

Imsys microcontroller and modules

2012-02-06 (rev 2012-10-21)

www.imsystech.com

Examples of customer products based on Imsys platform



(Japan)



(France)



(USA)



(Italy)



(Italy)



(USA)

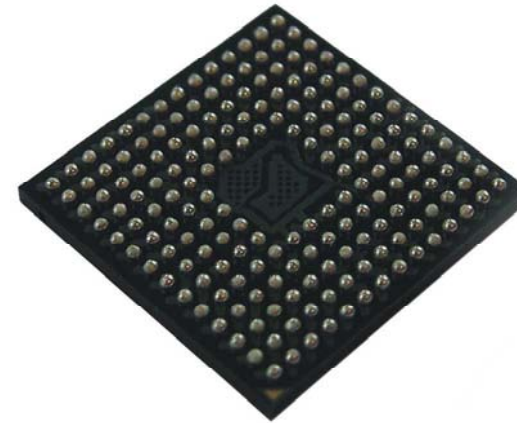


(Brazil)

The IM3000 Microprocessor Series

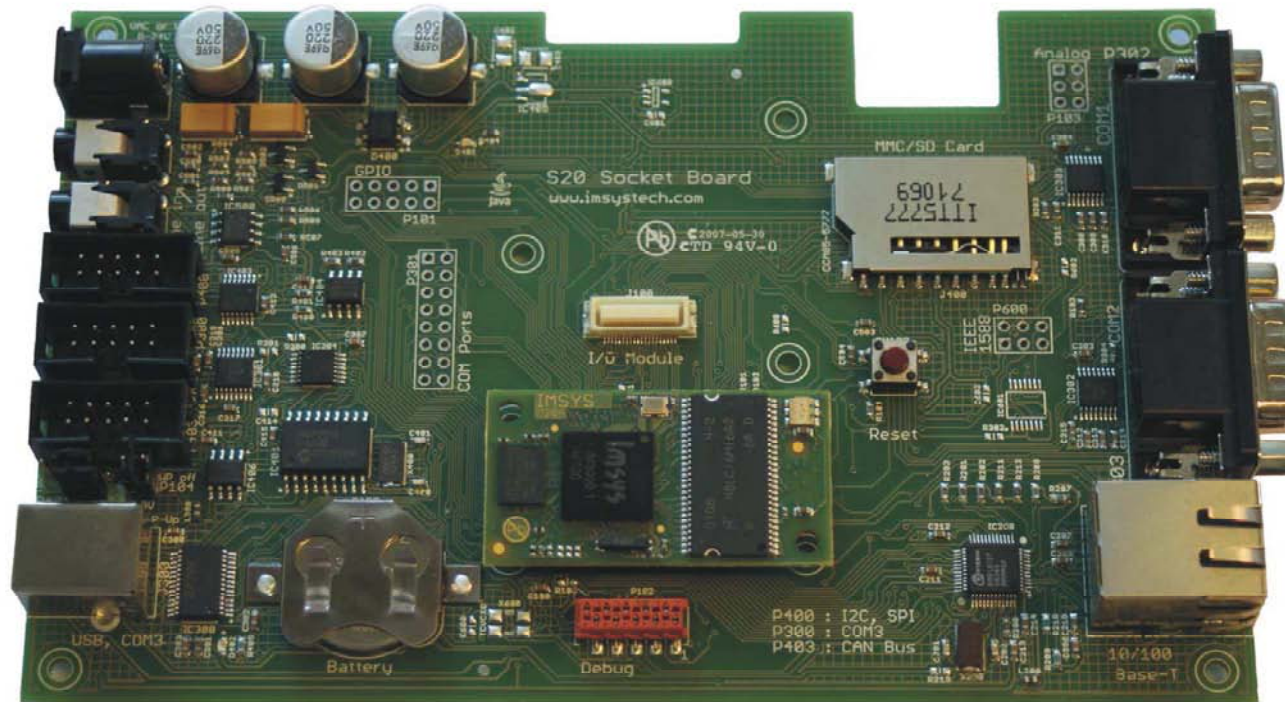
Networked Controller Platform

- Processor with Accelerated Functions in Microcode
- 42 mW @ 167 MHz
- 83 MBytes/s DMA transfer
- Hardware device
 - Dual Fast Ethernet MAC
 - Serial Ports and General Purpose I/O Ports
 - Timer System with support for eg. IEEE1588, capture, PWM, Autonomous Control of Serial (I2C/SPI) and Parallel (over DMA) Data Transfer
 - Analog Subsystem
 - 12x12 mm BGA with 180 connections
- Bundled Platform Software
 - Includes Java Virtual Machine



