

WIZnet PRODUCT GUIDE



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Core Technology

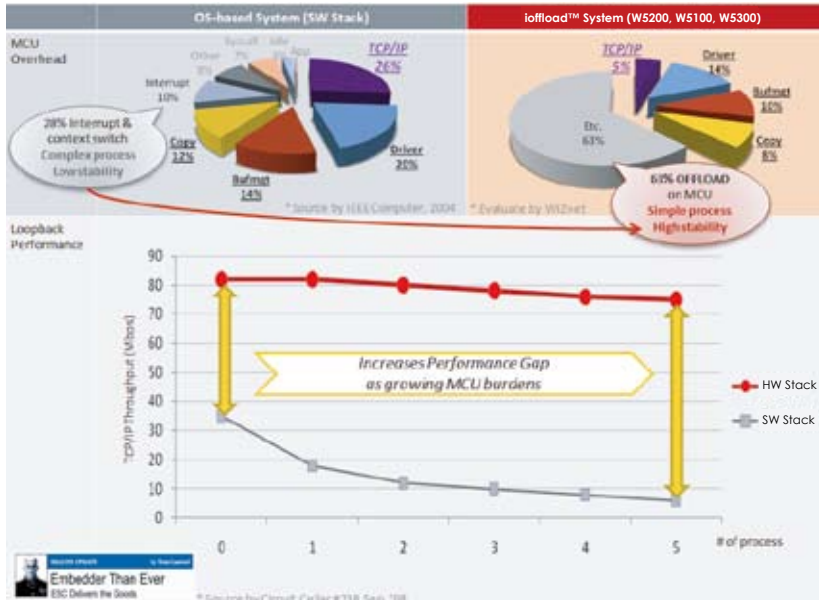
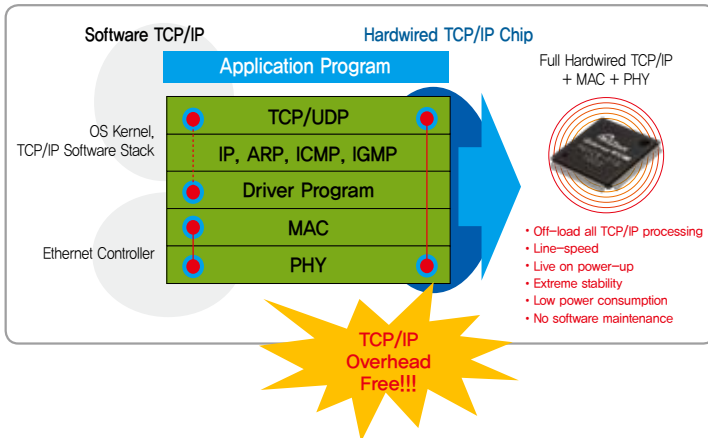




Table of Contents

01 - 07 Ethernet Controller and Microcontroller Chips

Ethernet Controller
Internet MCU

08 - 14 Embedded Modules

Network Module
Serial to Ethernet Module
WiFi Module
ioModule
Application Module

15 External Device Server

External Device Server



16 - 19 Application Note

Smart Meter in Europe
HD PVR with W5300
Wireless Module in Digital Tacho Meter
CDMA Repeater Management

20 - 28 WIZnet Open Hardware Platform

2010 iMCU W7100 Design Contest
2008 iEthernet W5100 Design Contest
WIZnet Shield for Arduino
WIZnet in YouTube

Ethernet Controller and Microcontroller

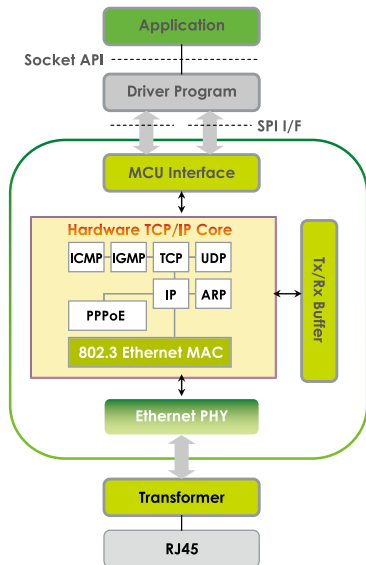
	W5200	W5300
Embedded Core	TCP/IP + MAC + PHY	TCP/IP + MAC + PHY
MCU Interface	High Speed SPI	8/16 bit BUS, DMA
TX/RX Buffer	32KB	128KB
HW Socket #	8	8
(*) Hybrid Mode	0	0
Network Performance	—	Max 80Mbps
Hardware TCP/IP Protocol	TCP, UDP, IP, ARP, ICMP, IGMP, PPPoE, Ethernet MAC	TCP, UDP, IP, ARP, ICMP, IGMP, PPPoE, Ethernet MAC
Auto MDI/MDIX	0	0
Auto Negotiation (Full / Half Duplex)	0	0
Operation Temp	-40°C ~ 85°C	-40°C ~ 85°C
Power	3.3V operation with 5V wtolerant I/O	3.3V operation with 5V tolerant I/O
Package	48QFN, 7 x 7	100LQFP, 14 x 14
		

(*) Hybrid Mode : Simultaneous operation of HW&SW TCP/IP stack



W5100	W3150A+	W7100A
TCP/IP + MAC + PHY	TCP/IP + MAC	8051 + TCP/IP + MAC + PHY
8bit BUS, SPI	8bit BUS, SPI	N/A
16KB	16KB	32KB
4	4	8
0	0	0
Max 25Mbps	Max 25Mbps	Max 15Mbps
TCP, UDP, IP, ARP, ICMP, IGMP, PPPoE, Ethernet MAC	TCP, UDP, IP, ARP, ICMP, MAC, IGMP, PPPoE	TCP, UDP, IP, ARP, ICMP, IGMP, PPPoE, Ethernet MAC
0	N/A	0
0	N/A	0
-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C
3.3V operation with 5V tolerant I/O	3.3V operation with 5V tolerant I/O	3.3V operation with 5V tolerant I/O
80 LQFP, 10 x 10	64 LQFP, 10 x 10	100 LQFP, 14 x 14 64 QFN, 8 x 8
		

iEthernet W5200 : Fast SPI Ethernet Controller



- Supports High Speed Serial Peripheral Interface (SPI Mode 0,3)
- Fully Hardwired TCP/IP Protocols
- 10 Base T/ 100Base TX Ethernet PHY Embedded
- Supports Auto Negotiation (Full Duplex and Half Duplex)
- Supports Auto MDI/MDIX
- Supports ADSL connection (with PPPoE Protocol & PAP/CHAP Authentication Mode)
- Supports 8 independent hardware sockets simultaneously
- Internal 32K Byte buffer for TCP/IP packet processing
- Supports Power Down Mode
- Supports Wake-On LAN
- 3.3V operation with 5V tolerant IO
- 48 Pin QFN Package

