319.00 EUR
incl. 19% VAT, plus shipping

Support: Driver (Windows) | AT Commands Manual | Specifications

Quectel RM500Q-AE is a 5G module optimized specially for IoT/eMBB applications. Adopting the 3GPP Rel. 15 LTE technology, it supports both 5G NSA and SA modes. Designed in an M.2 form factor, RM500Q-AE is compatible with Quectel LTE-A Cat 6 module EM06, Cat 12 module EM12 and Cat 16 module EM160R-GL, which will facilitate customers to migrate from LTE-A to 5G.

The global version RM500Q-AE nearly covers all the mainstream carriers worldwide. The module supports Qualcomm® IZat™ location technology Gen8C Lite (GPS, GLONASS, BeiDou/Compass and Galileo). The integrated GNSS receiver greatly simplifies product design and provides quicker, more accurate and more dependable positioning capability.

A rich set of Internet protocols, industry-standard interfaces and abundant functionalities (USB/ PCIe drivers for Windows 7/8/8.1/10, Linux, Android) extend the applicability of the module to a wide range of M2M and IoT applications such as industrial router, home gateway, STB, industrial laptop, consumer laptop, industrial PDA, rugged tablet PC, video surveillance and digital signage.

Features

- 5G/4G/3G Multi-mode module with M.2 form factor, optimized for IoT and eMBB applications
- Worldwide 5G and LTE-A coverage
- Both NSA and SA modes
- Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment
- Feature refinements: DFOTA and VoLTE (optional)

Frequency Bands	5G NR : n1/n2/n3/n5/n7/n8/n12/n20/n25/n28/ n38/n40/n41/n48/n66/n71/n77/n78/n79 LTE-FDD : B1/B2/B3/B4/B5/B7/B8/B9/B12/B13/ B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/ B32/B66/B71 LTE-TDD : B34/B38/39/B40/B41/B42/B43/B48 **LTE LAA : B46** (only support 2x2 MIMO) WCDMA : B1/B2/B3/B4/B5/B6/B8/B19 GNSS : GPS/GLONASS/BeiDou (Compass)/ Galileo
Power Supply	Supply voltage range: 3.3–4.4 V Typical supply voltage: 3.7 V
Transmitting Power	Class 3 (24 dBm +1/-3 dB) for WCDMA bands Class 3 (23 dBm ±2 dB) for LTE bands Class 3 (23 dBm ±2 dB) for 5G NR bands Class 2 (26 dBm ±2 dB) for LTE B38/B40/B41/ B42 bands HPUE Class 2 (26 dBm +2/-3 dB) for 5G NR n41/n77/ n78/n79 bands HPUE
Data Transmission	5G SA Sub-6 Data Rate (Mbps) : DL 2.1 Gbps; UL 900 Mbps 5G NSA Sub-6 Data Rate (Mbps) : DL 2.5 Gbps; UL 650 Mbps LTE Data Rate (Mbps) : DL 1.0 Gbps; UL 200 Mbps WCDMA Data Rate (Mbps) : DL 42 Mbps; UL 5.76 Mbps

5G NR Features	Supports 3GPP Rel-15 Supported modulations: Uplink: π/2-BPSK, QPSK, 16QAM, 64QAM and 256QAM Downlink: QPSK, 16-QAM, 64-QAM and 256-QAM Supported MIMO: Uplink: 2 × 2 MIMO* on n41/n77/n78/n79 Downlink: 4 × 4 MIMO on n1/n2/n3/n7/n25/n38/ n40/n41/n48/n66/n77/ n78/n79 Supports SCS 15 kHz and 30 kHz Supports SA and NSA operation modes Supports Option 3x, 3a and Option 2 RG500Q-EA: NSA: Max. 2.5 Gbps (DL)/650 Mbps (UL) SA: Max. 2.1 Gbps (DL)/900 Mbps (UL) RG500Q-NA*: NSA: Max. 2.5 Gbps (DL)/650 Mbps (UL) SA: Max. 2.1 Gbps (DL)/450 Mbps (UL) RG502Q-EA: NSA: Max. 5.0 Gbps (DL)/650 Mbps (UL) SA: Max. 4.2 Gbps (DL)/900 Mbps (UL)
LTE Features	Supports 3GPP Rel-15 Supports up to CA Cat 16 FDD and TDD Supported modulations: Uplink: QPSK, 16-QAM, 64-QAM and 256-QAM Downlink: QPSK, 16-QAM, 64-QAM and 256-QAM Supports 1.4/3/5/10/15/20 MHz RF bandwidth Supports DL 4 × 4 MIMO on B1/B2/B3/B4/B7/ B25/B30/B32/B34/B38/B39/ B40/B41/B42/B43/B46/B48/B66 RG500Q-EA: LTE: Max. 1.0 Gbps (DL)/200 Mbps (UL) RG500Q-NA*: LTE: Max. 1.0 Gbps (DL)/200 Mbps (UL) RG502Q-EA: LTE: Max. 2.0 Gbps (DL)/200 Mbps (UL)
UMTS Features	Supports 3GPP Rel-9 DC-HSDPA, HSPA+, HSDPA, HSUPA and WCDMA Supports QPSK, 16-QAM and 64-QAM modulations DC-HSDPA: Max. 42 Mbps HSUPA: Max. 5.76 Mbps WCDMA: Max. 384 kbps (DL)/384 kbps (UL)
Internet Protocol Features	Supports QMI/TCP*/UDP*/FTP*/HTTP*/NTP*/ PING*/HTTPS*/SMTP*/ MMS*/FTPS*/SMTPS*/SSL* protocols

