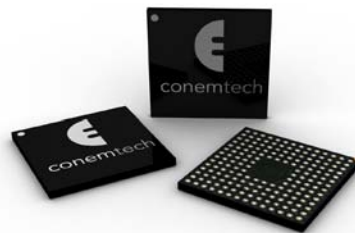


# C34 - Time and Frequency Synchronization with GPS reference

## Applications

- Packet Network Time and Frequency Synchronization Controller
- Edge Grandmaster in Telecoms
- IEEE 1588 Version 2 ordinary clock
- Low Power GPS time to Ethernet converter.



The C34 is an Application Specific controller for time and frequency synchronized applications. Its outstanding features stem from the ability to analyze and act on gate level, in real-time. The central functionality of the integrated circuit is delivered by its hardware based TimeStamp Engine (TSE). The component integrates an advanced operating system environment which enables software to access the timestamping process in a flexible way.

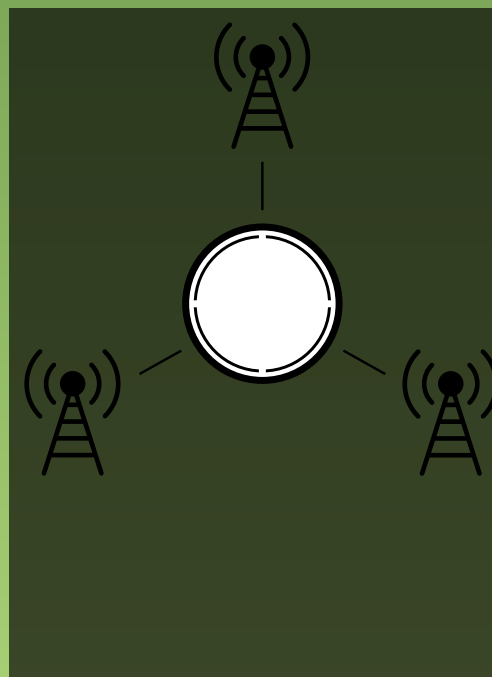
On top of the TSE and platform software a protocol stack and loop control filter software is running for the implementation of the IEEE 1588 version 2 standard. The true strength of the component is the combination of very efficient hardware and software to enable this accuracy in complex network environments.

A slave application on the basis of the C34 can leverage the components ability to manage the complete TCP/IP and UDP stacks up to 18.5 Mbit/s. It can share the same IP address as the local network processor up to 60 Mbit/s. This is done while running the time and synchronization stack for IEEE 1588 up to and beyond the recommended sync rates of the 1588 version 2 standard.

The C34 dramatically reduces the cost, power budget and board space for time and frequency synchronization. The IC embeds a complete software platform including real-time operating system, flash file system, TCP/IP communication stack, FTP and web server. For the IEEE 1588 protocol version 2, a software stack with full ordinary clock implementation is integrated.

## Features

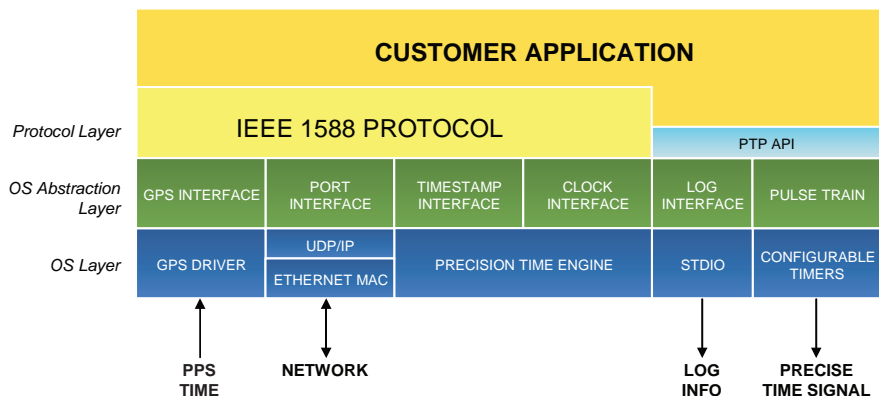
- Hardware Timestamp Engine (TSE)
- Three RS-232 ports (CMOS levels)
- SPI port
- Reference input (PPS from GPS)
- PPS and frequency output
- Up to 18.5 Mbit/s sustained UDP throughput with 1 Hz synch rate
- Supports 60 Mbit/s data paths
- Capacity to send up to 512 synchronization messages per second
- Max 80 mW power consumption.



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## Block Diagram

The GPS driver of the C34 enables the design of UTC referenced Grandmasters in IEEE 1588, or, GPS synchronized slaves using IEEE 1588 as backup. In case of a GPS signal failure, the platform will enter a holdover mode, or, if connected to a IEEE 1588 network, a master/slave mode.



A top level system API enables customers to add applications to make use of the precise time besides the application of a disciplined clock. The local precise time can be used by the software, or, directly by external hardware through the many GPIO ports of the device. The time signal presentation to the external is very precise, since it has no jitter caused by instruction execution.

## Development Tools

The DK5 is a complete kit for the development environment of Conemtech's connected embedded controllers with IEEE 1588 time synchronization. The kit is intended for the development of compact grandmasters, high precision slaves or ordinary clocks in the IEEE1588 network. It consists of a P50 OEM systems board with a small M50 subsystem module mounted, a trace adapter for real-time debugging and software. An integrated development environment enables the application designer to manage projects with configurations for different clock modes and precisions. The dimensions are 100x60 mm.



The DK4 development kit incorporates the P40 OEM system with the same general functions as of the DK5/P50, but for a single channel application. The DK4 dimensions are 85x54 mm.

### Technical Specifications

- High Performance C3 core
- Supply Voltage 3.0 – 3.6V, optional 1.8V
- Max power consumption 80 mW
- 80 Input/Output pins with tri-state support
- Clock frequency up to 167 MHz
- Package 12x12 mm BGA 180, pitch 0.8 mm
- Operating temperature -40 to +85 °C
- RoHS compliant.

### Ordering Information

C34 integrated circuit (BGA180)

other products:

M20-34 processor module with C34

M50-34 subsystem module with C34

P40 assembled OEM board with M20

P50 assembled development/OEM board with M50

DK4 development kit and design system, one channel, P40 based

DK5 development kit and design system, two channels, P50 based.

Conemtech may make changes to specifications and product descriptions in this document at any time, without notice.

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