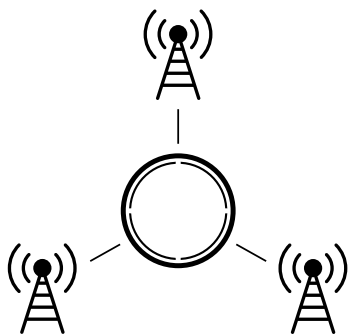


C32 – IEEE 1588 Slave Processor



Applications

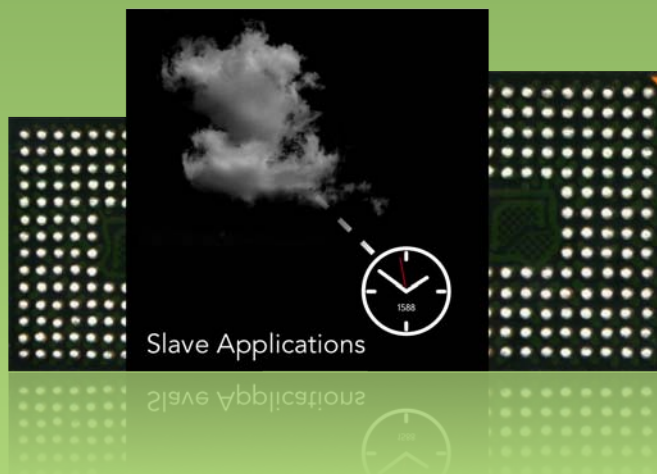
- Timing and Synchronization
- Telecom Network clients
- Industrial Automation
- Robotics
- Power Transmission
- Test and Measurement
- Sensor Networks

The C32 represents a new type of platform components with an ASSP profile from Conemtech. Its C3 core combines the best features of traditional CISC architectures and efficient use of resources with FPGA flexibility for a pre-defined application – time and frequency synchronization in packet networks. It substantially reduces the cost and size of precision time synchronization hardware using the IEEE 1588 protocol. The outstanding features of the C32 stem from the ability to analyze and act on gate level in real-time.

The processor architecture optimized on memory interaction without cache results in high energy efficiency and performance. With its ability to sustain 60 Mbit/s of IP dataflow while running the IEEE 1588 Protocol Engine software and consuming less than 80 mW the IM3220 offers the best performance/energy ratio in the industry. The C32 integrated circuit comes with a complete software platform including real-time operating system, flashfile system, TCP/IP communication stack, FTP and telnet server. A IEEE 1588-2008 protocol stack is included in the C32 and the software platform comes integrated and tested as a firmware profile for timestamping applications - ready to use.

Features

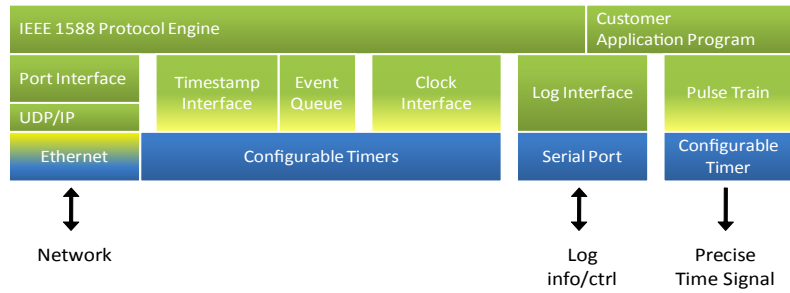
- Deterministic Real-Time Operating System and power fail-safe file system
- Supports C and Assembler programming
- Advanced source level debugging and profiling
- Accelerated IEEE 754 Floating Point arithmetic, single and double precision
- The arithmetic core contains both ALU and Multiplier-Accumulator (8x8 and 32 bits, respectively)
- Dual channel 10/100Mbit/s Ethernet MAC
- Three UARTs, one I²C/SPI serial interface
- Eight DMA channels with 83 MB/s sustained total data rate
- Eight ADC and two DAC channels
- Precise Timestamp Engine with IEEE 1588 support
- Up to 60 Mbit/s sustained pass through capacity (Ethernet channel 0 to channel 1)
- Hardware communication channel supporting synchronization frame rates up to > 128 Hz
- Software controlled PLL, multiple power saving modes.



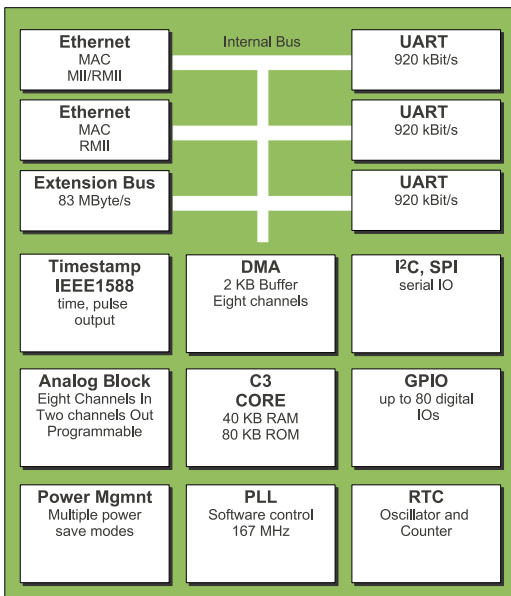
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IEEE 1588 timestamp support

The C32 can discipline its PTP clock by controlling an external oscillator using an analog control signal or a digital serial interface. As a lower-cost alternative it can use its on-chip oscillator, with only a crystal externally. The local precise time can be used both by software and directly by external hardware through the GPIO ports. The time presentation to the external is very precise, since it has no jitter caused by instruction execution.



Block Diagram



Technical Specifications

- Supply Voltage 3.0 – 3.6V, optional 1.8V core
- Max power consumption is below 80 mW at 1.8V and 3.3V at 167 MHz.
- Real-time clock current consumption 5 μ A
- Operating temperature range -40 to +85 $^{\circ}$ C
- 167 MHz max. oscillator frequency
- 80 Input/Output pins with tri-state support
- 12x12 mm BGA, 180 connections (14x14 grid, 0.8 mm pitch).

Ordering Information

- | | |
|-----------------|--|
| C32 | integrated circuit (BGA180) |
| other products: | |
| M20-32 | processor module with C32 |
| M50-32 | subsystem module with C32 |
| P40 | assembled OEM board with M20 |
| P50 | assembled dev/OEM board with M50 |
| DK4 | development kit and design system, one channel, P40 based |
| DK5 | development kit and design system, two channels, P50 based |