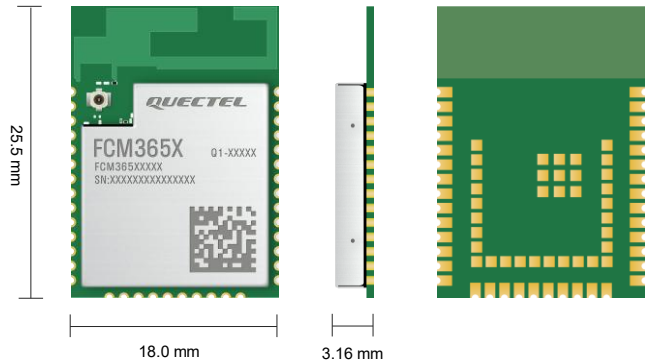




# Quectel FCM365X

Wi-Fi 6 & BLE 5.4 &  
IEEE 802.15.4 Module  
Compact LCC + LGA Package



FCM365X is a cutting-edge MCU Wi-Fi, Bluetooth and IEEE 802.15.4 module launched by Quectel. It boasts a high-performance processor (ARM Cortex-M33) with a frequency of up to 260 MHz and supports IEEE 802.11a/ b/ g/ n/ ac/ ax, BLE 5.4, and IEEE 802.15.4 (Thread/ Zigbee) protocols. The module features built-in 1.2 MB SRAM and 8 MB flash, ensuring efficient performance. In addition, it complies with WPA-PSK, WPA2-PSK and WPA3-SAE security standards, and supports AES-128 encryption.

FCM365X comes in an LCC + LGA form factor with an ultra-compact package size of 25.5 mm × 18.0 mm × 3.16 mm, which is compatible with diverse designs and optimizes end-product size and cost.

FCM365X supports GPIO, SDIO\*, UART, USB, SPI and JTAG interfaces by default and I2C, I2S, ADC, LCD\* and PWM interfaces in QuecOpen® solution, and many low power consumption modes and keep-alive mechanism, which provide flexibility and versatility for a range of applications, especially in smart homes and industrial IoT scenarios.

FCM365X supports QuecOpen® solution, with a compact protocol, and enables efficient product development.



## Key Features

- ✓ Wi-Fi 6 module, 2.4 GHz & 5 GHz Wi-Fi bands, 1 × 1 antenna
- ✓ Bluetooth Low Energy (BLE 5.4)
- ✓ IEEE 802.15.4 (Thread, Zigbee)
- ✓ Large memory, 1.2 MB SRAM and 8 MB flash
- ✓ PSRAM expansion (optional)
- ✓ GPIO, SDIO, UART, USB, SPI, JTAG, and etc.
- ✓ RF coaxial connector (IPEX Gen 4)\*, PCB antenna (optional)