SMS	Text and PDU modes Point-to-point MO and MT SMS cell broadcast SMS storage: ME by default
(U)SIM Interfaces	Supports SIM/USIM cards: 1.8/2.95 V
Audio Features	Supports two digital audio interfaces: PCM* and I2S 2) WCDMA: AMR/AMR-WB LTE: AMR/AMR-WB Supports echo cancellation and noise suppression
PCM Interface	Supports 16-bit linear data format Supports long frame synchronization and short frame synchronization Supports master and slave modes, but must be in master mode for long frame synchronization
I2S Interface	Supports 16-bit linear data format I2S is commonly used as a 4-wire DAI (normally I2S_MCLK is not used in the design) in Hi-Fi, STB and portable devices. The Tx and Rx lines are used for audio transmission, while the bit clock and left/right clock synchronize the link. I2S is flexible in that either the controller or codec can drive (master) the bit clock and left/right clock lines. Can be multiplexed to PCM function

USB Interface	Compliant with USB 3.1 and 2.0 specifications, with maximum transmission rates of up to 10 Gbps on USB 3.1 and 480 Mbps on USB 2.0 Used for AT command communication, data transmission, GNSS NMEA output, software debugging and firmware upgrade Supports USB serial drivers for: Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x USB Serial Driver : Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x/5.x/6.x/7.x/8.x/9.x/10 GNSS Driver : Android 4.x/5.x/6.x/7.x/8.x/9.x/10 RIL Driver : Android 4.x/5.x/6.x/7.x/8.x/9.x/10 NDIS Driver : Windows 7/8/8.1/10 MBIM Driver : Windows 7/8/8.1/10, Linux 3.18–5.4 GobiNet Driver : Linux 2.6–5.4 QMI_WWAN Driver : Linux 3.4–5.4
UART Interfaces	Main UART: Used for AT command communication Baud rate: 115200 bps by default Supports RTS and CTS hardware flow control Debug UART: Used for Linux console and log output Baud rate: 115200 bps BT UART: Used for BT communication Baud rate: 115200 bps COEX UART: Used for WWAN/WLAN coexistence algorithms
PCIe Interface	Compliant with PCI Express Specification Revision 3.0 Supports 2 lanes, 8 Gbps/lane Can be used to connect an external WLAN IC
Rx-diversity	Supports 5G NR/LTE/WCDMA Rx-diversity
GNSS Features	Gen9C Lite of Qualcomm Supports dual-band GNSS: L1 and L5 Protocol: NMEA 0183 Data update rate: 1 Hz
Antenna Tuner Control Interface	GRFC interface dedicated for external antenna tuner
AT Commands	Compliant with 3GPP TS 27.007, 27.005 and Quectel enhanced AT commands

Network Indication	Two pins NET_MODE* and NET_STATUS to indicate network connectivity status
Antenna Interfaces	Eight cellular antenna interfaces (ANT0–ANT7) and one GNSS antenna interface (ANT_GNSS)
Physical Characteristics	52.0mm x 30.0mm x 2.3mm, 8.4g
Operating Temperature	Standard operating temperature range : -20 to 60°C Operating temperature range: -30 °C to +75 °C To meet this operating temperature range, you need to ensure effective thermal dissipation, for example, by adding passive or active heatsinks, heat pipes, vapor chambers, etc. Within this range, the module can meet 3GPP specifications. Extended temperature range: -40 °C to +85 °C To meet this extended temperature range, you need to ensure effective thermal dissipation, for example, by adding passive or active heatsinks, heat pipes, vapor chambers, etc. Within this range, the module remains the ability to establish and maintain functions such as voice, SMS, emergency call, etc., without any unrecoverable malfunction. Radio spectrum and radio network are not influenced, while one or more specifications, such as Pout, may undergo a reduction in value, exceeding the specified tolerances of 3GPP. When the temperature returns to the normal operating temperature level, the module will meet 3GPP specifications again. Storage temperature range: -40 °C to +90 °C
Firmware Upgrade	USB 2.0 and DFOTA