necessary to drive next-generation home entertainment applications including High Definition (HD) and Standard Definition (SD) video distribution, TV over IP (IPTV), networked digital video recorders (DVR) and media center PCs. Additional broadband applications for the INT6000 solution include whole house audio, extension and bridging of high speed wireless technologies such as 802.11x and UWB, and higher data-rate broadband sharing based on technologies such as ADSL2+, VDSL and fiber-to-the-home (FTTH).

The following host interfaces offer maximum system flexibility:

- MII PHY (IEEE 802.3u) interface for interconnection to Ethernet controllers
- MII Host/ DTE interface (IEEE 802.3u) for interconnection to Ethernet PHY
- Peripheral Component Interconnect (PCI) local bus
- Memory Bus Interface (MBI)

The INT6000 IC implements HomePlug AV technology, which is tailored to reliably deliver up to 200 Mbps over the harsh powerline communication environment. The chipset combats deep attenuation notches, noise sources, and multi-path fading by using windowed OFDM, Turbo Convolutional Codes, precise channel adaptation and noise mitigation based on AC line cycle synchronization.

The MAC implements a mix of TDMA and CSMA/CA access protocols with prioritization and automatic repeat request (ARQ) for reliable delivery of packets. The TDMA mechanism provides strict QoS guarantees such as bandwidth reservation, tight control of latency and/or jitter, and quasi-error free delivery. These features are essential to provide efficient end-to-end delivery of broadcast quality HD and SD video streams over the harsh power-line environment.

Features

- Single-chip high-speed powerline MAC/PHY transceiver with integrated MII, Ethernet, PCI, and Memory Bus interfaces
- Up to 200 Mbps on the power line
- HomePlug AV compliant
- Co-existence with HomePlug 1.0 nodes
- Support IGMP managed multicast IP transmission
- Implements windowed OFDM, precise channel adaptation and noise mitigation based on patented line synchronization techniques for high data reliability under noisy media conditions
- Implements both TDMA and CSMA/CA access protocols for optimum MAC performance
- Enhanced Quality of Service (QoS) features: eight levels of prioritized random access, contention-free access, and segment and packet bursting
- Intelligent dynamic channel adaptation maximizes throughput under harsh channel conditions
- Advanced Turbo Code Forward Error Correction (France Telecom – TDF – Groupe des ecoles des telecommunications Turbo codes patents license)
- Supports 1024/256/64/16/8 QAM, QPSK, BPSK, and ROBO modulation means
- 128-bit AES Link Encryption with key management for secure powerline communications
- Flash interface for fast access to configuration parameters
- 289-contact BGA package
The CSMA/CA protocol provides efficient delivery of asynchronous traffic. Built-in Quality of Service (QoS) features provide the necessary bandwidth for multimedia payloads including voice, data, audio, and video. A four-level prioritized random access method is supported with strict adherence to priority. Segment bursting on the power line minimizes the demands on the receiver resources and maximizes the throughput of the network, while still providing excellent latency response and jitter performance. The contention-free access capability extends this concept of segment bursting to allow the transmission of multiple frames over the power line without relinquishing control of the medium.

Target Applications

- High Definition (HD) and Standard Definition (SD) video distribution
- TV over IP (IPTV)
- Backbone for Wi-Fi, UWB and Wireless USB
- Higher data rate broadband sharing
- Shared broadband internet access
- Audio and video streaming and transfer
- Expanding the coverage of wireless LANs
- Voice over Internet Protocol (VoIP)
- PC files and applications sharing
- Printer and peripheral sharing
- Network and online gaming
- Security cameras

Just plug it in!