IEEE  
802.11a/b/g/n/ac/ax



BLE 5.4



Zigbee



Thread



LCC + LGA  
Form Factor



Multiple  
Interfaces



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



Compact Size



Large Memory

# Quectel FCM365X

| Wi-Fi 6 & BLE 5.4 & IEEE 802.15.4 |                      | FCM365X                                                                               |                       |
|-----------------------------------|----------------------|---------------------------------------------------------------------------------------|-----------------------|
| WLAN Protocol                     |                      | IEEE 802.11a/ b/ g/ n/ ac/ ax                                                         |                       |
| Wi-Fi Frequency Band              |                      | 2.4 GHz/ 5 GHz                                                                        |                       |
| Wi-Fi Modulation Mode             |                      | DSSS/ OFDM/ DBPSK/ DQPSK/ CCK/ BPSK/ QPSK/ 16QAM/ 64QAM/ 256QAM                       |                       |
| Wi-Fi Operating Mode              |                      | AP/ STA                                                                               |                       |
| Bluetooth Protocol                |                      | BLE 5.4                                                                               |                       |
| IEEE 802.15.4                     |                      | Thread/ Zigbee                                                                        |                       |
| Encryption Mode                   |                      | WPA-PSK/ WPA2-PSK/ WPA3-SAE/ AES-128                                                  |                       |
| Internet Protocol                 |                      | IPv6                                                                                  |                       |
| Kernel                            |                      | ARM Cortex-M33 Processor (up to 260 MHz)                                              |                       |
| SRAM                              |                      | 1.2 MB                                                                                |                       |
| Flash                             |                      | 8 MB                                                                                  |                       |
| PSRAM Expansion (optional)        |                      | 8 MB                                                                                  |                       |
| Dimensions                        |                      | 25.5 mm × 18.0 mm × 3.16 mm                                                           |                       |
| Weight                            |                      | Approx. 1.51 g                                                                        |                       |
| Temperature Range                 |                      |                                                                                       |                       |
| Operating Temperature             |                      | -40 °C to +85 °C                                                                      |                       |
| Storage Temperature               |                      | -45 °C to +95 °C                                                                      |                       |
| Certification                     |                      |                                                                                       |                       |
| Regulatory                        |                      | Europe: CE<br>America: FCC<br>Canada: IC<br>Australia/New Zealand: RCM<br>China: SRRC |                       |
| Interfaces                        |                      |                                                                                       |                       |
| Antenna Interface                 |                      | × 1 (RF coaxial connector (IPEX Gen 4)*, PCB antenna) (Optional)                      |                       |
| Other Interfaces ①                |                      | UART/ USB/ GPIO/ SDIO*/ SPI/ JTAG/ I2C/ I2S/ ADC/ LCD*/ PWM                           |                       |
| Electrical Features               |                      |                                                                                       |                       |
| Power Supply Voltage              |                      | 3.14–3.46 V, Typ. 3.3 V                                                               |                       |
| Wi-Fi Performance                 |                      |                                                                                       |                       |
|                                   |                      | Receiver Sensitivity (Typ.)                                                           | Transmit Power (Typ.) |
| 2.4 GHz                           | 802.11b/1 Mbps       | -96 dBm ±2 dB                                                                         | 19 dBm ±2 dB          |
|                                   | 802.11b/11 Mbps      | -87 dBm ±2 dB                                                                         | 19 dBm ±2 dB          |
|                                   | 802.11g/6 Mbps       | -90 dBm ±2 dB                                                                         | 18 dBm ±2 dB          |
|                                   | 802.11g/54 Mbps      | -73 dBm ±2 dB                                                                         | 17 dBm ±2 dB          |
|                                   | 802.11n/HT20 MCS 0   | -90 dBm ±2 dB                                                                         | 18 dBm ±2 dB          |
|                                   | 802.11n/HT20 MCS 7   | -71 dBm ±2 dB                                                                         | 16 dBm ±2 dB          |
|                                   | 802.11ax/HE20 MCS 0  | -90 dBm ±2 dB                                                                         | 18 dBm ±2 dB          |
|                                   | 802.11ax/HE20 MCS 9  | -66 dBm ±2 dB                                                                         | 15 dBm ±2 dB          |
| 5 GHz                             | 802.11a/6 Mbps       | -90 dBm ±2 dB                                                                         | 18 dBm ±2 dB          |
|                                   | 802.11a/54 Mbps      | -73 dBm ±2 dB                                                                         | 16 dBm ±2 dB          |
|                                   | 802.11n/HT20 MCS 0   | -90 dBm ±2 dB                                                                         | 18 dBm ±2 dB          |
|                                   | 802.11n/HT20 MCS 7   | -71 dBm ±2 dB                                                                         | 15.5 dBm ±2 dB        |
|                                   | 802.11ac/VHT20 MCS 0 | -90 dBm ±2 dB                                                                         | 18 dBm ±2 dB          |
|                                   | 802.11ac/VHT20 MCS 8 | -67 dBm ±2 dB                                                                         | 14.5 dBm ±2 dB        |
|                                   | 802.11ax/HE20 MCS 0  | -88 dBm ±2 dB                                                                         | 18 dBm ±2 dB          |
|                                   | 802.11ax/HE20 MCS 9  | -65 dBm ±2 dB                                                                         | 13.5 dBm ±2 dB        |

NOTE:  
1. ①: See hardware design manual for details of the module interfaces.  
2. \* : Under development.



# Quectel FCM365X

| Wi-Fi 6 & BLE 5.4 & IEEE 802.15.4 |                      | FCM365X        |  |
|-----------------------------------|----------------------|----------------|--|
| Bluetooth Performance             |                      |                |  |
|                                   | Receiver Sensitivity | Transmit Power |  |
| BLE (1 Mbps)                      | -97 dBm ±3 dB        | 8 dBm ±3 dB    |  |
| BLE (2 Mbps)                      | -95 dBm ±3 dB        | 8 dBm ±3 dB    |  |
| BLE (S = 2)                       | -98 dBm ±3 dB        | 8 dBm ±3 dB    |  |
| BLE (S = 8)                       | -104 dBm ±3 dB       | 8 dBm ±3 dB    |  |
| IEEE 802.15.4 Performance         |                      |                |  |
|                                   | Receiver Sensitivity | Transmit Power |  |
| 2405 MHz                          | -99 dBm ±2.5 dB      | 8 dBm ±2.5 dB  |  |
| 2440 MHz                          | -99 dBm ±2.5 dB      | 8 dBm ±2.5 dB  |  |
| 2480 MHz                          | -93 dBm ±2.5 dB      | -2 dBm ±2.5 dB |  |

| Ordering Code      | PSRAM Expansion | LFRC Crystal | Antenna                            | Development Board (Only for Debugging) |
|--------------------|-----------------|--------------|------------------------------------|----------------------------------------|
| FCM365XAAMD-0P-08  | -               | -            | PCB antenna                        | FCM365XABTB-0P-08                      |
| FCM365XAAMD-4X-08* | -               | -            | RF coaxial connector (IPEX Gen 4)* |                                        |
| FCM365XABMD-0P-08* | Supported       | Supported    | PCB antenna                        | FCM365XABTB-0P-08*                     |

NOTE:  
1. \*: Under development.