W5200E01-M3 : Evaluation Board for W5200

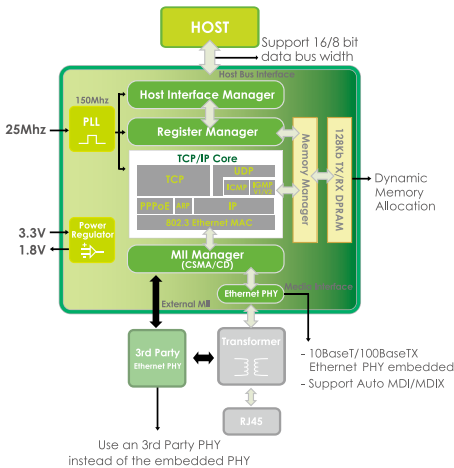


Category	Description
MCU	STM32F103C8 (Cortex-M3 Core)
TCP/IP Core	W5200
USB to Serial Converter	FT232RQ with USB mini type connector
MAG Jack	BS-RB10005 (Transformer + RJ-45 Connector)
LED	User LED : 2 EA Serial Status LED : 2EA Power LED : 1EA
Button	Reset Switch : 1EA Program Enable Switch : 1EA
Expansion Port	MCU Port Expansion : in 2.54mm Pitch 40pin Header
Size	28mm x 52mm

iEthernet W5300 : High Performance Ethernet Controller

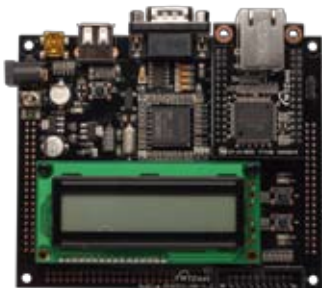


Ethernet Controller and Microcontroller



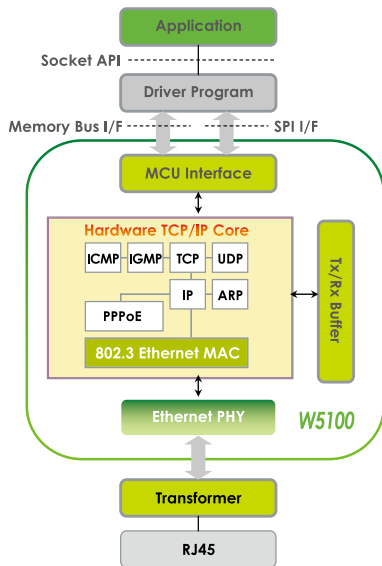
- High Network Performance : Max 80Mbps (by DMA)
- Hardwired TCP/IP Protocols : TCP, UDP, ICMP, IPv4, ARP, IGMPv2, PPPoE, Ethernet
- 8 Independent SOCKETS supported
- Support Hybrid TCP/IP stack (Software and Hardware TCP/IP stack)
- Internal 128Kbytes Memory for TCP/IP Packet Processing
- Flexible Memory Allocation supported
- Embedded 10/100 Ethernet PHY (Supports External PHY Interface)
- Supports Auto Negotiation (Full / Half Duplex)
- Supports Auto MDI/MDIX (Direct / Crossover)
- Supports Network Indicator LEDs (TX, RX, Full/Half Duplex, Collision, Link, Speed)
- Supports 16/8 bit Data Bus Width
- Supports 2 BUS Interface (Direct and Indirect Address Mode)
- 3.3V operation with 5V I/O signal tolerance
- 100LQFP 14x14 Lead-Free Package

W5300E01-ARM : Evaluation Board for W5300



Category	Description
MCU	200MHz Samsung S3C2410A ARM RISC Processor
RAM/ROM	SDRAM 64MB / NAND Flash 64MB
Interface	RS-232C 1 Port & USB Host 1 Port
WIZ830MJ	W5300 + 1 port RJ-45(Integrated Transformer)
LCD	16 Characters x 2 Line Character LCD Part (C-LCD Option)
LED	2 LEDs for Debugging
Button	2 Tact Switches for Debugging
JTAG	On Board JTAG Connector
Module Connector	56pin (28pin x 2) 2.54mm Pitch Pin-Header Socket
Extension Part	120pin (40pin x 3) 2.54mm Pitch Pin-Header Port
Power	DC 5V / 2A Adaptor

W5100 : Hardwired TCP/IP Embedded Ethernet Controller



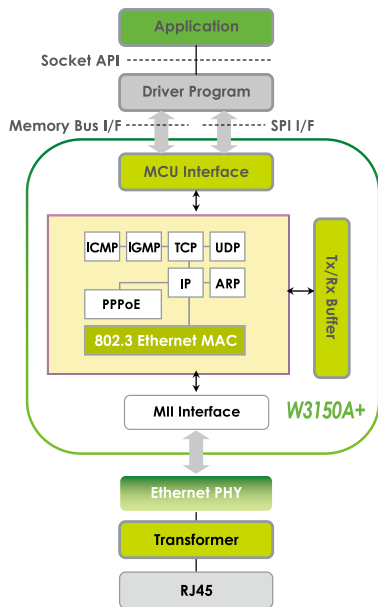
- Hardwired TCP/IP Protocols : TCP, UDP, ICMP, IPv4, ARP, IGMPv2, PPPoE, Ethernet
- Embedded 10/100 Ethernet PHY
- Supports Auto Negotiation (Full / Half Duplex)
- Supports Auto MDI/MDIX (Direct / Crossover)
- 4 Independent SOCKETS supported
- Internal 16Kbytes Memory for TCP/IP packet processing
- Supports 2 BUS Interface Interface (Direct and Indirect Address Mode) & Serial Peripheral Interface (SPI Mode 0)
- 0.18 μ m CMOS Technology
- 3.3V operation with 5V I/O signal tolerance
- 80 LQFP 10x10 Lead-Free

