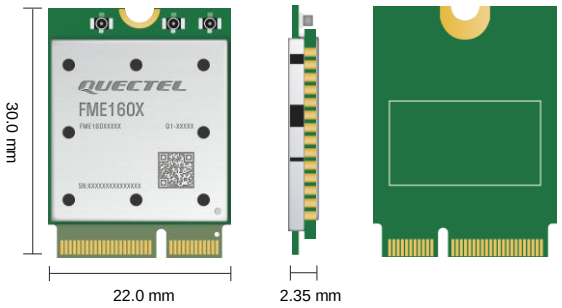
Quectel FME160X

Wi-Fi 6 & Bluetooth 5.4 Module
M.2 2230 KEY-E Package



FME160X is a high-performance Wi-Fi 6 and Bluetooth 5.4 module featuring 2T2R, designed in M.2 2230 KEY-E form factor. It can be used for WLAN and Bluetooth connections, delivering a maximum data rate up to 1201 Mbps.

With an ultra-compact size of 22.0 mm × 30.0 mm × 2.35 mm, the module optimizes the size and cost for end-products, which fully meets the demands of size-sensitive applications.

The M.2 KEY-E form factor makes this module an ideal solution for rugged designs, enabling easy integration into space-constrained applications while delivering reliable connectivity.

Based on the reliable PCIe 2.0 interface, the module enables high-speed, low-power WLAN wireless transmission. With its compact form factor, low power consumption, wide temperature range, and high reliability, FME160X is particularly suitable for laptop applications.

Key Features

- 2.4 GHz and 5 GHz Wi-Fi bands and Bluetooth 5.4
- PCIe 2.0 interface that supports higher data transmission rate and enables lower power consumption
- M.2 2230 KEY-E package
- Wider operating temperature range: -20 °C to +80 °C

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

Bluetooth 5.4

PCIe 2.0 Interface

Ultra-compact Size

Operating Temperature Range: -20 °C to +80 °C

M.2 Package

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Wi-Fi 6 & Bluetooth 5.4	FME160X
WLAN Protocol	IEEE 802.11a/b/g/n/ac/ax
Wi-Fi Frequency Band	2.4 GHz/5 GHz
Wi-Fi Antenna	2 × 2
Wi-Fi Modulation Mode	DSSS/CCK/BPSK/QPSK/DBPSK/DQPSK/16QAM/64QAM/256QAM/1024QAM/OFDMA
2.4 GHz Channel Bandwidth	20 MHz/40 MHz
5 GHz Channel Bandwidth	20 MHz/40 MHz/80 MHz
Encryption Mode	WEP, WPA, WPA2, WPA3-SAE, WAPI
Wi-Fi Operating Mode	AP/STA
Bluetooth Protocol	Bluetooth 5.4
Dimensions	22.0 mm × 30.0 mm × 2.35 mm
Weight	Approx. 3.02 g
Temperature Range	
Operating Temperature	-20 °C to +80 °C
Storage Temperature	-25 °C to +90 °C
Physical Rate (Max.)	
802.11a	54 Mbps
802.11b	11 Mbps
802.11g	54 Mbps
802.11n	300 Mbps
802.11ac	866.7 Mbps
802.11ax	1201 Mbps
Interfaces	
PCIe 2.0	× 1 (for Wi-Fi)
PCM	× 1 (for Bluetooth)
USB	× 1 (for Bluetooth)
Wi-Fi Antenna	× 2 (ANT_WIFI0, ANT_WIFI1)
Bluetooth Antenna	× 1 (ANT_BT)
Electrical Features	
Power Supply Voltage	VCC: 3.0–3.6 V, Typ. 3.3 V
Power Consumption	Max. current at Tx mode: 323.92 mA @ VCC
Certifications	
Regulatory (Planning)	**Europe:** CE **America:** FCC **Canada:** IC **China:** SRRC **Australia/New Zealand:** RCM

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Wi-Fi 6 & Bluetooth 5.4		FME160X	
Wi-Fi Performance			
		Transmit Power (Typ.)	**Receiver Sensitivity (Typ.)**
2.4 GHz	802.11b/1 Mbps	18 dBm	-100 dBm
	802.11b/11 Mbps	18 dBm	-92 dBm
	802.11g/6 Mbps	18 dBm	-95 dBm
	802.11g/54 Mbps	15 dBm	-79 dBm
	802.11n/HT20 MCS 0	18 dBm	-95 dBm
	802.11n/HT20 MCS 7	15 dBm	-77 dBm
	802.11n/HT40 MCS 0	18 dBm	-92 dBm
	802.11n/HT40 MCS 7	15 dBm	-74 dBm
	802.11ax/HE20 MCS 0	18 dBm	-95 dBm
	802.11ax/HE20 MCS 11	13 dBm	-66 dBm
	802.11ax/HE40 MCS 0	18 dBm	-92 dBm
	802.11ax/HE40 MCS 11	13 dBm	-64 dBm
5 GHz	802.11a/6 Mbps	18 dBm	-92 dBm
	802.11a/54 Mbps	15 dBm	-76 dBm
	802.11n/HT20 MCS 0	18 dBm	-92 dBm
	802.11n/HT20 MCS 7	15 dBm	-75 dBm
	802.11n/HT40 MCS 0	18 dBm	-89 dBm
	802.11n/HT40 MCS 7	15 dBm	-71 dBm
	802.11ac/VHT20 MCS 0	18 dBm	-92 dBm
	802.11ac/VHT20 MCS 8	14 dBm	-70 dBm
	802.11ac/VHT40 MCS 0	18 dBm	-89 dBm
	802.11ac/VHT40 MCS 9	14 dBm	-65 dBm
	802.11ac/VHT80 MCS 0	18 dBm	-85 dBm
	802.11ac/VHT80 MCS 9	14 dBm	-62 dBm
	802.11ax/HE20 MCS 0	18 dBm	-92 dBm
	802.11ax/HE20 MCS 11	12 dBm	-64 dBm
	802.11ax/HE40 MCS 0	18 dBm	-90 dBm
	802.11ax/HE40 MCS 11	12 dBm	-61 dBm
	802.11ax/HE80 MCS 0	18 dBm	-85 dBm
	802.11ax/HE80 MCS 11	12 dBm	-57 dBm
Bluetooth Performance			
		Transmit Power (Typ.)	**Receiver Sensitivity (Typ.)**
BR (GFSK)		5 dBm	-90 dBm
EDR (π/4-DQPSK)		5 dBm	-90 dBm
EDR (8-DPSK)		5 dBm	-85 dBm
BLE (1 Mbps)		5 dBm	-96 dBm
BLE (2 Mbps)		5 dBm	-95 dBm
BLE (S = 2)		5 dBm	-98 dBm
BLE (S = 8)		5 dBm	-99 dBm

Model	Ordering Code	Antenna	Temperature Range	Development Board (Only for Debugging)
FME160X	FME160XAAMD	Three antennas	-20 °C to +80 °C	FME160XAAMD

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