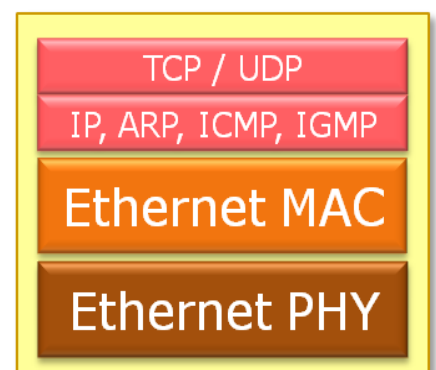## WIZnet
W5100 Hardwired TCP/IP Embedded Internet-Controller

The gate level integrated TCP/IP Hardware-Stack of the W5100 supports all level-3 and -4 protocol layers like TCP, UDP, IPv4, ICMP, ARP, IGMP, PPPoE (ADSL) and Multicast. The HW-Stack also processes the handshaking and the controller is relieved of all protocol tasks. As TX/RX buffer 16kByte dual-port SRAM are available for up to 4 simultaneous Internet connections.

The controller-interface (8bit address-/data bus, SPI) supports data rates up to 25MBits/s.

Open source drivers and examples for different µC-platforms are available. No operating system is needed even for WEB-, FTP- or DHCP-client or server.
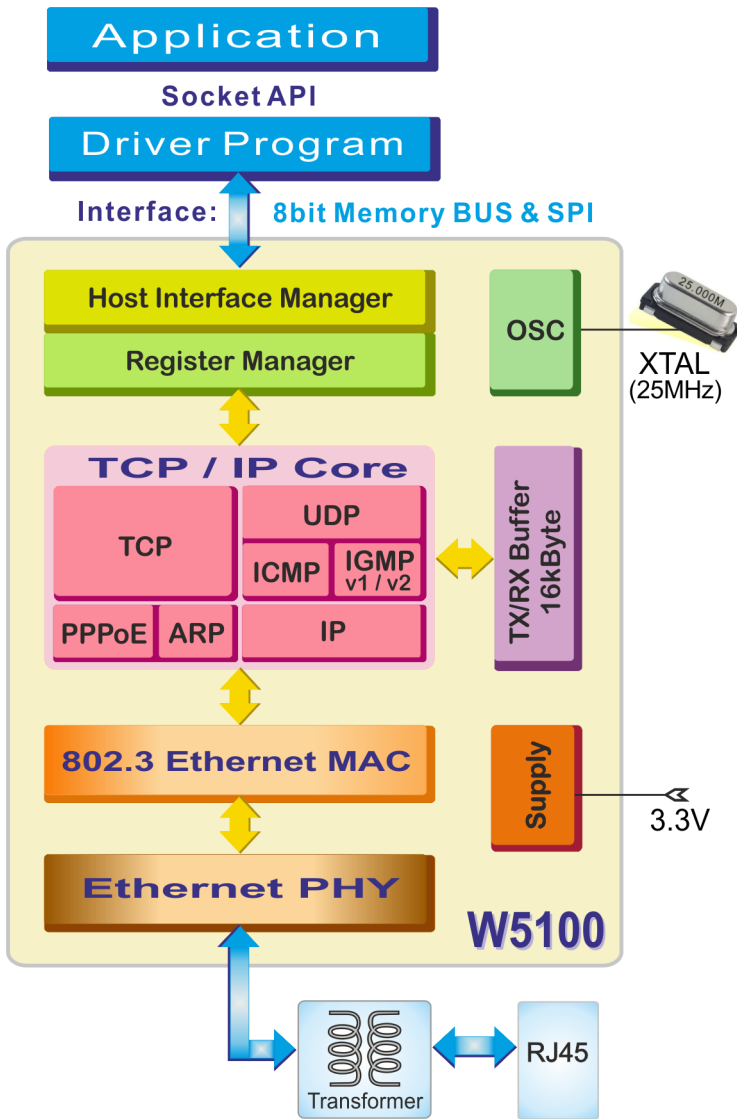
	Software Stack	**W5100**
Performance	Low and depending on Task	High and Stable
Effort	Software-Development, hard to debug	Easy to integrate into any Application
Basics	TCP/IP Protocol & OS Kernel, Driver & Socket	Only Socket or API programming
Stability	Depending on Operating system	No OS needed, Stack can not be attacked

TCP / UDP
IP, ARP, ICMP, IGMP
Ethernet MAC
Ethernet PHY

General Features

- Hardwired TCP/IP:
  - TCP, UDP, ICMP, IGMP, IPv4, ARP, Ethernet
  - Up to 4 independent sockets simultaneously
  - Supports hybrid TCP/IP stack for software protocols
  - Internal 16K Bytes Dual-Port-RAM (TX/RX buffer)
- Embedded Ethernet-MAC:
  - IEEE 802.3 (10Base-T) and 802.3u (100Base-TX)
  - Muliticast
  - Connection PPPoE protocol with PAP/CHAP authentication mode for ADSL
- Embedded 10BaseT/100BaseTX PHY:
  - Auto Negotiation for full- and half-duplex
  - Auto MDI/MDIX for auto crossover
- Interface:
  - 8 Bit Address/Data Bus for direct- & indirect-mode
  - Serial Peripheral Interface for SPI-mode 0 and 3
- Up to 25MBit/s thruput at application layer
- Multi-Function LED outputs:
  - TX, RX, full-/half-duplex, collision, link, speed
- 3.3V operation with 5V I/O signal tolerance
- Temperature range: -40°C to 85°C
- Small 80 Pin LQFP Package

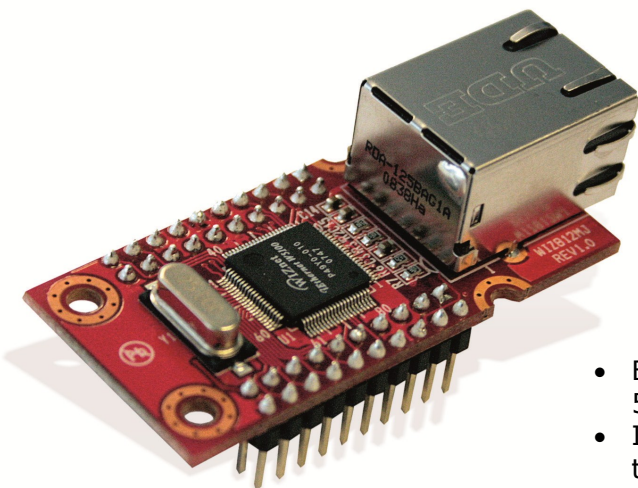# Block Diagram WIZ812MJ Module

Applications

- Home Network & Set-Top Boxes
- Serial-to-Ethernet - Gateways
- Smart Metering
- GPIO-to-Ethernet - Sensor Network
- Security Systems & Cameras
- Factory and Building Automation
- Medical Monitoring Equipment
- Embedded Server

Hybrid Architecture

The W5100 supports up to 4 simultaneous connections over the TCP/IP-core.

One of these sockets can be used as a normal MAC-controller over the "MAC-RAW"-mode. This hybrid architecture allows direct access to the MAC-layer.

Therefore proprietary protocols can be implemented in software and additional connections can be established.

WIZ812MJ Embedded Network Module

- Board size:
  55.5 x 25mm^2
- Interface Connector:
  two 2x10 pin headers 2.54mm pitch

April 2012