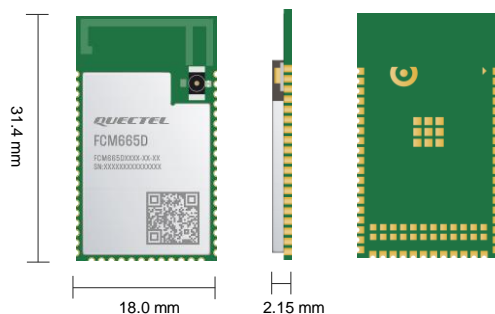


Quectel FCM665D

Wi-Fi 6/ Classic Bluetooth 2.1/ BLE 5.4 Module



FCM665D is a high-performance Wi-Fi 6 & Classic Bluetooth 2.1 & BLE 5.4 module launched by Quectel, supporting 2.4 GHz frequency. It has a built-in 32-bit triple-core ARMv8-M Star MCU processor with a frequency of up to 480 MHz, supporting double-precision floating-point operations and SIMD instruction sets.

The module has an integrated 640 KB SRAM and offers multiple memory specifications such as 8 MB/16 MB PSRAM and 8 MB/16 MB flash; it complies with WPA-PSK/WPA2-PSK/WPA3-SAE security standards and supports multiple hardware encryption engines, such as AES, RSA and ECC, and is equipped with TrustZone and security firmware to ensure data security.

Under the QuecOpen® solution, the module supports up to 54 GPIOs that can be multiplexed as UART, SPI, QSPI, PWM, ADC, I2C, SDIO, USB, I2S, LCM, and touch sensor interfaces to meet the connectivity needs of various devices. It can be flexibly and widely used in application scenarios such as smart home and industrial Internet of Things.

Due to its powerful processor performance and large storage capacity, FCM665D can support multiple network connections and a local cache of big data, which is particularly suitable for photovoltaic inverters, energy storage batteries, and other smart devices that require long-term operation data monitoring and preservation. Its excellent image encoding and decoding capabilities and dedicated peripherals also make it suitable for multimedia application scenarios such as low-power doorbells, video door locks, IPCs, point-reading pens, and LCD screen displays.

With flexible connectivity, powerful processing, and reliable security, the FCM665D is an excellent solution for smart devices.



Key Features

- ✓ Wi-Fi 6 module, single band (2.4 GHz)
- ✓ Classic Bluetooth 2.1, BLE 5.4 and Wi-Fi pairing via Bluetooth
- ✓ RF coaxial connector or PCB antenna (optional)
- ✓ 8 MB/16 MB PSRAM and 8 MB/16 MB flash
- ✓ Supports DVP, CSI
- ✓ Built-in MJPEG codec, supports H.264 video encoding
- ✓ Supports DMIC and Audio DAC/ ADC
- ✓ Supports RGB565, RGB888, MCU8080, QSPI
- ✓ Integrated LVGL embedded GUI graphics development framework, supports image sliding, rotation, and scaling



IEEE
802.11/b/g/n/ax



Classic Bluetooth 2.1
& BLE 5.4



Large Memory



Compact Size



Low Power Consumption



Multiple
Interfaces



LCC + LGA
Package



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

Wi-Fi 6 & Classic Bluetooth 2.1 & BLE 5.4 FCM665D	
WLAN Protocol	IEEE 802.11b/g/n/ax
Wi-Fi Frequency Band	2.4 GHz
Wi-Fi Modulation Mode	DBPSK, DQPSK, CCK, BPSK, QPSK, 16QAM, 64QAM
Wi-Fi Operating Mode	AP/STA
Bluetooth Protocol	Classic Bluetooth 2.1 & BLE 5.4
Encryption Mode	WPA-PSK/WPA2-PSK/WPA3-SAE/AES/RSA/ECC
Internet Protocol	IPv4, IPv6
Kernel	Triple-core ARMv8-M Star (up to 480 MHz)
SRAM	640 KB
PSRAM ^①	8 MB/16 MB
Flash ^②	8 MB/16 MB
Dimensions	31.4 mm × 18.0 mm × 2.15 mm
Weight	Approx. 1.96 g
Temperature Range	
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-45 °C to +95 °C
Certifications	
Regulatory	China: SRRC Europe: CE America: FCC
Interfaces	
Other Interfaces ^③	UART, SPI, QSPI, PWM, ADC, I2C, SDIO, USB, I2S, LCM, touch sensor, etc.
Antenna Interface	× 1 (1 st generation RF coaxial connector, PCB antenna) (optional)
Supply Voltage	
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	-96 dBm ±2 dB	17 dBm ±2 dB	
	802.11b/11 Mbps	-87 dBm ±2 dB	17 dBm ±2 dB	
	802.11g/6 Mbps	-92 dBm ±2 dB	16 dBm ±2 dB	
	802.11g/54 Mbps	-74 dBm ±2 dB	15 dBm ±2 dB	
	802.11n/HT20 MCS 0	-91 dBm ±2 dB	15 dBm ±2 dB	
	802.11n/HT20 MCS 7	-71 dBm ±2 dB	14 dBm ±2 dB	
	802.11n/HT40 MCS 0	-89 dBm ±2 dB	14 dBm ±2 dB	
	802.11n/HT40 MCS 7	-69 dBm ±2 dB	14 dBm ±2 dB	
	802.11ax/HE20 MCS 0	-92 dBm ±2 dB	15 dBm ±2 dB	
	802.11ax/HE20 MCS 7	-73 dBm ±2 dB	14 dBm ±2 dB	
	802.11ax/HE40 MCS 0	-90 dBm ±2 dB	14 dBm ±2 dB	
	802.11ax/HE40 MCS 7	-71 dBm ±2 dB	14 dBm ±2 dB	
	Bluetooth	BR (GFSK)	-90 dBm ±2 dB	5 dBm ±2 dB
		EDR (π/4-DQPSK)	-91 dBm ±2 dB	3.5 dBm ±2 dB
EDR (8-DPSK)		-82 dBm ±2 dB	4 dBm ±2 dB	
BLE (1 Mbps)		-94 dBm ±2 dB	7 dBm ±2 dB	
BLE (2 Mbps)		-91 dBm ±2 dB	7 dBm ±2 dB	
BLE (125 kbps)		-99 dBm ±2 dB	7 dBm ±2 dB	
BLE (500 kbps)		-94 dBm ±2 dB	7 dBm ±2 dB	

Ordering Code	PSRAM	Flash	Antenna	Development Board (Only for Debugging)
FCM665DAAMD-1X-08	8 MB	8 MB	1 st generation RF coaxial connector	FCM665DAATA-1X-08
FCM665DAAMD-0P-08	8 MB	8 MB	PCB antenna	FCM665DAATA-0P-08
FCM665DABMD-1X-0A	16 MB	16 MB	1 st generation RF coaxial connector	FCM665DABTA-1X-0A
FCM665DABMD-0P-0A	16 MB	16 MB	PCB antenna	FCM665DABTA-0P-0A

NOTE:

- ①: Contact Quectel sales if you need a flash of other specifications.
- ②: See hardware design manual for details of the module interfaces.