

IPJV-ES

Ethernet and RS232 module designed for the Java™ Platform

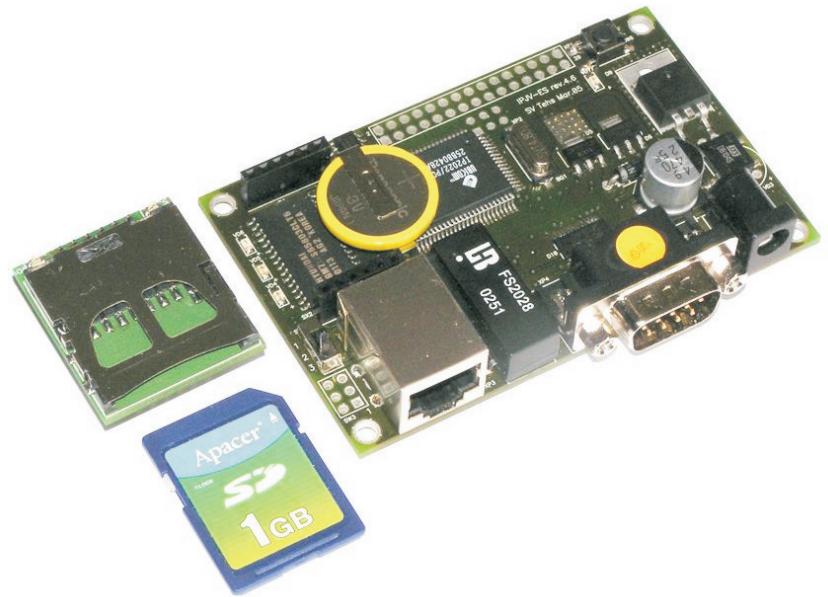
The IPJV-ES evaluation board with embedded virtual machine for Java™ offers an Ethernet based connection to the Internet and numerous interface possibilities to other equipment, include serial RS-232 DTE interface, serializer module with UART, SPI, GPSI and 10BASE-T Ethernet support, 6-channel 10-bit A/D inputs, analog comparator and 16 I/O pins.

The IPJVM virtual machine for Java is a clean room implementation, that has been specially optimized to run on device with limited amount of internal memory and designed for Java™ 2 Platform, Micro Edition (J2ME™) Connected Device Configuration (CDC) Foundation Profile.

A complete development toolkit available for application development with IPJVM platform. The IPJVM platform provide system designers and software developers simple, flexible and cost-effective solution for embedded Internet application rapid development and prototyping. The platform is combination of Uvicom IP2022 Internet Processor and a Java programmable runtime environment.

Key Features

- Based on Uvicom IP2022 120/160MIPS RISC Internet Processor
- Internal 64kB flash, 16kB Instruction/Data RAM, 4kB Data RAM
- On-board 8MB RAM and 2MB/8MB flash
- On-board real-time clock with battery backup
- On-board SD card connector
- Full-featured TCP/IP protocol stack
- Embedded Virtual Machine designed for J2ME™ CDC Foundation profile
- Embedded configuration utility
- Includes HTTP/FTP/SMTP/SNMP/Telnet servers
- Includes encryption, security and authentication tools
- Reporting and alarming via e-mail
- Remote monitoring, control, management and maintenance
- Remote updates of the firmware and user applications
- Minimum time-to market and pay back time
- Shape and specifications can easily be changed to meet application-specific needs



