



# GS2101M Low Power, High Speed 802.11b/g/n module

## Smart Energy, Cost Optimized



The GS2101M module provides a quick, easy, and cost effective way for device and appliance manufacturers to add Wi-Fi connectivity to their products. Intended for smart energy and sensor applications, the module runs the SEP 2.0 Smart Energy Profile stack and 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, achieving up to 25 Mbps throughput over an SDIO interface.

The GS2101M 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-Enterprise 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.

The GS2101M has extended range with industry leading receiver sensitivity. 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 (ETSI) and Japan (TELEC) certified.

SKU	Antenna Option
GS2101MIE	External Antenna
GS2101MIP	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)
- Ultra-low power consumption through dynamic power management modes
  - Standby, Sleep, Deep Sleep
- Extended range

### FEATURES:

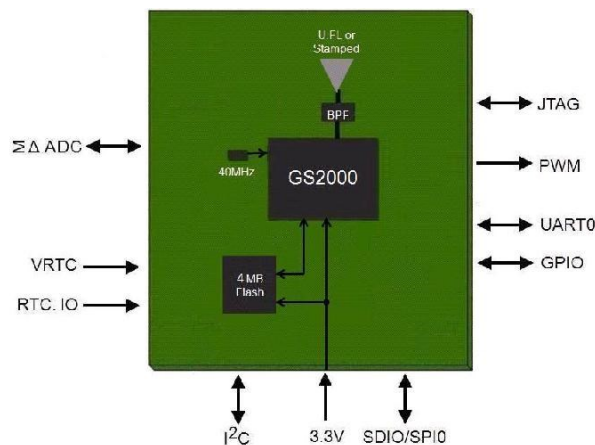
- 3 16-bit Sigma-Delta ADCs for sensors and measurement
- IEEE 802.11 b/g/n connectivity with PHY rates up to 72 Mbps
- Limited AP, Wi-Fi Direct with concurrent mode, WPS 2.0
- UART, SPI, SDIO interface to microcontroller
- Throughput (typical): 25 Mbps on SDIO, 15 Mbps on SPI (master), 5 Mbps on SPI (slave) , and 1 Mbps on UART
- Extensive networking stack and services
- Security: 802.11i, WPA/2–Personal and Enterprise, legacy WEP, TLS

**GS2101M MODULE SPECIFICATIONS**

<b>Radio Protocol</b>	IEEE 802.11b/g/n
<b>Pin Count</b>	40 pins
<b>RF Output Power (Typical)</b>	+14 dBm (802.11b), +11 dBm (802.11n)
<b>Rx Sensitivity</b>	-95 dBm
<b>Wake From Standby Time</b>	1 ms (1 millisecond)
<b>RF Operating Frequency</b>	2.4 - 2.495 GHz
<b>Supported Data Rates</b>	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)
<b>Antenna Options</b>	External antenna (u.FL connector) or Internal PCB trace antenna
<b>Operating Temperature</b>	-40° to +85°C
<b>Security Protocols</b>	WPA/WPA2 - Personal, WPA/WPA2 - Enterprise (PEAP, EAP-FAST, EAP-TLS, EAP-TTLS), WEP, TLS/SSL Client and Server, HTTPs
<b>Networking Protocols</b>	TCP, UDP, IPv4, TLS Client and Server, SNMP client, DHCP Client and Server v4, DNS Client and Server, mDNS, DNS-SD, HTTP Client and Server, and XML Parser
<b>Certifications and Compliance</b>	FCC, IC, TELEC, ETSI, RoHS, Wi-Fi CERTIFIED, Wi-Fi Direct, WPS 2.0, SEP 2.0
<b>I/O Interfaces</b>	SPI, UART, SDIO, I <sup>2</sup> C, I <sup>2</sup> S, GPIO, ADC (16 bit), ADC (12 bit), JTAG
<b>Host Connections</b>	SPI, UART, SDIO (typically to an external microcontroller)
<b>Internal Flash</b>	4 MB
<b>Outline Dimensions</b>	18 mm x 25 mm x 2.5 mm (shield)
<b>I/O Voltage</b>	2.7-3.6V
<b>Operating Voltage</b>	2.7-3.6V
<b>V<sub>BAT</sub></b>	1.6-3.6V

**TARGET APPLICATIONS**

The GainSpan GS2101M 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.



**GS2100 Block Diagram**

