

Dual Channel 10/100 Ethernet PHY

The μPD60620 Dual Channel 10/100 Ethernet PHY is a fully integrated physical layer device to connect to standard IEEE802.3 Ethernet networks. In applications such as industrial networking, daisy chain and ring topologies are becoming more popular due to reduced cabling costs and increased redundancy. For such applications, two-channel PHYs optimized for low latency and offering enhanced diagnostic functions are recommended. For such applications two channels are used. This device specifically focuses on low latency and low jitter to support today's industrial Ethernet standards. Renesas' specific enhanced diagnosis features allow a permanent cable quality monitoring for easy maintenance in factory automation.

The PHY can connect to twisted-pair cable via external magnetics or to optical fibre via fibre PMD modules. It interfaces to an Ethernet MAC through the IEEE 802.3 Standard Media Independent Interface (MII) or reduced MII interface.

APPLICATIONS

- > Industrial networking such as EtherNet/IP, Profinet, ModbusTCP and others
- > 10/100 Mbps LAN on motherboard (LOM) and network interface card (NIC)
- > Switches, routers and repeaters with 10/100 Mbps capable ports
- > Test and measurement applications
- > Home servers, broadband routers, printers, game equipment and IP phones
- > Telecom base stations
- > Real-time networking
- > Audio/video transmission

SPECIAL FEATURES

- > Low latency and low jitter for industrial networking
- > Fast link-down detection
- > Permanent cable quality tracking
- > Enhanced system testability (such as bypass, loopback and cable length measurement by TDR)
- > Fast link-up option
- > Industrial networking special auto-negotiation function
- > Fast error detection
- > Cable monitoring and error detection

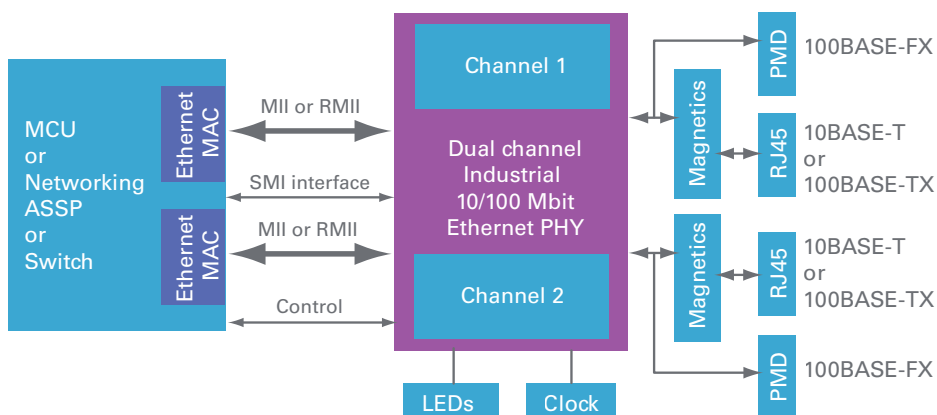
PRODUCT FEATURES

- > Two channel PHY
- > Fully standard compliant with IEEE 802.3 for 100BASE-TX, 100BASE-FX and 10BASE-T
- > MDI interface:
 - » 10BASE-T and 100BASE-TX to twisted-pair cable via magnetics
 - » 100BASE-FX to fiber via optical module
 - » SMI at 25 MHz
- > Integrated PMD sub-layer featuring adaptive equalization and baseline wander correction
- > IEEE 802.3 auto-negotiation and parallel detection
- > Full and half duplex operation
- > Supports automatic polarity detection and correction
- > Supports automatic MDI/MDI-X crossover

UPPER LAYER INTERFACE

- > Flexible MAC interface: MII and RMII
- > Serial management port (MDC/MDIO)
- > Supports user programmable interrupts
- > Enables software power-up/down and automatic power-up/down by energy detection
- > Single 3.3V power supply
- > Operating temperature: $T_{\text{ambient}} = -40$ to $+85$ °C (T_{junction} from -40 to $+125$ °C)

SYSTEM SET-UP



ORDERING INFORMATION:

Dual Channel Ethernet PHY: UPD60620GK-GAK-AX

DEVELOPMENT TOOLS:

A Starter Kit is now available under the ordercode YSK-Ethernet-PHY-ASSP.

For Starter Kits and samples please contact your Renesas office or distributor.

SOFTWARE DRIVER:

A generic driver applicable for various operating systems is in preparation.

PACKAGE:

LQFP80 – 12x12 mm, 0.5 mm pitch

80-PIN PLASTIC LQFP (12x12)