W5100E01-AVR : Evaluation Board for W5100



Category		Specification
Base Board	UART	2 x RS232 Serial Port
	Display	16 x 2 Text LCD
	PAL	Address Decoder
	TCP/IP	W5100 (PHY Embedded)
	RJ-45 Connector	RB1-125BAG1A, Transformer Integrated (1:1)
PM-A1	MCU	ATMEGA 128 (128K Flash & 4K EEPROM)
	Clock	8MHz Crystal
		SRAM (32K Bytes)

iEthernet W3150A+ : Hardwired TCP/IP Embedded Ethernet Controller



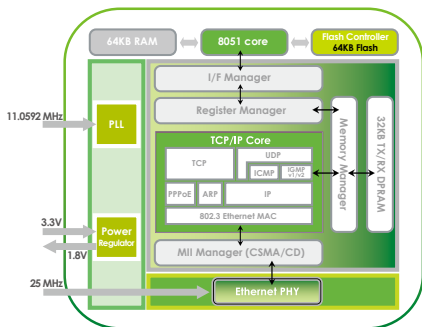
- Hardwired TCP/IP Protocols : TCP, UDP, ICMP, IPv4, ARP, IGMPv2, PPPoE, Ethernet
- ADSL Connection (Supporting PPPoE with PAP/CHAP Authentication mode)
- 4 Independent SOCKETS supported
- Standard MII Interface for Ethernet PHY chip
- Supports 10BaseT/100Base TX
- Supports full-duplex mode
- Internal 16Kbytes Memory for TCP/IP packet processing
- Supports 2 BUS Interface (Direct and Indirect Address Mode) & Serial Peripheral Interface (SPI Mode 0)
- 0.18μm CMOS Technology
- 3.3V operation with 5V I/O signal tolerance
- 64 LQFP 10x10 Lead-Free Package

EVB-B1+ : Evaluation Board for W3150A+



Category		Specification
Base Board	UART	RS232 Serial Port
	Display	Character LCD (Gray 16 x 2)
PM-PIC24	MCU	ATMEGA 128 (128KB Flash / 4KB EEPROM)
	CLOCK	8MHz Crystal
	External Memory	SRAM (32KB)
NM7010B+	TCP/IP	W3150A+
	PHY	IP101A-LF (Ethernet PHY)
	RJ-45 Connector	RDA-125BAG1A

IMCU™ W7100A : Single Chip Microcontroller with TCP/IP & MAC/PHY



- Fully software compatible with industrial standard 8051
- Pipelined architecture 4~5 times faster than a standard 8051
- 2 data Pointers for fast memory block processing
- Internal 2K Byte boot ROM
- Internal 64K Bytes Embedded Program FLASH Memory
- Internal 255 Bytes Embedded Data FLASH
- Internal 64K Bytes SRAM
- External 11.0592 MHz operation frequency for internal PLL
- Interrupt Controller : 2 priority levels / 4 external interrupt sources / 1watch dog interrupt
- 19 I/O Ports
- Three timers/counters
- Full Duplex UART
- Programmable Watchdog Timer
- DoCD & trade compatible debugger
- Fully Hardwired TCP/IP Core
- 8 independent hardware TCP/IP socket
- Supports hybrid software stack
- Internal 32K Bytes memory for TCP/IP data communication
- 10BaseT/100Base TX Ethernet MAC/PHY Embedded
- Auto negotiation (Full / Half Duplex)
- Auto MDI/MDIX
- 3.3V operation with 5V tolerant I/O

IMCU™7100EVb : Evaluation Board for W7100A



Category	Description
MCU	IMCU W7100A
Serial	On Board RS-232C 1 Port with DB9 Connector
Ethernet	On Board RJ-45 (Integrated Transformer)
LCD	16 Characters * 2 Line Character LCD
LED	User Debugging LED 3 EA/ Network Status LED 8EA
Button	Reset Switch
Debugger	On Board Debugger Socket
Expansion Port	MCU Port expansion and Dummy Hole
Power	DC 5V / 2A Adaptor
PCB Size	120mm x 80mm

Embedded Module

Network Module



Models	WIZ810MJ	WIZ811MJ	WIZ812MJ	WIZ830MJ
TCP/IP Chip	W5100	W5100	W5100	W5300
Dimension (W x H x D)	52 x 25 x 21	55.5 x 25 x 23.5	55.5 x 25 x 23.5	53.3 x 34 x 19.5
Connector Type	2mm pitch 14x2 header	2.54mm pitch 10 x 2 header	2.54mm pitch 10 x 2 header	2.54mm pitch 2 x 14 header pin
PCB Through Hole	x	Two PCB Through Hole (ø3.00mm)	Four PCB Through Hole (ø3.00mm)	Two PCB Through Hole (ø3.00mm)
RJ-45 Connector	RDA-125BAG1A			
Input Voltage	3.3V Internal Operation and 5V Tolerant I/Os			
Power Consumption	10/100 base T : Max 185mA (3.3V)			
Temperature	Operation : 0°C ~ 70°C / Storage : -40°C ~ 85°C			

■ WIZ810MJ



■ WIZ812MJ



■ WIZ811MJ



■ WIZ830MJ



Serial to Ethernet Gateway Module

		WIZ100SR	WIZ105SR	WIZ110SR	WIZ107SR
MCU		8051			W7100A
TCP/IP, PHY		W5100			
RJ-45 Connector		-	o	o	0
Serial	Port	1	1	1	1
	Signals	TXD, RXD, RTS, CTS, GND			
	Speed	Up to 230Kbps			
	RS 232 Transceiver	x	x	o	o
Connector Type		2 x 12 2mm pin header	2mm Pitch 12 pins		2.54mm Pitch 12 pins
Input Voltage		3.3V	3.3V	DC5V	3.3V
Power Consumption		200mA	200mA	Under 200mA	Under 250mA
Dimension (mm)		50 x 30 x 12	40 x 62 x 17	75 x 45	30 x 45

