Quectel FGM840R

Wi-Fi 4 & BLE 5.0 Module
Compact LGA Package

12.5 mm

13.2 mm

2.05 mm
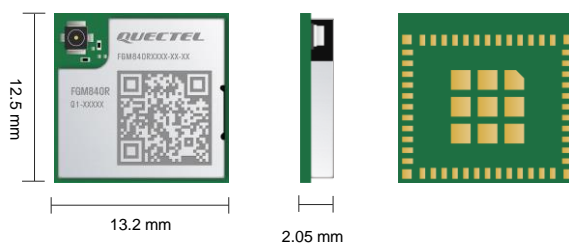
FGM840R is a cutting-edge MCU Wi-Fi and Bluetooth combo module launched by Quectel. It has a built-in Cortex-M33&M23 dual-core processor with a main-core frequency of up to 200 MHz. It supports IEEE 802.11a/b/g/n protocol and BLE 5.0, covers 2.4 GHz & 5 GHz frequency bands, and has built-in 512 KB RAM and 4 MB Flash to meet the needs of high-speed data processing.

The module is in a LGA form factor with an ultra-compact package size of 12.5 mm × 13.2 mm × 2.05 mm, which optimizes the size and cost for end-products and is compatible with diverse designs.

The module complies with WPA-PSK, WPA2-PSK and WPA3-SAE security standards, supports comprehensive security such as TRNG (True Random Number Generator) , AES-128, TrustZone, Secure Boot and flash encryption.

In QuecOpen® solution, the module supports up to 20 GPIO interfaces, which can be multiplexed as SPI, I2C, ADC, PWM, SDIO, SWD and USB functions, which provide flexibility and versatility for a range of applications, especially in smart homes and industrial IoT scenarios.

The module supports QuecOpen® solution and standard AT commands, with a compact protocol, and can realize efficient product development for customers.

Key Features

✔ Wi-Fi 4 module, 2.4 GHz & 5 GHz Wi-Fi bands, 1 × 1 antenna

✔ BLE 5.0 and Wi-Fi pairing via Bluetooth

✔ Built-in 512 KB SRAM , 4 MB flash

✔ Supports up to 20 GPIOs for SPI, I2C, ADC, PWM, SDIO, SWD and USB functions in QuecOpen® solution

✔ RF coaxial connector or pin antenna interface (Optional)

✔ Wide operating temperature range: -40 °C to +85 °C

✔ USB Ethernet access solution

IEEE 802.11 a/b/g/n

2.4 GHz & 5 GHz Dual-band

BLE 5.0

Large Memory

Compact Size

Operating Temperature: -40 °C to +85 °C

Wi-Fi 4 & BLE 5.0	FGM840R
WLAN Protocol	IEEE 802.11 a/b/g/n
Wi-Fi Frequency Band	2.4 GHz, 5 GHz
Wi-Fi Modulation Mode	DBPSK/ DQPSK/ CCK/ BPSK/ QPSK/ 16QAM/ 64QAM
Wi-Fi Operating Mode	AP/ STA
Bluetooth Protocol	BLE 5.0
Encryption Mode	WPA-PSK, WPA2-PSK, WPA3-SAE, AES-128, DES, SHA, TrustZone, Secure Boot, etc.
Internet Protocol	IPv4
Kernel	ARM Cortex-M33&M23（main core frequency up to 200 MHz）
RAM	512 KB
Flash	4 MB
Dimensions	12.5 mm × 13.2 mm × 2.05 mm
Weight	Approx. 0.72 g
Temperature Range	
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-45 °C to +95 °C
Certification	
Regulatory [1]	**Europe:** CE **America:** FCC **Canada:** IC **China:** SRRC **Australia/New Zealand:** RCM
Interfaces	
Antenna Interface	× 1 (4th generation RF coaxial connector or pin antenna interface) (Optional)
Other Interfaces [2]	UART/ GPIO/ SPI/ I2C/ PWM/ ADC/ SDIO/ SWD/ USB, etc.
Electrical Features	
Power Supply Voltage	3.0–3.6 V, typ. 3.3 V
RF Performance	

		Receiver Sensitivity	Transmit Power
2.4 GHz	802.11b/1 Mbps	-99 dBm ±2 dB	18 dBm ±2 dB
	802.11b/11 Mbps	-90.5 dBm ±2 dB	18 dBm ±2 dB
	802.11g/6 Mbps	-94 dBm ±2 dB	18 dBm ±2 dB
	802.11g/54 Mbps	-77.5 dBm ±2 dB	17 dBm ±2 dB
	802.11n/HT20 MCS 0	-94 dBm ±2 dB	18 dBm ±2 dB
	802.11n/HT20 MCS 7	-75 dBm ±2 dB	16 dBm ±2 dB
5 GHz	802.11a/6 Mbps	-94 dBm ±2 dB	16 dBm ±2 dB
	802.11a/54 Mbps	-76.5 dBm ±2 dB	14 dBm ±2 dB
	802.11n/HT20 MCS 0	-94 dBm ±2 dB	16 dBm ±2 dB
	802.11n/HT20 MCS 7	-74.5 dBm ±2 dB	13 dBm ±2 dB
BLE	1 Mbps	-100 dBm ±3 dB	4.5 dBm ±3 dB
	2 Mbps	-96 dBm ±3 dB	4.5 dBm ±3 dB

Ordering Code	Operating Temperature	Antenna	Development Board (Only for Debugging)
FGM840RAAMD-4X-04	-40 °C to +85 °C	4th generation RF coaxial connector	FGM840RAATB-4X-04
FGM840RAAMD-0L-04	-40 °C to +85 °C	Pin antenna interface	FGM840RAATB-0L-04

NOTE:

[1]: Certifications are in progress. Contact Quectel sales If you have other certification needs.
[2]: See hardware design manual for details of the module interfaces.

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