GS2100M Low Power High Speed 802.11b/g/n Module

Smart Energy, Cost and Size Optimized

The GS2100M is a small foot print module that provides a quick, easy, and cost effective way for manufacturers to add Wi-Fi connectivity to their products. Intended for smart energy and sensor applications, the module has 3 high bit-rate sigma-delta ADCs for high resolution sensor and measurement devices.

This module provides a low cost, high speed serial to Wi-Fi connection to an embedded design built on an 8/16/32-bit microcontroller, through an SDIO, SPI or UART interface.

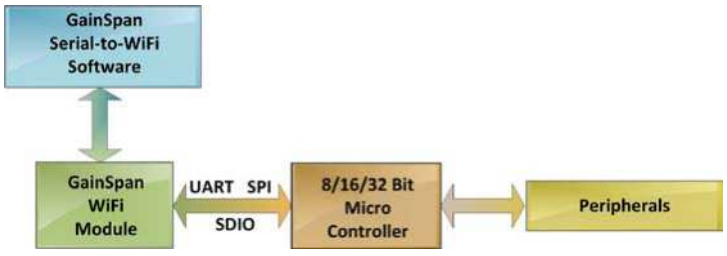
The GS2100M is an ideal solution for organizations with limited Wi-Fi or RF expertise or for those seeking faster time to market, as it reduces RF design time and removes the burden of testing and certification. The module is IEEE 802.11b/g/n compliant, and meets worldwide regulatory and Wi-Fi Alliance certification requirements.

The module runs the full Wi-Fi and TCP/IP networking stacks, completely offloading the host microcontroller. It supports a complete suite of security protocols, also without tasking the host microcontroller, including WPA/WPA2-Enteprise and Personal security modes, legacy WEP encryption, and upper layer security protocols such as TLS/SS 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 module is single sided with castellation on the edges for the I/O connections for soldering down on the product's baseboard.

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



GS2100M System Block Diagram

SKU	Antenna Option
GS2100MIE	External (u.FL)
GS2100MIP	PCB Antenna

BENEFITS:

- **High resolution sensing and energy measurement**
- **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**
- **Full offload solution minimizes load on host processor**
- **Easy smartphone provisioning with Limited AP or Wi-Fi Protected Set-up (WPS)**
- **Low power consumption through dynamic power management modes**
  - **Standby, Deep Sleep, Sleep**

FEATURES:

- **Three 16-bit Sigma-Delta ADCs for sensors and measurement**
- **IEEE 802.11 b/g/n connectivity with PHY rates up to 72 Mbps**
- **Limited AP, Wi-Fi Direct capable with concurrent mode, WPS 2.0**
- **UART, SPI, SDIO interface to microcontroller**
- **16 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:

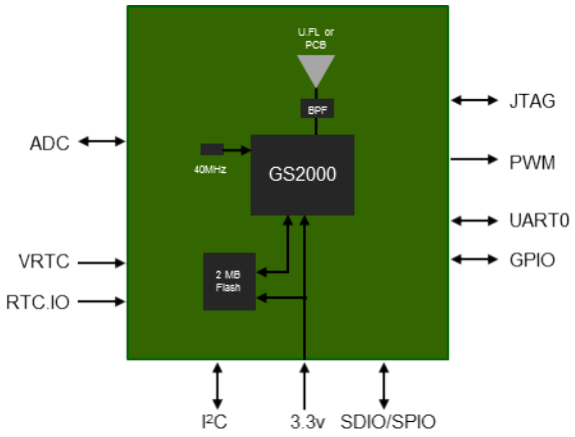
- **Power Source**
  - **3.3V main supply**
  - **3.3V I/O**
  - **1.6V to 3.6V Battery**
- **Certification: FCC, IC, CE/ETSI, TELEC, Wi-Fi**
- **I/O interfaces : SPI, UART, SDIO, I^2C, I^2S, GPIO, ADC, JTAG, PWM**
- **Industrial Grade**

GS2100M MODULE SPECIFICATIONS

Radio Protocol	IEEE 802.11b/g/n
Pin Count	40 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)
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 Options	External antenna (u.FL connector) or Internal 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, IPv6, TLS Client and Server, SNTP client, DHCP Client and Server v4, DHCP Client and Server v6, DNS Client and Server, mDNS, DNS-SD, HTTP Client and Server, and XML Parser
Certifications and Compliance	FCC, IC, TELEC, CE/ETSI, RoHS, Wi-Fi CERTIFIED
I/O Interfaces	SPI, UART, SDIO, I^2C, I^2S,GPIO (16), ADC, JTAG, PWM (3), RTC
Host Connections	SPI, UART, SDIO
Internal Flash	2 MB
Outline Dimensions	18 mm x 25 mm x 2.5 mm (shield)
I/O Voltage	3.3V
Operating Voltage	2.7-3.6V
V_{BAT}	1.6-3.6V

TARGET APPLICATIONS

The GainSpan GS2100M 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 smart energy, healthcare and fitness, industrial controls, commercial building automation, and consumer electronics.



GS2100M Block Diagram

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