■ WIZ100SR



■ WIZ110SR



■ WIZ105SR



■ WIZ107SR



- Various Hardware Typed Serial to Ethernet Modules
- Simple & Quick Network Implementation
- Supports Firmware Customization for Various Serial Devices
- High Stability and Reliability by using WIZnet Fully-Hardwired TCP/IP
- Provides Easy and User-Friendly Configuration Program

- Supports Serial Command for on-Site Configuration w/o PC
- 10/100 Mbps Ethernet & Max.230Kbps Serial Interface
- WIZ VSP (Virtual Serial Port) Supported
- RoHS Compliant

WIZ108SR	WIZ120SR	WIZ125SR	WIZ140SR	WIZ145SR
W7100A	ARM Cortex-M3	ARM Cortex M3	ARM Cortex M3	ARM Cortex M3
	W5100	W5100	W5300	W5300
o	x	o	x	0
1	2	2	4	4
RS485:TXRD+TRXD- RS422:TXD+,TXD-, RXD+, RXD-	TXD, RXD, RTS, CTS, GND		Data : 4RxD, 4TxD, 4RTS, 4CTS Console :RxD, TxD	
Upto 230kbps				
o (RS 422/485)	x	o	x	x
2.54mm Pitch 12 pins	1x14 2mm Pin header X 2	2 port DB9 connectors	1x14 2.54mm Pin header 2x14 2.54mm Pin header	
3.3V	3.3V	5V	3.3V	3.3V
Under 250mA	Under 300mA	Under 220mA	Under 250mA	Under 250mA
30 x 45	50 x 30 x 8.85	60 x 85	48 x 35 x 16	48 x 61 x 24

■ WIZ120SR



■ WIZ140SR



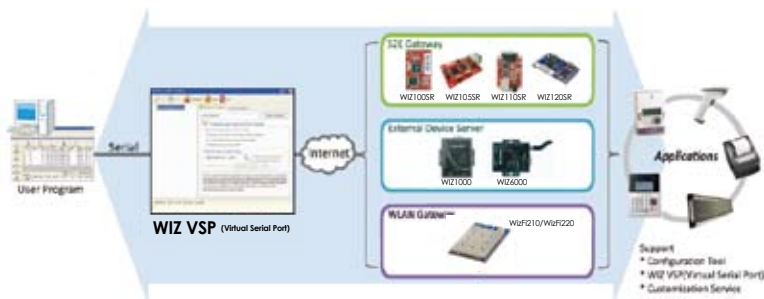
■ WIZ108SR



■ WIZ125SR



■ WIZ145SR



Wireless Module

WizFi210 & WizFi220 : Ultra Low Power Serial to WiFi Module



WizFi210 / WizFi220



WizFi210-EVB / WizFi220-EVB

- Supports WiFi Connectivity via Serial Host Interface (RS232 or SPI)
- Quick Booting Time : less than 20msec
- Ultra Low Power through Dynamic Power Management (34 μ A at the Standby Mode)
- Operates with Standard 802.11 b/g/n access points at speed up to 11Mbps (802.11b)
- Limited Access Point : Supports direct WiFi connection from PC, Laptop, Smart Phone and etc
- Operation Temperature : -40°C ~ 85°C
- Compact Size (mm) : 32 x 23.5 x 2.9
- CE, FCC, KCC Certified
- WizFi220 : External Power AMP Supported

Specifications	Description
Wireless Standard	IEEE 802.11b
Supported Data Rates	11, 5.5, 2, 1 Mbps (802.11 b)
Modulation	DSSS and CCK
RF Operating Frequency	2.4 - 2.497 GHz
Antenna Options	Chip antenna and U.FL connector for external antenna
Power Consumption (Typical)	WizFi210 : 34 μ A / Receive = 125mA / Transmit = 135mA WizFi220 : 34 μ A / Receive = 125mA / Transmit = 295mA
RF Output Power (Typical)	8dBm \pm 1dB (WizFi210) / 17dBm \pm 1.5dB (WizFi220)
Security Protocols	WEP, WPA/WPA2 - PSK, Enterprise, EAP-FAST, EAP-TLS, EAP-TTLS, PEAP
I/O Interface	UART, SPI, I2C, ADC, WAKE, ALARM, GPIOs, PWM, JTAG
Power Source	3.3V

WIZ610wi : WLAN AP Module



- IEEE 802.11b/g Wireless Networking
- Supports Access Point, Client, Gateway, Serial to WLAN mode
- Ethernet to WiFi Bridging : Enable a wired network device to have wireless communication interface
- MII, UART, U.FL(WALN) Interface
- Max 25Mbps Effective Data Streaming
- Easy Configuration : Built-In Web server, Wizard Program, Serial Command

Specifications	Description
Wireless Standard	IEEE802.11b/g
Frequency Range	2.412 ~ 2.462GHz (US & Canada) / 2.412 ~ 2.472 (Europe) / 2.412 ~ 2.482 (Japan)
Output Power	802.11b : 16dBm@11Mbps / 802.11g : 14dBm@54Mbps
Receive Sensitivity	802.11b-65dBm@11Mbps / 802.11g-76dBm@54Mbps
Data Rates	Max.54Mbps (Max 24Mbps Effective Data Streaming)
Security	SSL, WEP 64,128bit WPA/WPA2 PSK/AES/TKIP, 802.1x (Radius)
Dimension(mm)	32 x 39 x 9
Interface	UART, MII, U.FL (Wireless)

WIZ630wi : WLAN AP Module



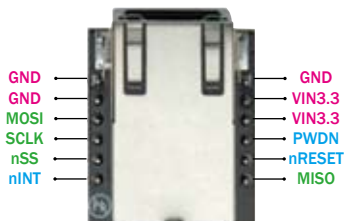
- IEEE802.11 b/g/n Wireless Networking
- Max 150Mbps WiFi-Link Data Rate
- Operation Mode : WiFi Router/AP (Bridge), Client, AP-Client
- AD-HOC Function
- Serial to WiFi / Serial to Ethernet
- Ethernet to WiFi Bridging
- Easy Configuration : Built-In Webserver, Serial Command
- CE, FCC, KCC Certified

ioModule (Internet Offload Module)

