

AR7400

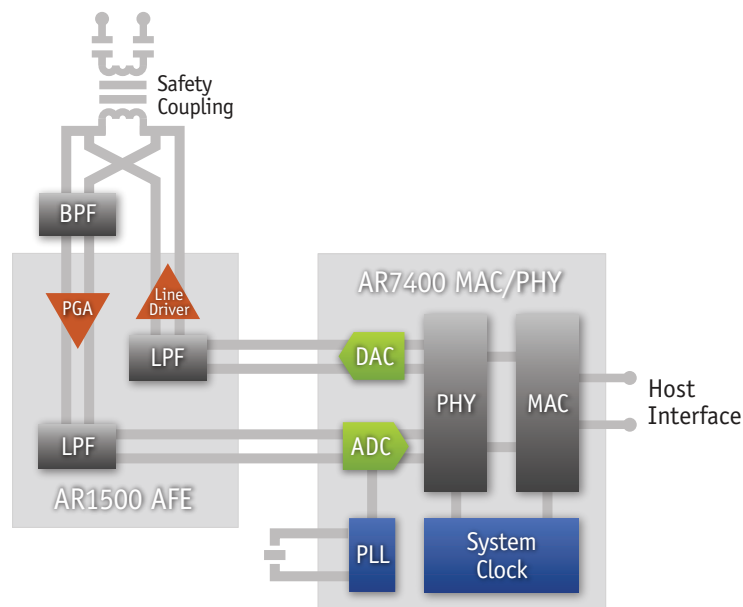
IEEE 1901 compliant HomePlug® AV
MAC/PHY Transceiver



Solution Highlights

- Supports up to 500 Mbps PHY rates over powerline and 700 Mbps PHY rates over coax
- Highly integrated MAC/PHY transceiver, supporting MII and RGMII interfaces
- Support for low power EuP directive
- IEEE 1901 and HomePlug AV PHY:
 - Supports OFDM 4096/1024/256/64/16/8 QAM, QPSK, BPSK and ROBO Modulation Schemes
 - 128-bit AES Link Encryption with key management
 - Windowed OFDM with noise mitigation based on patented line synchronization techniques improves data integrity in noisy conditions
 - Dynamic channel adaptation and channel estimation
 - Advanced Turbo Code Forward Error Correction
- IEEE 1901 and HomePlug AV MAC:
 - Priority-based CSMA/CA channel access schemes maximize efficiency and throughput
 - Integrated Quality of Service (QoS) enhancements with programmable packet classification engines and multiple priority queuing
 - Supports IGMP managed multicast sessions
- RoHS Compliant: 15x15 mm, 196 LBGA, Pb-Free package

AR7400 Architecture



Combining Powerline with Atheros' rich portfolio of WLAN and Ethernet products, we are transforming networking in the digital home with unified Wi-Fi/PLC/Ethernet gateways, and with dynamic meshed networks employing the nimble combination of Wi-Fi and Powerline adapters throughout the home. The combination of these great connectivity technologies will enable a new class of networking for consumer electronics, computing as well as mobile devices in the home that benefit users with added capacity, flexibility, reliability and ease-of-deployment.



Technology Overview

Atheros is committed to addressing the dramatically expanding connectivity requirements of the digital home. The AR7400 is the latest and fastest in Atheros' AMP™ Powerline solutions portfolio and is IEEE 1901 and HomePlug AV compliant. This fourth-generation HomePlug AV-based IC delivers carrier-grade broadband communications over both powerlines and coax.

For consumers and service providers using powerline, AR7400 technology enables fast, wired networking within a home using the home's existing electrical wiring. It performs even faster over coax, providing last-mile broadband access in multi-dwelling units. In these Ethernet-over-Coax applications, it delivers PHY rates of 700 Mbps and up to 350 Mbps of throughput over coax.

Product Overview

The AR7400 is a Powerline Communications (PLC) transceiver IC. This IC enables the world's smallest, highest performing and lowest power HomePlug AV-based and IEEE 1901-compliant products yet deployed. The chipset operates over a wider spectrum (2 MHz to 68 MHz), delivering over 2x the PHY rate speed of current HomePlug AV solutions.

The AR7400 transceiver is optimized for multi-media streaming applications to reliably deliver up to 500 Mbps PHY rate over the home's AC wiring. The AR7400 includes a complete IEEE 1901 and HomePlug AV MAC and PHY, an Ethernet MII/RGMII Host Interface and an external memory interface that supports SDRAM/DDR memory. The AR7400 includes high-precision A/D (Analog-to-Digital) and D/A (Digital-to-Analog) converters required for analog interface to the AR1500 AFE/Line Driver IC.

The companion chip is the AR1500 AFE/Line Driver IC. The AR1500 AFE/Line Driver IC includes a Tx filter, a programmable-gain line driver and a programmable-gain Rx amplifier. The amplifier programmability allows signal optimization and multiple country support.

There is Here.™

AR7400

IEEE 1901 compliant HomePlug AV
MAC/PHY Transceiver



RD7400-GE Reference Design Highlights

- Gigabit Ethernet Wall Adapter Reference Design
- Based on 4th-generation IEEE 1901 and HomePlug AV compliant AR7400/AR1500 Chipset
- Supports 500 Mbps PHY rates over powerline
- EuP low power directive compliant
- Emissions Compliance
 - FCC Part 15
 - CE class A and class B
- Reference design covers U.S., and Euro plug types

AR7400 MAC/PHY Transceiver

- IEEE 1901 and HomePlug AV compliant
- Supports MII and RGMII interfaces
- Supports SDRAM/DDR Memory
- Support EuP Low Power Directive

AR1500 AFE/Line Driver IC

- Companion to the AR7400 MAC/PHY IC
- Supports 2 MHz to 68 MHz operating frequency
- High precision low-noise receiver
- Integrated Tx Line Driver
- Programmable Tx gain control amplifier

Atheros Communications is a global leader in innovative technologies for wireless and wired communications. Atheros combines its wireless and networking systems expertise with high-performance radio frequency (RF), mixed signal and digital semiconductor design skills to provide highly integrated chipsets that are manufactured on low-cost, standard complementary metal-oxide semiconductor (CMOS) processes. Atheros technology is used by a broad base of leading customers, including networking equipment, computing and consumer device manufacturers.

AR7400 Specifications

Frequency Band	2 – 68 MHz
Network Standard	IEEE 1901 and HomePlug AV
Modulation Technology	Windowed OFDM
FEC Coding	Turbo Code
Hardware Encryption	AES 128-bit
Quality of Service	VLAN/TOS/Packet Classifier/ Quasi Error Free Delivery for IPTV service
Communications Interface	MII/RGMII
Peripheral Interface	SPI/GPIO/UART/I2C
Memory Interface	SDRAM/DDR
Supported Data Rates	500 Mbps PHY rate
Low Power Design	Support EuP Low Power Directive
Customization Functionality	LED and Programmable Switches
Security	Supports “Simple Connect” with Push Button Encryption and Network Management Key
Diagnostic and Management Interface	HomePlug AV generic and vendor specific Management Message Entries (MME) TR-069 Remote Management
Worldwide Regulatory Support	Programmable Power Amplitude adjustments
Tools	Atheros Powerline Toolkit that supports Linux/Windows/RTOS OS Complete Software Development Kit User Interface Utility

For more information on the AR7400 or other solutions from Atheros contact your local representative:

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