12 x 12 mm

*FX module on Euro-size board,
with more interfaces*



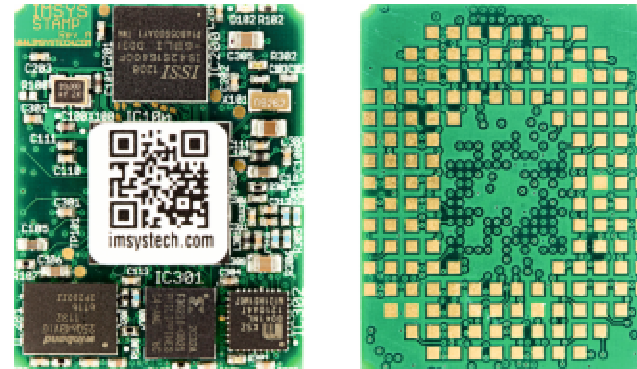
(Part of Development Kit DK3)



New Modules

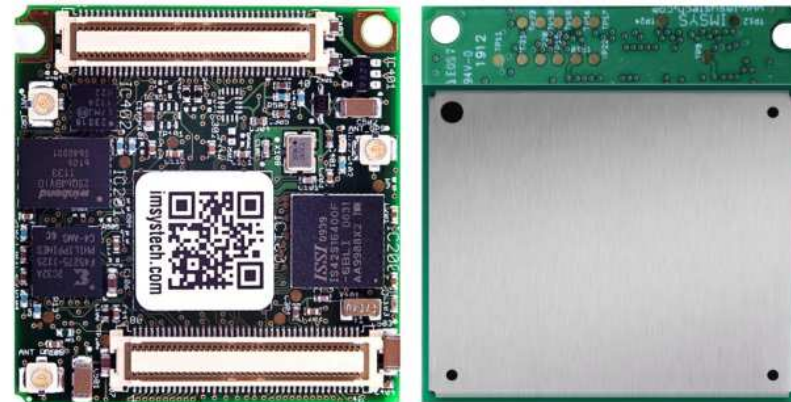
Velox

Compact LGA module
25x32 mm, 156 pads
IM3000, SDRAM, flash,
Optional Ethernet PHY



Aerius

Compact plug-in module
34x35 mm
IM3000, SDRAM, flash
3G+ cellular communication
Optional GPS



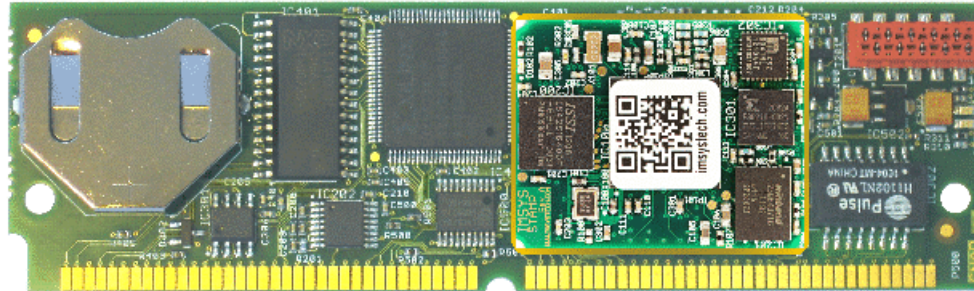


Velox Development Kit



Simple
Network
Application
Platform

SNAP Classic – now based on Velox



*Snap-in replacement for TINI®
-but 100 times faster
and with lower consumption*

Interfaces:

- 10/100Base-T Ethernet
- Three serial ports
- Dual 1-Wire® net interfaces
- CAN (Controller Area Network)
- High-speed I²C bus and SPI
- Parallel data bus
- General-purpose digital I/O pins

On-board resources:

- 8 Mbytes SDRAM
- 4 Mbytes flash memory
- Real time clock and calendar
- Temperature sensor

Bundled Platform Software:

- Java VM (J2ME/CLDC)
- Rubus JOS RTOS
- HCC SAFE file system
- TCP, UDP, IPv4, SNMP V1, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE
- Web server
- Extensive I/O capabilities through Java APIs

(TINI is a trade mark of Dallas Semiconductor Inc.)

Performance

- Energy efficiency and code density better than that of any other known architecture
- Speed is usually sufficient, sometimes much higher than e.g. that of ARM
- Important functions like graphics, image processing, crypto, can be speeded up by 20-50 times without adding hardware
- 667 Mbit/s sustained DMA throughput