WIZ820io



WIZ820io



WIZ820io Pin Map

- Plug-in Typed Internet Offload Module having W5200 & Mag Jack
- Usable without H/W design for W5200, Transformer and RJ-45
- Breadboard friendly
- Fast evaluation available for W5200 and MCU in the target board
- Supports 8 Independent sockets simultaneously
- Supports high speed SPI interface
- Supports Power down mode and Wake-on LAN function
- Very small form factor (PCB Size : 23mm x 25mm)

Specifications		Description
Architecture	TCP / IP	W5200
	PHY	Embedded in W5200
	Interface	10/100 Base-T Ethernet (Auto detect)
Network	Protocol	TCP, UDP, IP, ARP, ICMP, IGMP, PPPoE, MAC
PCB size		23.0mm x 25.0 mm
Connector Type		2.54mm pitch 1x6 Pin header (2 Row)
Input Voltage		3.3V internal operation, 5V tolerant I/O
Temperature		Operation: -40 ~ +85 (Centigrade degree)
		Storage: -40 ~ +85 (Centigrade degree)
Power consumption		10/100 Base-T max. 120mA (3.3V)

Application Module

WIZ200WEB : Embedded Web Server Module

WIZ200WEB



WIZ200WEB-EVB

- Embedded Web Server Module having ATmega 128 & W5300
- Operates as HTTP Server
- Available of testing Digital output (LED & LCD Control), Digital Input & Analogue Input through web browser
- Guarantees system stability and reliability by using W5300, the hardwired TCP/IP chip
- Configuration Tool for easy use and control
- Supports 10/100 Mbps Ethernet
- RoHS Compliant

WIZ220IO : Remote I/O Module

WIZ220IO



WIZ220IO-EVB

- Remote I/O Monitoring and Control with Ethernet
- Supports sending I/O parameters to server
- 8 Digital Input Ports
- 8 Digital Output Ports
- 2 Analog Input Ports (12 bit resolution)
- 2 Analog Output Port (12 bit resolution)
- 1 UART Output Port
- Supports Configuration program
- Supports Web Server
- RoHS Compliant

WIZ-SM10 : Smart Meter Module

WIZ-SM10



WIZ-SM10-EVB

- Application module for smart meter
- 2 port serial to Ethernet
- Serial Commands for Serial Configuration
- Supports PPPoE for ADSL Connection and Authentication Configuration
- Static IP, DHCP, PPPoE, DNS
- Configuration Tool Program
- 10/100 Mbps Ethernet and 230Kbps Serial Communication
- mSD for Data Logging
- UART and SPI interface for External Device
- RoHS Compliant

External Device Server

WIZ1000 (Serial to Ethernet)



- Easy to Connect with Serial Device
- Adding Network Function Simply and Quickly
- Provides Firmware Customization
- High System Stability and Reliability by using W5100 Hardware Chip
- Supports PPPoE Connection
- Supports Serial Configuration with Simple and Easy Command
- Supports Password for the Security
- Easy and Powerful Configuration Tool Program
- Telnet Com Port Option (RFC2217) Compliant
- 10/100 Ethernet interface and Max 230Kbps Serial Interface
- Compact Design : 90.5mm x 94.5mm x 22.7mm (L x W x H)
- RoHS Compliant
- CE, FCC and KCC Certified
- WIZ VSP (Virtual Serial Port) Supported

WIZ6000 (Serial to WiFi)



- Embedded 802.11b/g Wireless Networking
- Communication Mode : Serial to WLAN, Access Point, Gateway, Client
- Ethernet to Wireless Bridging / Strong Security with 64/128 bit WEP, WPA, WPA2(AES), SSL
- Ethernet, UART, External Dipole Antenna
- Ready to use serial to wireless application
- Max. 25Mbps Effective Data Streaming
- Compact design 90.5mm X 94.5mm X 22.7mm (L x W x H)
- RoHS Compliant
- CE, FCC and KCC certificated
- WIZ VSP (Virtual Serial Port) Supported

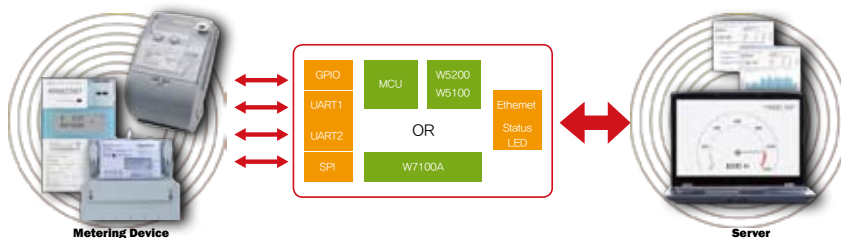
Application Note

Smart Meter in Europe

WIZnet's Internet chip and module are getting popular among smart meter manufacturers in Europe. WIZnet started to supply the Serial to Ethernet Gateway module to a Germany company in 2009. Since then, more than 10 companies have been developing and manufacturing metering devices by adopting

WIZnet as the Internet connectivity solution.

In Europe, the Internet function is basically required at the end device of metering system. The following figure shows the block diagram of the meter device in which WIZnet chip is applied for the Ethernet function.



In the smart meter system, WIZnet works and provides

- Serial to Ethernet function
- TCP Client : Metering Data Transferring to the Server
- TCP Server : Local Monitoring
- Serial Commands and Configuration Tool Program for Easy Configuration
- Support DNS, HTTP, TCP, UDP protocols
- Micro SD for Data Logging



WIZ-SM10
WIZnet Smart Meter Module

WIZnet's Hardwired TCP/IP, the world-unique technology enables you to implement the most stable Internet with the quickest and easiest way. It is the main reason that WIZnet is being adopted by smart meter developers in Europe.

WIZnet provides WIZ-SM10 module that has been specially designed for smart meter application. By interfacing to existing metering devices through GPIO, UART, SPI and etc, customer can simply implement the Ethernet connectivity.

HD PVR with W5300

HDT (Hyundai Digital Technology) is a Korean STB company who mainly develops and produces digital satellite, digital cable, PVR, IPTV and etc.

