

# IM3910 a High-Efficiency Controller for Networked Equipment

## Applications

- Networked Equipment
- Battery Powered Devices
- Real-time Control
- Graphical User Interfaces
- Internet Connected Systems
- Telematics Information Exchange
- Java Enabled Applications, e.g.
  - Remote Device Management
  - Facility Automation
  - Point of Sales



The IM3910 is a dedicated controller for networked applications in real-time environments. Its high energy-efficiency and ability to deliver a sustained throughput of 83 Mbyte/s makes it also an ideal choice for performance critical operations in battery powered devices. The microcoded architecture outperforms typical RISC processors in applications where memory size, component count and power consumption must be kept at a minimum. Enabled with Java, the IM3910 provides remote management capabilities and support for various user interfaces. Applications with networked equipment, graphical user interfaces, internet connections and battery operation will leverage on the IM3910 controller.

The IM3910 sets new standards for energy efficiency due to its microcoded control logic and patented memory interface. The embedded Java Virtual Machine is an integral part of the controller, reducing the interpretation overhead and increasing code efficiency. Microcoded native instructions enable true parallel execution and superior performance on limited power. Imsys' software API on the IM3910 is well adapted to networked automation and control systems and the application designer can mix and match between Java, C and assembler languages to reach optimal performance.

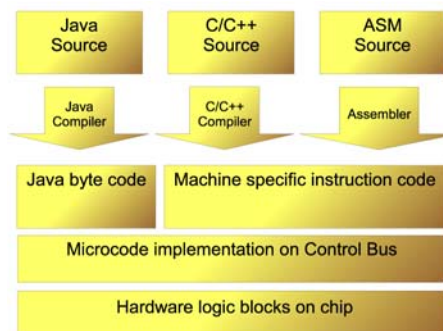
## Features

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>□ Deterministic real-time operating system for critical applications</li> <li>□ Supports C, Java and assembler programming</li> <li>□ Advanced source level debugging from Java down to assembler</li> <li>□ Accelerated IEEE 754 Floating Point arithmetic, single and double precision</li> <li>□ SDRAM interface, 4 GB address range, auto detected configuration</li> <li>□ Multiplier-Accumulator (8x8 and 32 bits, respectively)</li> </ul> | <ul style="list-style-type: none"> <li>□ General purpose HW timer system</li> <li>□ Dual channel 10/100Mbit/s Ethernet MAC</li> <li>□ Eight DMA channels with up to 83 MByte/s sustained total data rate</li> <li>□ Three UARTs 920 kBit/s</li> <li>□ I<sup>2</sup>C/SPI serial interface</li> <li>□ SDRAM interface, 4 GB address range, auto detected configuration</li> <li>□ Software controlled PLL.</li> </ul> |
|--|--|

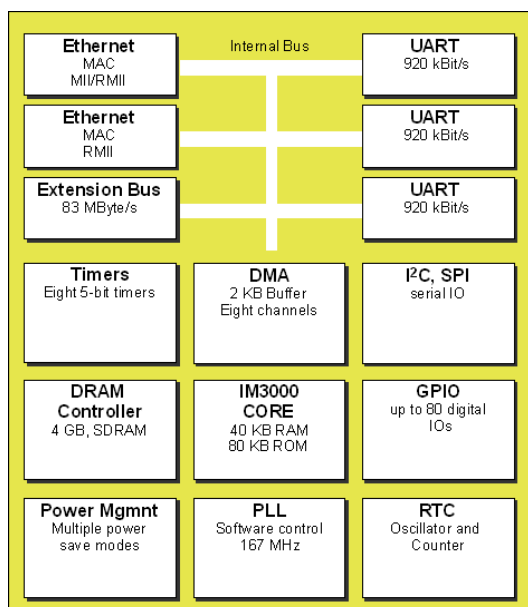


## Software Development – abstraction levels

- Java or C for complex, not very time critical tasks, for example User Interface, printer paper handling, etc
- C and assembler, for medium complexity, medium speed applications, for example device drivers
- Vendor provided microcode, for time critical algorithms, for example image processing, real-time kernel functions or fast I/O
- Integrated application development environment available, ordering code IMDK3-3910.



## Block Diagram



The block diagram shows the main parts of the processor.

The microcode in the internal ROM and RAM controls the processor logic and hardware resources. It also provides the abstraction layer used by the software.

The architecture enables acceleration of CPU intensive tasks by orders of magnitude. By micro-coding functions like encryption, half-toning, time stamping, high-resolution screen refresh etc, the processor can handle tasks not possible in comparable products - concurrently.

Cost effective solutions are enabled through multiple on-chip interfaces.

## Technical Specifications

- Supply Voltage 3.0 – 3.6V, optional 1.8V core
- Typical internal power consumption is 42 mW at 1.8V/167 MHz including core, PLL, DMA etc.
- Additional 20 mW is consumed by the SDRAM interface 3.3V/167MHz
- Real-time clock current consumption 5  $\mu$ A
- Operating temperature range -40 to +85  $^{\circ}$ C
- 167 max. oscillator frequency
- 80 Input/Output pins with tri-state support
- 12x12 mm SSBGA, 180 connections (14x14 grid, 0.8 mm pitch).



Imsys may make changes to specifications and product descriptions at any time, without notice. Java and all Java-based marks are trademarks or registered trademarks of Sun Microsystems, Inc.