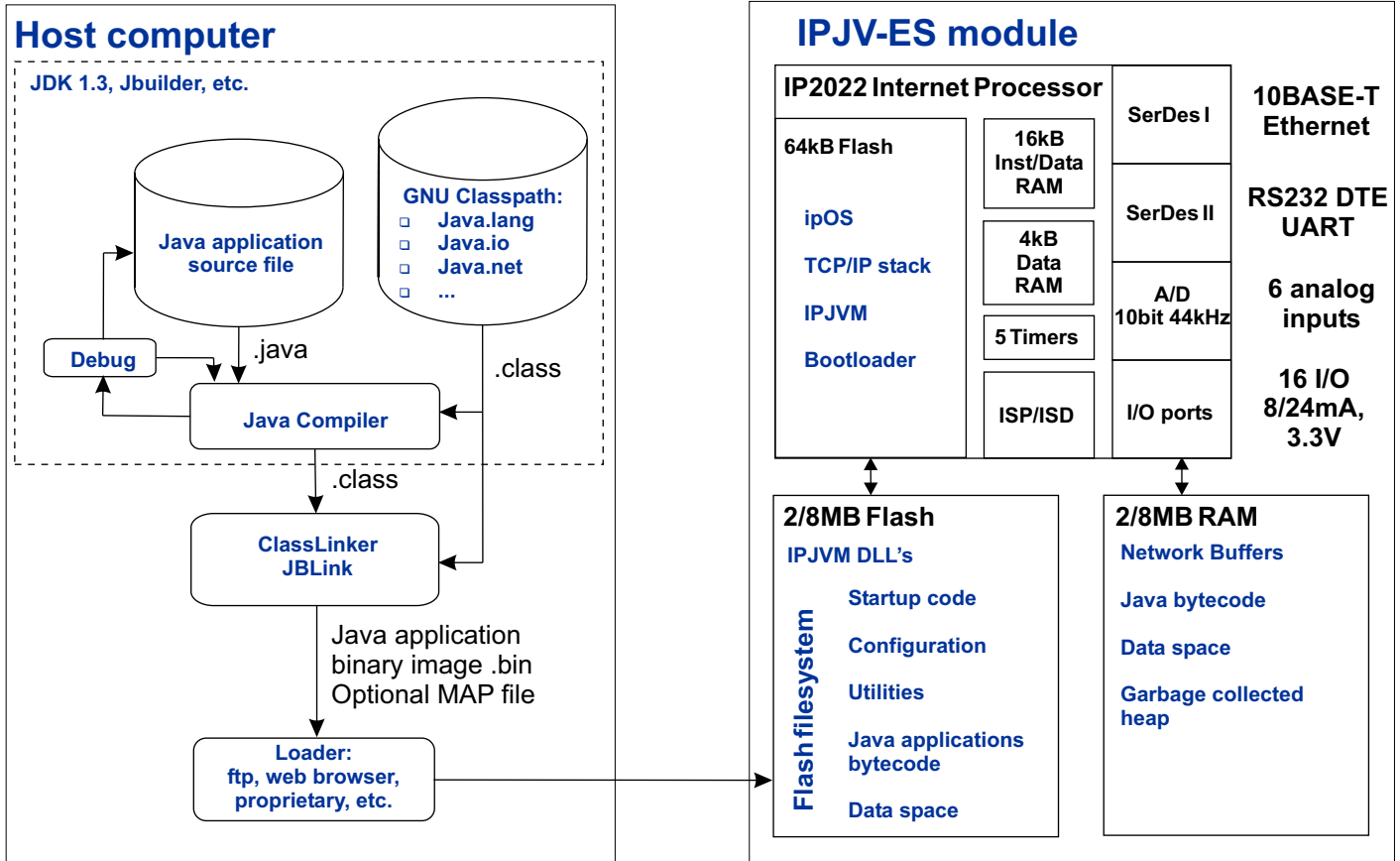
Virtual Machine

- Designed for J2ME/CDC Foundation Profile
- Standard Java Developer's Kit (JDK)
- Standard .class files, GNU classpath
- Unlimited number of threads (to max heap size)
- Thread switch 1 msec
- Execution speed 150,000 bytecodes per sec
- Pre-linked classes
- Pre-linked Java applications
- Dynamic garbage collection
- Efficient memory and method frames allocation
- Small memory footprint
- Flash filesystem support
- External I/O support

Hardware

- Small form factor at 3.5" x 2.2" x 0.8"
- Works off any 8...10V AC/DC supply
- Board consumes 200 mA typical @ 5V
- Power-over-Ethernet connector
- 10BASE-T interface
- RS-232 DTE interface
- SD card interface
- Real-time clock with battery backup
- 30-pin extension connector:
 - Serializer with UART,SPI,GPSI,Ethernet support
 - 6-input 10-bit 44 kHz A/D converter
 - Analog comparator
 - 14 I/O pins 8/24mA 3.3V
 - 5V, 200 mA power supply for external circuit
- In-system reprogrammable for highest flexibility

The software that comprises IPJV runtime environment can be divided into the following categories: native Virtual Machine for Java™ code, executed directly by microcontroller and resided in microcontroller internal flash and an API interpreted as bytecodes by the Virtual Machine for Java. Application code is written in Java and utilizes the API to exploit the capabilities of the native runtime and the underlying hardware resources. IPJV uses pre-linked Java applications, which significantly reduce the application start-up times, as no dynamic class loading is required. Pre-linked classes allow VM to execute bytecodes at full speed without delays to constant pool symbolic references resolving.



GNU Classpath

IPJV utilizes GNU Classpath, free core class libraries for use with virtual machines and compilers for Java™. The following packages (some with subpackages) are supported: *java.applet java.beans java.io java.lang java.math java.net java.rmi java.security java.sql java.text java.util java.util.jar java.util.zip*. This is enough to run many non-graphic programs. Many of the implemented classes are already up to the 1.2 API spec. Some are already compliant with the 1.3 and (preliminary) 1.4 API specification.

Applications

IPJV-ES evaluation board offers extremely fast time-to-market solutions for stand-alone embedded tasks such as monitoring and controlling a local device or system, but it is especially useful for different internet appliances. A few applications of the IPJV-ES evaluation board include the following:

- Web-based equipment monitoring and control, remote diagnostics and data collection.
- Industrial controls, factory automation equipment
- Protocol conversion. IPJV-ES can be easily adopted for different legacy devices connection to the Ethernet networks.

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