In January of 2009, HDT started their HD PVR hardware design. In their new design, they have used STi7101 by STMicroelectronics as their main processor. The Ethernet controller of this new product is used to communicate with a middleware and add some Internet services. WIZnet's W5300 was adopted for the Ethernet functions.

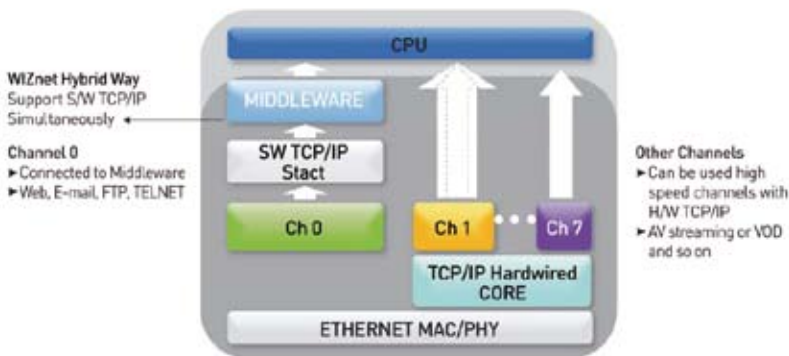
STi7101 already includes the integrated MAC and MII/RMII interface. Therefore, the network can be implemented just by adding an external PHY chip. In HDT's point of view, the W5300's additional MAC overlaps the onboard MAC in STi7101. However, the main reason why HDT chose WIZnet's solution is the network performance. With the software TCP/IP stack, resource is shared between the CPU

and networking. When there is a large amount of data to be processed by the network, the CPU overhead is increased, and it degrades the overall system stability.

The Hybrid architecture of W5300 was used to connect to the middleware which is operated in the upper layer of WIZnet. Basically, W5300 provides 8 sockets to process Ethernet data through TCP/IP hardwired core. However, if we configure the first channel (socket #0) as Mac-Raw mode, the socket #0 operates as like MAC/PHY chips. With this architecture, the STB can utilize the hardware stack for application use while leaving the software stack for middleware use.



W5300



Wireless Module in Digital Tacho Meter



Application : Public Vehicle System

Background : In order to reduce traffic accidents and upgrade the driving efficiency, Korean government legislated to equip the public vehicles with digital tachograph system. Digital tachographs is that records are saved to a smart card and are transmitted to the server through wireless network. Digital tachos record not only payment data but also driver activity such as driving time, other work, rests and breaks in the card. Digital tachograph's legal purpose is to find the systematic solution to upgrade traffic safety by analyzing the data collected by the tachograph.

Solution : WizFi210

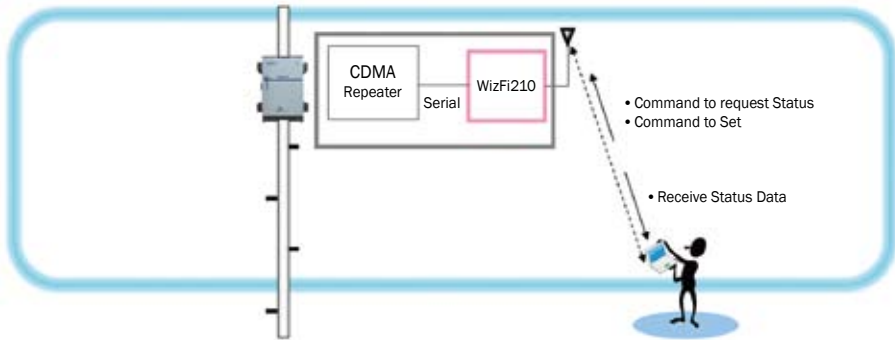
WizFi210 provides serial to wireless connectivity for the tachograph to transmit

the data saved in the smart card. In the tachograph, WizFi210 operates as client mode and establishes wireless networking by automatically connecting to the access point. The tacho data is transmitted to WizFi210 through serial interface. WizFi210 converts the serial data into TCP/IP and sends to the server through wireless network.



WizFi210

CDMA Repeater Management



Application : CDMA Repeater Management

Background : For easy and convenient management of CDMA repeaters, our wireless solution was adopted. Repeater equipments were mostly installed on tall poles or pylon. In order to manage or upgrade the equipment, the worker must climb up to the pole. However, the worker's safety is a concern since various accidents have occurred in the past.

Solution : By using WizFi210, the worker can conveniently manage the equipments without risking his/her safety. In the repeater, WizFi210 is operated in "serial to WLAN" mode. The CDMA repeater can be managed wirelessly by using a Laptop.

Customer : WizFi210 has been adopted by SK Telecom as a wireless standard for their repeaters. SK Telecom (www.sktelecom.com) is

one of the biggest telecommunication company in Korea. In order to provide a better quality of mobile phone services, they are installing repeater systems all over the country. WizFi210 satisfies SK Telecom's requirements including RF output power, serial to WLAN functions, network parameter customization. WizFi210 has passed the temperature and humidity reliability tests.



WizFi210

WIZnet Open Hardware Platform

WIZnet iMCU 2010 Design Contest Winners



The WIZnet iMCU Design Contest 2010 challenged engineers across the globe to incorporate the W7100 Internet MCU (“iMCU”) in creative embedded design projects. The W7100 is an Internet MCU integrating a hardwired TCP/IP core with an 8051 processor. It makes an easy-to-implement platform for applications that require a network connection. By combining the latest hardwired TCP/IP chip with the benefits of the W5100 and 8051 MCU core, the W7100 provides a one-chip solution for all embedded Internet projects. With \$15,000 in cash prizes up for grabs, the competition was fierce, with innovative projects coming in from locations such as the United States, Romania, Australia, India, and Japan. The judges’ results are now final. Congratulations to the winners!

FIRST PLACE

● Net Butler

The innovative Net Butler is a multifunction design used to control, monitor, and automatically maintain a home network. Built around an iMCU7100EVB evaluation board, the design has several functions: it serves as a DNS proxy with a domain name block list and an activity log display; it tracks and reports on connected network devices; it operates as a web server for viewing system activity and configuration settings; it enables you to easily manage a Wi-Fi network via push buttons, a webpage, or a timer; and it downloads and displays up-to-date weather information. Each

task can be individually enabled or disabled, and most of them have several configuration settings. The system includes a bootloader for downloading new code over the network, so adding new functions is a straight forward process.

