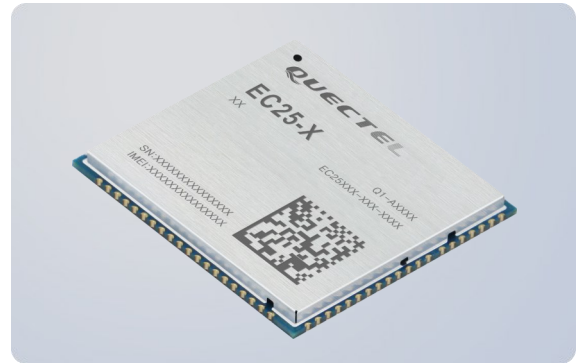


# Quectel EC25

## IoT/M2M-optimized LTE Cat 4 Module



Quectel EC25 is a series of LTE Cat 4 module optimized specially for M2M and IoT applications. Adopting the 3GPP Rel. 11 LTE technology, it delivers 150Mbps downlink and 50Mbps uplink data rates. Designed in the compact and unified form factor, EC25 is compatible with Quectel multi-mode LTE Standard EC21/EC20 R2.0/EC20 R2.1/EG25-G modules and UMTS/HSPA+ UC20/UC200T modules, which allows for flexible migration among them in design and manufacturing.

EC25 contains 14 variants: EC25-E, EC25-EU, EC25-EUX, EC25-EC, EC25-A, EC25-V, EC25-AF, EC25-AFX, EC25-MX, EC25-AU, EC25-AUX, EC25-AUT, EC25-AUTL and EC25-J. This makes it backward-compatible with existing EDGE and GSM/GPRS networks, ensuring that it can be connected even in remote areas devoid of 4G or 3G coverage.

EC25 supports Qualcomm® IZat™ location technology Gen8C Lite (GPS, GLONASS, BeiDou, Galileo and QZSS). The integrated GNSS greatly simplifies product design, and provides quicker, more accurate and more dependable positioning.

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



### Key Benefits

- ✓ LTE Cat 4 module optimized for M2M and IoT applications
- ✓ Worldwide LTE, UMTS/HSPA+ and GSM/GPRS/EDGE coverage
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment
- ✓ Feature refinements: supports DFOTA\*, eCall\* and DTMF
- ✓ MIMO technology meets demands for data rate and link reliability in modem wireless communication systems



LTE Cat 4  
Max 150Mbps (DL)  
Max 50Mbps (UL)



Max 42Mbps (DL)  
Max 5.76Mbps (UL)