Important distinction

Imsys offers a complete, verified, platform,

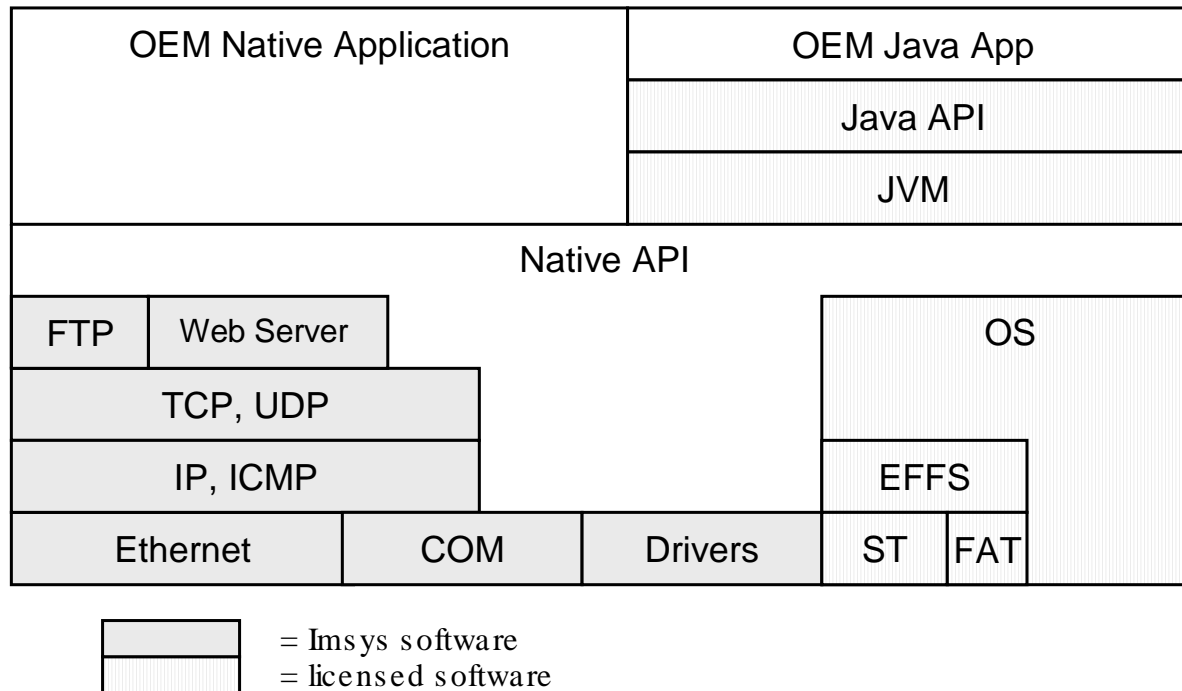
not just a microprocessor.

Java VM, RTOS, file system, TCP/IP etc are already there

The customer only adds his specific application software, developed in Java (and/or C).

Software platform

- **application** (e.g. PTP protocol engine) in C or Java
- **platform** in Java / C / assembler / microcode



Flash file system

- power-fail safe system
- wear-leveling (static and dynamic)
- error correction (ECC)
- “bad block” handling
- long file names
- multiple volumes
- multiple files open simultaneously
- erase suspend/resume
- standard file API
- POSIX API

Imsys Developer

The screenshot displays the Imsys Developer IDE interface for a project named 'im3000'. The main window shows the source code for 'main.c', which includes a main function that initializes DMA channels and starts the operating system. The code is as follows:

```
* The programs main function which does the following:  
*  
* 1) Initiates the DMA channels.  
* 2) Initiates the operating system, Rubus JOS.  
* 3) Creates the startup thread that will start up the system.  
* 4) Starts the operating system.  
*  
*****/  
int main(int argc, char *argv[])  
{  
    pthread_attr_t pthread_attr;  
    pthread_t th;  
    sysinit_attr_t sysattr;  
    josinit_attr_t jos_attr = (0);  
  
    // Init system. Setup DMA channels.  
    sysattr.dma[0] = 0;  
    sysattr.dma[1] = 0x400;  
    sysattr.dma[2] = 0;  
    sysattr.dma[3] = 0x300;  
}
```

The interface also features a Project View on the left, a Registers window on the right, and a Locals window below the code editor. The Registers window shows the following values:

Register	Value
PC	0000660B
MSP	00066C94
ESP	00068300
LSP	00067E00
RAR	000064B1
SW	60510000
EIR	00000000
PIR	00000000
PSR	00000000
EAR	00000000
BMP	00000000
FMP	00000000
LMP	00066C98
ERAR	00000000
PSCTR	F4
MSCTR	2D
Flags	NZ C DI

The Locals window shows the following variables:

- argc = 0x0000020D
- jos_attr
- pthread_attr
- sysattr
- th = 0x00000000

The debugger window at the bottom shows the following output:

```
Starting simulator  
Reset done  
Detected processor model: IM3000 (A)  
Loading microprogram: im3210m11.mp (v0.1.1.0)  
Loading application: im3000.gpx (address 00000000-0016258B)  
Program arguments: "im3000.gpx -1"  
Creating EPPS RAM disk...  
RAM disk created, 1024KB  
Controller successfully booted!
```

The Breakpoints window shows the following table:

File	Line	Function	Address
main.c	116	main	0x6616
HelloWorld.java	4	main(String[])	0x0

The Memory 2 window shows the following memory dump:

Address	Hex	ASCII
00000000	E4 63 FF FF FF FF 00 06	.c.....
0000000A	83 00 00 00 01 00 00 01
00000014	00 00 07 00 01 00 01 003
0000001E	32 C9 00 00 00 00 00 00	2.....
00000028	00 00 00 00 00 07 F0 00 00
00000032	00 00 00 00 00 00 00 00
0000003C	00 00 00 00 00 00 00 00
00000046	00 00 00 00 00 00 00 00
00000050	00 00 64 B4 00 64 ED 00 00	..d...d..
nnnnnn54	64 F0 00 20 00 00 00 64 00	.d.n.d

The status bar at the bottom indicates the simulator is 'Stopped' at 'C/Asm Ln 109, Col 31'.