Richard Wotiz United States | dick601@mystics.org



SECOND PLACE

● A Green Solution to Basement Humidity Control

Humidity control is essential in residential and industrial buildings alike. This handy humidity control system calculates water vapor pressure from temperature and humidity readings. When the design detects that the outside air is drier than the air indoors, it triggers a ventilation system as opposed to a dehumidifier. A W7100 enables a user to monitor and control the moisture removal

process via any PC with a standard Web browser. File data is stored on a memory stick so it can be transferred easily to a PC.

David Penrose United States | david.penrose@comcast.net



THIRD PLACE

● m7100s: A Network Operating System

The m7100s is an original network operating system for the W7100. It can run several simultaneous tasks and enhances the W7100 TCP/IP core interface by allowing it to be reentrant, which simplifies programming. For debugging, the operating system also has a kernel-based monitor/debugger that can check on different tasks and their registers, modify

memory, and start the program.

Naubert Aparicio United States | naubert.aparicio@usa.net



FOURTH PLACE

● Moonlight Programmable LED Display

The Moonlight project is a creatively designed W7100-based intelligent LED display with network connectivity. It uses a W7100 as a network co-processor with a 32-bit microcontroller, which runs embedded Lua (or “eLua,” an open-source project based on the Lua programming language). The two CPUs communicate through a powerful yet simple remote procedure call mechanism. The 32-bit CPU sends network requests to the W7100,

which then executes them and returns the results.

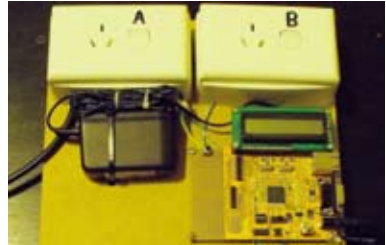
Bogdan Marinescu Romania | bogdan.marinescu@gmail.com



Honorable Mention

Remote Finger

The Remote Finger was designed to provide remote access to an embedded device for software development purposes. The W7100-based design provides power control, RS-232 access, and a relay for the likes of a Reset button. Other possible applications of the project include lighting control and advertising signage. Clayton Gumbrell Australia | clayton@gumbrell.net



TCP/IP Fuzzy Temperature Controller

This environment-friendly, W7100-based temperature controller uses TCP/IP technology, and fuzzy logic to control a room's temperature. A web-based interface is used for device configuration. Two fuzzy control algorithms work to maintain the pre-selected temperature and consume no more than the pre-selected power threshold.

Petru Iulian StefanRomania | spi_personal@yahoo.com



Ethernet-to-GPIB Interface

The Ethernet-to-GPIB Interface is a smart alternative to purchasing an expensive IEEE-488 card. The W7100-based project enables users to interface a PC to IEEE-488 devices via Ethernet.

Edwin Sidik and Yanto SuryonoJapan | edwin.sidik@gmail.com



Remote Temperature Sensor

Harnessing the power of a W7100 evaluation board, this extended temperature sensor is used to remotely monitor temperatures. The design supports control output for external equipment such as a fan or heater.

-Thomas RahnGermany rth@zuehlke.com





DESIGN CONTEST

2007 iEthernet Design Contest Winners

The WIZnet iEthernet Design Contest 2007 gave engineers throughout the embedded design community a chance to join the Ethernet revolution while competing for a share of \$15,000 in cash prizes and international recognition. Designers from around the world quickly stepped up to the challenge by incorporating WIZnet's W5100 hardwired TCP/IP Ethernet controller in innovative embedded projects. Within weeks of the contest launch, designers began

submitting their exciting, next-generation, Ethernet-enabled embedded systems.

After spending many long days and nights closely studying the entries and judging them on their technical merit, originality, usefulness, cost-effectiveness, and design optimization, the judges presented their scores to the contest administrator. The results are now final, and we're proud to announce the winners.

FIRST PLACE

● Drip Irrigation Controller

The irrigation timer with advanced planning (ITAP) is a truly next-generation irrigation control system. Featuring a WIZnet WIZ810MJ network module and an Atmel ATmega168, the innovative controller provides user interaction through a standard web browser. As a result, the system doesn't have a keyboard or an LCD. The single-controller unit can manage up to eight zones. No software installation is required. Its functionality is split between the browser-based user interface and the hardware-based web server, data model, and control logic. The web server is used to read and write the

internal data model.

Its other function is to return files stored in internal program memory. Precision irrigation control is now a reality because the system provides useful information such as watering schedules and zone activity.

-Thomas Bereiter Italy itimer@micaview.com



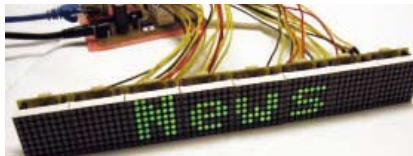
SECOND PLACE

● LED News Ticker

The handy LED News Ticker brings the news to you by displaying up-to-date headlines in a scrolling format. The system features a main board and eight slave boards attached to dot-matrix LED displays. The main board features a Microchip Technology PIC18F2525 microcontroller connected to a WIZnet WIZ810MJ Ethernet module, which uses the W5100 to provide an easy-to-use interface to the Internet. The LED News Ticker

requires no interaction to operate. Once powered up, the device immediately connects to the Internet and downloads news updates every 15 minutes. It handles all DHCP leasing and DNS resolving, allowing you to use dynamic IP addresses.

-James Blackwell U.S. azoore@azosoft.com



THIRD PLACE

● DMX Portal

The well-designed DMX Portal is an affordable DMX lighting controller. You can use the novel system to remotely control up to 512 channels through an IP-based network or directly interface them to embedded systems with a serial connection. It was designed to be perfectly suited for designers who want to off-load DMX management and refreshes from the main system controller. It's also useful for distributed lighting systems where low-cost Ethernet wiring

is more practical than expensive RS-485 wiring. The prototype includes an external EEPROM for scene storage and a Microchip Technology PIC18F4620 microprocessor. A WIZnet WIZ810MJ evaluation board is connected to the SPI on the PIC development board.

