Single Chip IP2022-based Complete Web Server Module

The PhantomServer™ module from Ubicom is the smallest complete Web server for Ethernet connectivity, bringing the immense potential of the World Wide Web to embedded designs. The PhantomServer distinguishes itself from other embedded Web server offerings through significant advantages in integration, form factor, flexibility, and robust features, made possible through the use of Ubicom highly integrated IP2022 Internet Processor. This combination of benefits makes the PhantomServer an extremely fast time-to-market solution and an ideal vehicle for supporting prototyping and pilot runs of web-enabled products. The PhantomServer is available in an evaluation kit, or in simple module form.

Highly Integrated Solution
- Extremely small form factor at 1 inch x 2 inch wide, 11/16 inch high (see photo)
- Based on Ubicom IP2022 Internet Processor
- Requires minimal circuitry for a complete Web server solution
- No external Ethernet MAC/PHY chip needed
- Module requires no additional circuitry

Upgradable technology
- Supports remote reprogramming of Website content and board firmware over the network
- Includes serial programming/debug header for development

Easy Setup and Configuration
- Includes Ubicom Locator™ for device discovery and configuration on your network
- Support both Static and Dynamic (DHCP) Addressing

Flexible Design
- Most functions implemented via firmware running in IP2022
- Runs Ubicom ipModule™ software _ ipEthernet™, ipStack™, ipWeb™, etc.
- Easy development of customer code via software API and tools20 pin connector provides several uses:
  - 16 I/O pins for application expansion (plus 4 pins for power and ground)
  - Serial/Parallel communication to a host
  - Bridging from Ethernet to numerous communication interfaces _ SPI, UART, I2C, GPSI, USB, etc.

Operating Characteristics:
- Power:
  - Works off any 4V – 9V DC supply
  - Board consumes 100mA typical @ 5 V
  - Power can be sourced through 20-pin interface, or via power supply header
- 10base-T 10Mbps Ethernet interface
- Uses low cost 4.8 MHz crystal (on board)

The PhantomServer is based on Ubicom IP2022 Internet Processor in its smallest form factor.
offering, a 9x9mm 80-pin microBGA package. The IP2022 provides a true single-chip solution for Ethernet connectivity with integrated support for Ethernet MAC and PHY, along with on-chip Flash and RAM memory for storage of Ubicom ipStack network stack and related application protocols, packet buffering, and custom user software. Because of the high level of integration, the IP2022 can interface directly to an RJ45 Ethernet connector with integrated magnetic.

To support a complete Web server implementation, the PhantomServer board includes a 512 Kilobyte serial Flash IC for storage of web pages, an on-board voltage regulator, and a 20-pin expansion header to allow for use as a daughter-card to a user host system via a flexible serial or parallel bus interface. Ubicom ipWebtm software module is a full-featured implementation of a Hypertext Transport Protocol (HTTP) server, but specifically designed for use in embedded systems. It runs on top of Ubicom ipStack and ipEthernet software to provide a complete Web server software solution.

For the PhantomServer reference design, this software solution is then coupled with a hardware design optimized to provide lots of features and a high degree of flexibility in a very small footprint. The result is the smallest, commercially available, complete Web server in the world. The use of ipWeb technology in embedded applications creates almost limitless opportunities to provide innovative and exciting new services in everyday products via a direct connection to the global Internet or corporate Intranets.

**ipWeb Web Server Technical Features**

- Multi-session HTTP v1.1 server that works with standard browsers
- Support for Server-Side Includes (SSI) allows dynamic HTML content and reduces HTML page size memory requirements
- CGI interface allows HTML forms to set system parameters and/or internal routines
- Virtual File System provided (ipFile) which has standard file interface functions (i.e. fopen(), fread(), fclose(), etc.)
- Number of connections is limited only by free memory
- Persistent Connection
- Compatible with all graphic formats, Frames, Java Script, and Java Applets
- Code space requirements:
  - TCP/IP stack, web server, and native Ethernet code use under 42KB of Flash and 1KB of RAM 
  - Includes:
    - ipOStm
    - Ethernet MAC/PHY, link layer
    - ARP
    - IP/ICMP
    - UDP and TCP
    - DHCP Client
    - ipWebtm (HTTP)
    - ipFiletm
    - Packet handling
- For development purposes, PhantomServer can be used with Ubico Connectivity Kit, order # IP2K-KDV-CONNKIT2-10
Kit Contents and Order Information
PhantomServer Evaluation Kit Order #: IP2K-KEV-PHSRVRSS-20
Includes:
• PhantomServer module PhantomServer Modules Order #: IP2K-FSP-PHSRVRSS-20
  Module Includes:
• 1 PhantomServer module
• AC power adapter
• Evaluation code pre-installed in PhantomServer memory, .BIN files
• Schematics, BOM and PCB manufacturing files
• Accompanying technical and user documentation