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GS2011MxxS Ultra-Low Power 802.11b/g/n Compact Module

Backwards-Compatible



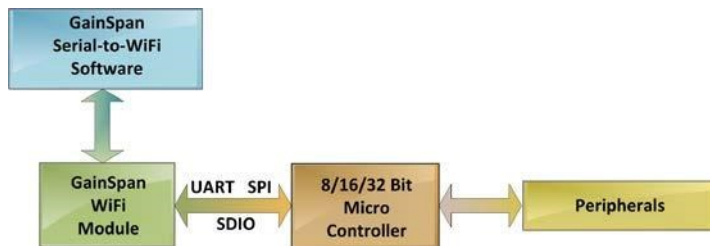
The GS2011MxxS is a reduced size ultra-low power module that provides a quick, easy, and cost effective way for device and appliance manufacturers to add Wi-Fi connectivity to their products. The module provides a high speed serial interface connection to an embedded design built on an 8/16/32-bit microcontroller. The SDIO interface can be clocked up to 40MHz.

The GS2011MxxS is an ideal solution for organizations with limited Wi-Fi or RF expertise or for those seeking faster time to market, as it reduces RF design time and removes the burden of testing and certification. The module is IEEE 802.11b/g/n compliant, and meets worldwide regulatory and Wi-Fi Alliance certification requirements.

The module includes a 12 bit analog to digital converter (ADC) for connecting energy measurement and other sensors. It runs the full Wi-Fi and TCP/IP networking stacks on module, completely offloading the host microcontroller. The module supports a complete suite of security protocols, also without tasking the host microcontroller, including WPA/WPA2-Enterprise and Personal security modes, legacy WEP encryption, and upper layer security protocols such as TLS/SSL and HTTPs. Alternatively, it can be run self-contained without a host.

For ease of provisioning, the module can be set up simply and easily from a smartphone or laptop through the innovative Limited AP mode or with Wi-Fi Protected Setup (WPS).

The GS2011MxxS is available with a u.FL connector to add an external antenna for max performance or a PCB trace antenna for low cost, and convenience while saving space. US/Canada (FCC/IC), Europe (CE/ETSI), Japan (TELEC), and Wi-Fi certified.



GS2011MXXS System Block Diagram

SKU	Antenna Option
GS2011MIES	External (u.FL)
GS2011MIPS	PCB Trace

BENEFITS:

- Adds low power, high speed Wi-Fi and Internet connectivity to any device with a microcontroller and serial host interface
- Certified module reduces development time, testing, and certification, accelerating time to market
- Easy upgrade path: footprint and pin compatible with GS1011MxxS modules
- Full offload solution minimizes load on host processor
- Easy smartphone provisioning with Limited AP or Wi-Fi Protected Setup (WPS)
- Ultra low power consumption through dynamic power management modes and on module DC to DC regulator

FEATURES:

- IEEE 802.11 b/g/n connectivity with PHY rates up to 72 Mbps
- Limited AP, Wi-Fi Direct, Concurrent mode, WPS 2.0
- UART, SPI, SDIO interface to microcontroller
- 24 configurable I/O
- Interface clock rate: 40 MHz on SDIO, 30 MHz on SPI (master), 10 MHz on SPI (slave), and 921k baud on UART
- Extensive networking stack and services
- Security: 802.11i, WPA/2–Personal and Enterprise, legacy WEP, TLS

MODULE HIGHLIGHTS:

- Power source:
 - 3.3V main supply
 - 1.8V, 3.3V I/O
 - 1.6V to 3.6V Battery
- Certification: FCC, IC, ETSI, TELEC, Wi-Fi
- I/O interfaces : SPI, UART, SDIO, I²C, I²S, GPIO, ADC, PWM
- Industrial Grade

GS2011MXXS MODULE SPECIFICATIONS

Backwards compatibility	Pin compatible with GS1011MxxS Modules
Radio Protocol	IEEE 802.11b/g/n
Pin Count	37 pins
RF Output Power (Typical)	+17 dBm (802.11b 1Mbps), +15dBm (802.11g 6Mbps), +14dBm (802.11n MCS0)
Rx Sensitivity	-91 dBm (802.11b 1Mbps), -88 dBm (802.11g 6Mbps), -88 dBm (802.11n MCS0)
Wake From Standby Time	1.25 millisecond
RF Operating Frequency	2.4 - 2.495 GHz
Supported Data Rates	72, 65, 58, 43, 29, 22, 14, 7 Mbps (802.11n), 54, 48, 36, 24, 18, 12, 9, 6 Mbps (802.11g) 11, 5.5, 2, 1 Mbps (802.11b)
Antenna	External Antenna (u.FL connector) or PCB Trace Antenna
Operating Temperature	-40° to +85°C
Security Protocols	WPA/WPA2 - Personal, WPA/WPA2 - Enterprise (PEAP, EAP-FAST, EAP-TLS, EAP-TTLS), WEP, TLS/SSL Client and Server, HTTPs
Networking Protocols	TCP, UDP, IPv4, TLS Client and Server, SNMP client, DHCP Client and Server v4, DNS Client and Server, HTTP Client and Server, XML Parser
Certifications and Compliance	FCC, IC, TELEC, CE/ETSI, RoHS, Wi-Fi CERTIFIED
I/O Interfaces	SPI, UART, SDIO, I ² C, I ² S, GPIO (24), ADC, PWM (2), RTC (2)
Host Connections	SPI, UART, SDIO (typically to an external microcontroller)
Internal Flash	2 MB
Outline Dimensions	19.4 mm x 28.7 mm x 3.35 mm (shield)
I/O Voltage	1.8V or 3.3V
Operating Voltage	2.7-3.6V
V_{BAT}	1.6-3.6V

TARGET APPLICATIONS

The GainSpan GS2011MxxS module is easily designed into embedded systems, allowing customers to develop a broad array of devices and appliances that connect to other local devices or the Internet over Wi-Fi. Applications include healthcare and fitness, smart energy, industrial controls, commercial building automation, and consumer electronics.

GS2011MxxS Block Diagram