LCC Package



Embedded Abundant  
Protocols



eCall\*



Multi-constellation  
GNSS



USB 2.0 High Speed  
Interface



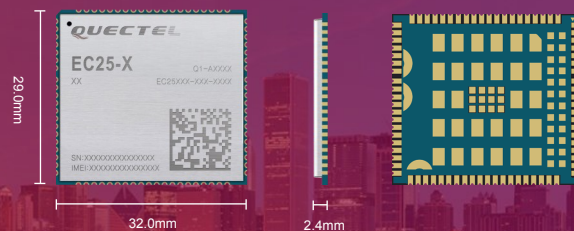
USB Drivers



Quectel Enhanced  
AT Commands

# Quectel EC25

## IoT/M2M-optimized LTE Cat 4 Module



### Variants for EMEA/Korea/Thailand/India

**EC25-E:**  
LTE FDD: B1/B3/B5/B7/B8/B20  
LTE TDD: B38/B40/B41  
WCDMA: B1/B5/B8  
GSM: B3/B8

**EC25-EU:**  
LTE FDD: B1/B3/B7/B8/B20/B28A  
LTE TDD: B38/B40/B41  
WCDMA: B1/B8  
GSM: B3/B8

**EC25-EC:**  
LTE FDD: B1/B3/B7/B8/B20/B28A  
WCDMA: B1/B8  
GSM: B3/B8

**EC25-EUX<sup>①</sup>:**  
LTE FDD: B1/B3/B7/B8/B20/B28A  
LTE TDD: B38/B40/B41  
WCDMA: B1/B8  
GSM: B3/B8

### Variants for North America/Mexico

**EC25-A:**  
LTE FDD: B2/B4/B12  
WCDMA: B2/B4/B5

**EC25-V:**  
LTE FDD: B4/B13

**EC25-AF:**  
LTE FDD: B2/B4/B5/B12/B13/B14/B66/B71  
WCDMA: B2/B4/B5

**EC25-AFX<sup>②</sup>:**  
LTE FDD: B2/B4/B5/B12/B13/B14/B66/B71  
WCDMA: B2/B4/B5

**EC25-MX<sup>③</sup>:**  
LTE FDD: B2/B4/B5/B7/B28/B66  
WCDMA: B2/B4/B5

### Variants for Australia/New Zealand/Taiwan/ Latin America

**EC25-AU:**  
LTE FDD: B1/B2<sup>④</sup>/B3/B4/B5/B7/B8/B28  
LTE TDD: B40  
WCDMA: B1/B2/B5/B8  
GSM: B2/B3/B5/B8

**EC25-AUX<sup>④</sup>:**  
LTE FDD: B1/B2<sup>④</sup>/B3/B4/B5/B7/B8/B28  
LTE TDD: B40  
WCDMA: B1/B2/B4/B5/B8  
GSM: B2/B3/B5/B8

**EC25-AUT:**  
LTE FDD: B1/B3/B5/B7/B28  
WCDMA: B1/B5

**EC25-AUTL:**  
LTE FDD: B3/B7/B28

**Variant for Japan**

**EC25-J:**  
LTE FDD: B1/B3/B8/B18/B19/B26  
LTE TDD: B41  
WCDMA: B1/B6/B8/B19

### Data

**LTE:**  
LTE FDD: Max 150Mbps (DL)/Max 50Mbps (UL)  
LTE TDD: Max 130Mbps (DL)/Max 30Mbps (UL)

**UMTS:**  
DC-HSDPA: Max 42Mbps (DL)  
HSUPA: Max 5.76Mbps (UL)  
WCDMA: Max 384Kbps (DL)/Max 384Kbps (UL)

**GSM:**  
EDGE: Max 296Kbps (DL)/Max 236.8Kbps (UL)  
GPRS: Max 107Kbps (DL)/Max 85.6Kbps (UL)

### Voice

Speech Codec Modes:  
HR/FR/EFR/AMR/AMR-WB

**Echo Arithmetic:**  
Echo Cancellation/Noise Suppression

**VoLTE:**  
Digital Audio and VoLTE (Voice over LTE)  
(Optional)

### Interfaces

UART × 2 : Main UART and Debug UART  
USB x 1: USB 2.0 with High Speed up to 480Mbps  
(U)SIM x 1: 1.8V/3.0V (U)SIM Interface  
Digital Audio through PCM Interface (Optional)  
NETLIGHT × 2 (NET\_STATUS and NET\_MODE)  
ADC × 2  
SGMII × 1  
SDIO × 2 (for Wi-Fi and SD card)<sup>⑤</sup>  
RESET  
PWRKEY  
Solder Pads for Primary, Rx-diversity and GNSS  
Antennas

### Enhanced Features

SDIO Interface for Wi-Fi Function (Optional)<sup>⑥</sup>  
UART/PCM Interfaces for BT4.0 Function\*<sup>⑥</sup>  
eCall\*<sup>⑥</sup>  
DTMF<sup>⑥</sup>  
Audio Playback&Audio Recording<sup>⑥</sup>  
QuecFile\*  
(U)SIM Card Detection  
**DFOTA\***: Delta Firmware Upgrade Over-The-Air  
**GNSS**: GPS/GLONASS/BeiDou/Galileo/QZSS  
(Optional)

### Electrical Characteristics

**Output Power:**  
Class 4 (33dBm±2dB) for GSM850  
Class 4 (33dBm±2dB) for EGSM900  
Class 1 (30dBm±2dB) for DCS1800  
Class 1 (30dBm±2dB) for PCS1900  
Class E2 (27dBm±3dB) for GSM850 8-PSK  
Class E2 (27dBm±3dB) for EGSM900 8-PSK  
Class E2 (26dBm±3dB) for DCS1800 8-PSK  
Class E2 (26dBm±3dB) for PCS1900 8-PSK  
Class 3 (24dBm+1/-3dB) for WCDMA bands  
Class 3 (23dBm±2dB) for LTE-FDD bands  
Class 3 (23dBm±2dB) for LTE-TDD bands

