



GS2011M Ultra-Low Power High Speed 802.11b/g/n Module *Backwards-Compatible*

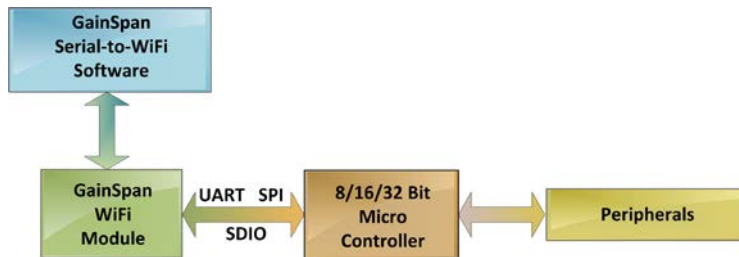
The GS2011M is an ultra-low power module that provides a quick, easy, and cost effective way for device and appliance manufacturers to add Wi-Fi connectivity to their products. The module provides a high speed serial interface connection to an embedded design built on an 8/16/32-bit microcontroller. The SDIO interface can be clocked at up to 40MHz.

The GS2011M 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 two analog to digital converter (ADC) pins 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 GS2011M is available with an u.FL connector to add an external antenna for max performance or a ceramic chip for convenience while saving space. US/Canada (FCC/IC), Europe (CE/ETSI), Japan (TELEC), and Wi-Fi certified.



GS2011M System Block Diagram

SKU	Antenna Option
GS2011MIE	External (u.FL)
GS2011MIZ	Ceramic Chip



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 GS1011M and GS1500M 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
- Extended range

FEATURES:

- IEEE 802.11 b/g/n connectivity with PHY rates up to 72 Mbps
- Limited AP, Wi-Fi Direct with concurrent mode, WPS 2.0
- UART, SPI, SDIO interface to microcontroller
- 27 configurable I/O
- Interface clock rate: 40MHz on SDIO, 30MHz on SPI (master), 10MHz 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
 - 3.3V I/O
 - 1.6V to 3.6V Battery
- Certification: FCC, IC, CE/ETSI, TELEC, Wi-Fi
- I/O interfaces : SPI, UART, SDIO, I²C, I²S, GPIO, ADC, JTAG, PWM
- Industrial Grade

GS2011M MODULE SPECIFICATIONS

Backwards compatibility	Pin compatible to GS1011MIE, GS1011MIP, GS1011MEE, GS1011MEP and GS1500M. Same size and footprint as GS1011MIE and GS1011MIP
Radio Protocol	IEEE 802.11b/g/n
Pin Count	49 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 Ceramic Chip
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, IPv6, TLS Client and Server, SNTP client, DHCP Client and Server v4, DHCP Client and Server v6, 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 (27), ADC (2), JTAG, PWM (3), RTC (3)
Host Connections	SPI, UART, SDIO
Internal Flash	4 MB
Outline Dimensions	22.8 mm x 32.5 mm x 3.63 mm (shield)
I/O Voltage	3.3V
Operating Voltage	2.7-3.6V
V_{BAT}	1.6-3.6V

TARGET APPLICATIONS

The GainSpan GS2011M 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.

GS2011M Block Diagram

