

Imsys VELOX™

Highly Integrated Compact Controller Module

Compact, Low-Power Module – A Complete Platform for Java Applications

- Internet of Things
- Ethernet or Wireless
- Remote Management
- Robotics & Sensors
- M2M / Telematics Clients
- Graphical Operator Panels
- Building & Factory Automation
- Retail Automation, POS, Digital Signage
- Office and Medical Equipment
- Security & Video Surveillance

Imsys VELOX offers a simple way of reducing design time and risk. It contains all basic hardware and software needed for communication and control – just add your Java application.

Many years of experience and several generations have led to this product. The Imsys VELOX offers a robust and complete single-component hardware, based on Land Grid Array (LGA) technology. With many connections, LGA has been found to be the most reliable surface-mount technology (SMT) for compact PCB modules. The two-dimensional LGA pattern allows for more signals without the need for high connection density, thereby offering access to all interfaces of the Imsys processor without increasing manufacturing cost or compromising reliability. Imsys VELOX is ideal for OEMs needing a powerful computer-on-module for minimizing time-to-revenue.

Imsys VELOX is based on Imsys' native-mode IM3000 Java processor. This allows user applications to run without Java byte code interpreter or JIT compiler. You just copy your Java class or jar files over and run them. Firmware and application software can be uploaded and managed through the network connection. The module contains JVM/CLDC environment with TCP/IP stack, Web/FTP/Telnet servers, device drivers for various I/O interfaces, and an easy-to-use command line interface. The JVM encapsulates the Rubus™ real-time operating system – which is well proven in safety-critical applications from Audi, BAE Systems, and Volvo – as well as a flash file system with wear leveling and power fail recovery. The embedded Java environment greatly accelerates development and eases deployment.



Actual size 25.4 x 31.9 mm (front and back shown)

Java class files generated by any Java IDE (Eclipse, Netbeans) are directly executable on Imsys VELOX. Development kit hardware and reference designs are available. The Imsys Developer (a complete IDE) can be utilized for hardware debugging and software development in Java, C and assembler, with breakpoints, dynamic variable inspection, and single step debugging at all levels.

Features

- High-performance, multi-threaded Java execution
- Certified J2ME-CLDC Java Virtual Machine
- Enhanced performance for special functions e.g. graphics, crypto, and floating point operations
- Rubus JOS RTOS with failsafe flash file system
- MMC/SD card support
- TCP/IP stack, Web/FTP/Telnet server
- Extensive I/O functions through Java APIs, including PPP, FTP, e-mail, GPIO, timers
- 2*/ 4*/8 Mbytes flash memory
- 8/32 Mbytes SDRAM
- 10/100 Base-T Ethernet MAC and PHY*
- Optional MII or second RMII Ethernet interface
- Three serial ports (3.3V levels, 4-wire, 920 kb/s)
- High-speed I2C and SPI buses
- Parallel 8-bit high-speed data bus
- 8 to 53 general-purpose digital I/O ports
- High-I/O bandwidth (>660 Mbits/s DMA)
- Real-time clock with 3V battery input
- Eight-channel A/D, 16-bit 44 kS/s converter with optional external reference voltage
- Two D/A 16-bit 44 kS/s converters
- 167 MHz oscillator frequency
- Commercial/industrial* temp range
- Interface for Imsys JTAG-like trace adapter
- Reference designs available, complete with schematics and firmware for:
 - Dallas/Maxim 1-wire
 - CAN
 - CD-quality audio

*) Option

imsystech.com

Hardware

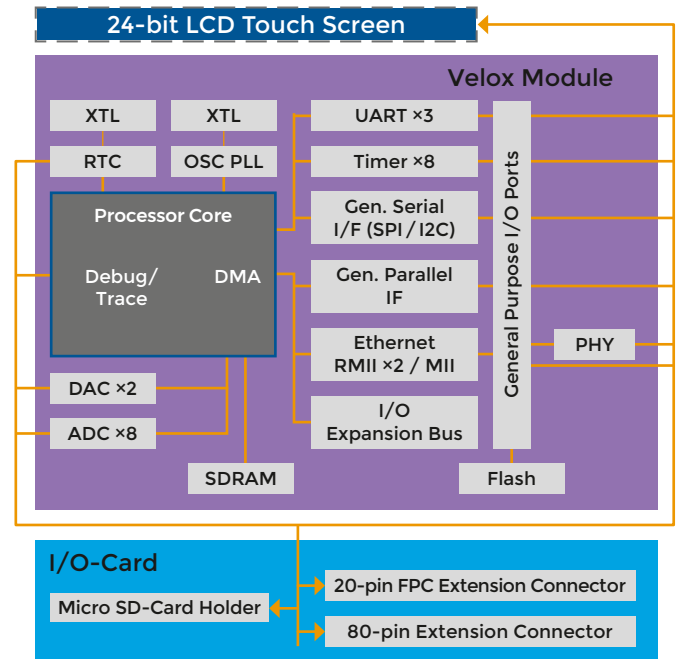
This block diagram shows the main parts of the processor IC as well as the main auxiliary components on the Imsys VELOX module PCB.

Microcode inside the core controls the processor logic and hardware resource, in addition to providing the abstraction layer used by the software.

The architecture enables acceleration of CPU intensive tasks by orders of magnitude. Functions like jar file unpacking, garbage collection, byte-code interpretation, encryption, Ethernet MAC, audio playing, and video display are included in the internal processor microcode. The processor can therefore handle combinations of tasks that would otherwise require much more silicon and/or power consumption.

Electrical and Mechanical Specifications

- Single supply voltage: 3.0 – 3.6V
(For lowest energy consumption, the core can alternatively be driven by a separate 1.8V supply)
- Typical active current consumption: 50 mA (est.), excluding Ethernet PHY
- Real-time clock current consumption: 5 µA.
(No current from battery when a 3.3V supply is present)
- Dimensions: 25.4 x 31.9 x 2 mm
- Packaging technology: 156-pad LGA footprint (1.8 mm pitch), for reflow soldering



Further information available on Imsys website imsystech.com
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