### Consumption:

20uA @Power off  
3mA @Sleep, Typ.  
22mA @Idle

**Sensitivity:**  
LTE B1: -101.5dBm (10M)  
LTE B2: -101dBm (10M)  
LTE B3: -101.5dBm (10M)  
LTE B4: -101dBm (10M)  
LTE B5: -101dBm (10M)  
LTE B7: -99.5dBm (10M)  
LTE B8: -101dBm (10M)  
LTE B12: -101dBm (10M)  
LTE B13: -100dBm (10M)  
LTE B14: -99dBm (10M)  
LTE B18: -101.7dBm (10M)  
LTE B19: -101.4dBm (10M)  
LTE B20: -102.5dB (10M)  
LTE B26: -101.5dBm (10M)  
LTE B28: -102dBm (10M)  
LTE B38: -100dBm (10M)  
LTE B40: -100dBm (10M)  
LTE B41: -99dBm (10M)  
LTE B66: -99dBm (10M)  
LTE B71: -100dBm (10M)  
WCDMA B1: -110dBm  
WCDMA B2: -110dBm  
WCDMA B4: -110dBm  
WCDMA B5: -110.5dBm  
WCDMA B6: -110.5dBm  
WCDMA B8: -110.5dBm  
WCDMA B19: -110.5dBm  
GSM850: -109dBm  
EGSM900: -109dBm  
DCS1800: -109dBm  
PCS1900: -109dBm

### Software Features

**USB Serial Driver:**  
Windows 7/8/8.1/10,  
Linux 2.6/3.x/4.1~4.15,  
Android 4.x/5.x/6.x/7.x/8.x/9.x

**RIL Driver:**  
Android 4.x/5.x/6.x/7.x/8.x/9.x

**NDIS Driver:**  
Windows 7/8/8.1/10

**ECM Driver\*<sup>⑦</sup>:**  
Linux 2.6/3.x/4.1~4.15

**Gobinet Driver:**  
Linux 2.6/3.x/4.1~4.15

**Linux qmi wwan Driver:**  
3.x (3.4 or later)/4.1~4.15

**Protocols:**  
TCP/UDP/PPP/FTP/FTPS/HTTP/HTTPS/NTP/PING/  
QMI/NITZ/MMS/SMTP/SSL/MQTT/FILE/CMUX\*/  
SMTPS\*

### General Features

Temperature Range: -40°C ~ +85°C  
Dimensions: 29.0mm x 32.0mm x 2.4mm  
Weight: Approx. 4.9g  
LCC Package  
Supply Voltage: 3.3V~4.3V, 3.8V Typ.  
3GPP E-UTRA Release 11  
Bandwidth: 1.4/3/5/10/15/20MHz  
3GPP TS 27.007, 27.005 and Enhanced AT  
Commands

### Approvals<sup>④</sup>

**Carrier:**  
Vodafone (Global)  
Deutsche Telekom/British Telecom/Telefónica  
(Europe)  
Verizon/AT&T/T-Mobile/US. Cellular  
(North America)  
Rogers/Telus/Bell\* (Canada)  
SKT/KT\*/LGU+\* (South Korea)  
NTT DOCOMO/SoftBank/KDDI (Japan)  
Telstra\* (Australia)

**Regulatory:**  
GCF (Global)  
CE (Europe)  
FCC/PTCRB (North America)  
IC (Canada)  
Anatel (Brazil)  
IFETEL\* (Mexico)  
KC (South Korea)  
NCC (Taiwan)  
JATE/TELEC (Japan)  
RCM (Australia/New Zealand)  
FAC (Russia)  
NBTC (Thailand)  
ICASA (South Africa)

**Others:**  
RoHS Compliant  
WHQL

- ① EC25-EUX/-MX/-AFX/-AUX are based on ThreadX OS.
- ② LTE B2 of EC25-AU/EC25-AUX do not support Rx-diversity.
- ③ SDIO interfaces, UART/PCM interfaces for BT4.0 function, eCall, DTMF, audio playback&audio recording and ECM driver are not supported on ThreadX modules.
- ④ Certification status are different among different variants of EC25 module.

\* Under Development