-Matt Ernst U.S. nomadelectronics@gmail.com



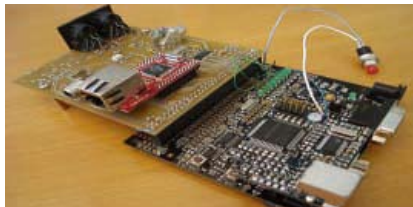
FOURTH PLACE

● Remote Real Virtual Instrument Interface

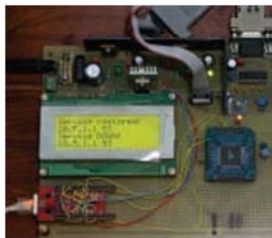
With the amazing Remote Real Virtual Instrument Interface, you can control any musical instrument with a MIDI input and capture its audio output over the Internet. You can also use the well-designed streaming media device to record audio if you don't need MIDI. It features a WIZnet W5100 hardwired TCP/IP chip, a Ramtron VRS31L3074 microcontroller, and a Texas Instruments TLV320AIC23B audio CODEC. The system's software is split into two

parts: an embedded portion for the VRS31L3074 microcontroller and a PC portion for the VSTi plug-in. The PC-side software provides the interface to the virtual music studio software.

-Clemens Valens France cvalens@yahoo.com
www.polyvalens.com



HONORABLE MENTION



Portable Network Service Monitor

Alexander Popov & Peter Popov
Bulgaria / sasho@popovbrothers.com



ThermoNet

Kevin Houser / US
thermonet@rocketfarmers.com



FATE

Flexible Audio Transmission Over
Ethernet / John Clayton / US
jclaytons@earthlink.net



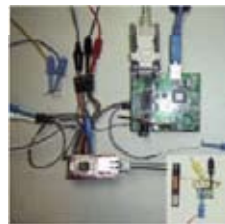
Travel WIZard

Matthew Pannell & Aaron Thomas / US
Alphatango22@gmail.com



Web Camera

Minas Kalarakis / Greece
info@kalarakis.gr



Time Server

Steven Nickels / US
Ssea000@gmail.com



Greener Lawn : A Sprinkler Control System

Zack Clobes / US
zack@custom-ds.com



NIETO : An NCID and NTP Client

Thomas Glembocki / US
tomgle@yahoo.com



WIZnet Shield for Arduino

● WIZnet WiFi Shield

WIZnet WiFi shield provides WiFi connectivity to your Arduino-based project. It is a drop-in and plug-and play solution to provide 802.11 b/g WiFi connectivity to your Arduino Diecimila, Duemilanove and Uno



- Use SPI BUS for host communication
- Simple control commands like AT command
- Antenna : on-board chip antenna type or cable via U. FL connector (optional)
- Indication LEDs
 - Power : indicates that the board and shield are powered
 - W_COM : indicates the presence of a Wifi network link
 - S_CON : indicates the presence of a Serial Link
 - S_RXD : flashes when the shield receives data from Arduino
 - 2 Debug LED

● WIZnet Ethernet Shield

WIZnet Ethernet Shield allows an Arduino board to connect to the Internet. WIZnet W5200 provides a hardwired TCP/IP protocol stack enabling your application to communicate by TCP or UDP.

- Micro-SD card slot for storing data
- On board W5200
- 10/100 Mbps, Full/Half Auto Negotiation, Auto MDI/MDIX
- Indication LEDs
 - Power : indicates that the board and shield are powered
 - LINK : indicates the presence of a network link
 - Duplex : Indicates the presence of a network link
 - Speed : indicates the presence of a 100 Mbps network connection
 - 2 Debug LED



WIZnet opens all hardware & software source materials of WIZnet WiFi & Ethernet shields. (not produce and supply the products). Please contact to sales@wiznet.co.kr for more detail.

WIZnet in YouTube



Internet Meter : an introduction to the Arduino Ethernet Shield

This video is about Arduino Ethernet shield (in which W5100 is embedded) and PHP code for using physical panel meters to display Google Reader unread counts and Gmail unread counts.



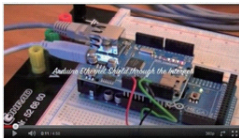
Web Controlled LED

This is a video using the Arduino and the Ethernet shield to control LED light using a web browser.



Arduino with Ethernet Shield and PHP Server= Automation

Home automation set up : Successfully activating the Arduino with an Ethernet Shield.



Arduino Ethernet Shield on a MEGA 2560 board

The analog value from a pot is read on input A0 by the board. It is sent first on a LAN to be ready by a browser and finally through the Internet.



TROBOT 2.0 - Velocity Test

The TROBOT 2.0 is a compact six-axis robot powered by small RC-style servo motors. A W7100 evaluation kit acts as a servo controller interface between the robot and a PC running ABB's Robot Studio.



Integrating W5100, WIZ811MJ with Atmel AVR Microcontroller

We are going to build the embedded web server using the Wiznet 811MJ network module which is based on WIZnet well know W5100 TCP/IP hardwired chip that include the Ethernet controller physical layer(PHY).



Parallax Propeller and WIZnet W5100 = Spinneret Web Server!

Your favorite Prop chip on board a nice compact Parallax board with WIZnet's W5100 Ethernet controller, Micro SD storage, real time clock, and backup capacitor.



Sponsor to Open Hardware Summit



WIZnet sponsors Open Hardware Summit, the world's first comprehensive conference on open hardware. In this summit, world renowned leaders from industry,

academia and DIY community discuss and draw attention to the rapidly growing open source hardware movement.

Arduino Ethernet Shield & Clones

Arduino (www.arduino.cc) is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software.

WIZnet's chip and module are being used in the Arduino's Ethernet Shield, and adopted in its clones.



SPINNERET WEB SERVER DESIGN CONTEST A Partnership between Parallax & WIZnet



This design contest aims to promote the emerging open-source hardware community by encouraging the use of good open-source design practices, cooperation, and proactive sharing of new designs. For more detail, please visit <http://www.parallax.com/go/spinneret>



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