

Quectel MC90

LCC Quad-band GSM/GPRS/GNSS/Wi-Fi Module



MC90 is a quad-band full-featured GSM/GPRS/GNSS/Wi-Fi module using LCC castellation package. It supports hybrid positioning technology, which includes GNSS, Cell ID and Wi-Fi aided positioning. The module also features low power consumption and supports dual SIM single standby function.

Thanks to the hybrid positioning technology, MC90 supports position tracking under both indoor and outdoor environments. GNSS+Cell ID+Wi-Fi hybrid positioning ensures that the module can track position even in weak or no signal areas; and Wi-Fi positioning is used to ensure position tracking indoors. MC90 also supports EPO™ technology which provides predicted Extended Prediction Orbit to speed up TTFF without the need of any extra server. Based on EPO data, QuecFastFix Online function further reduces TTFF in cold start. EASY™ technology enables a very fast first fix when there is no enough satellite information. GLP (GNSS Low Power) power saving mode ensures great positioning accuracy while with ultra-low power consumption. The built-in LNA provides the module with improved RF sensitivity and exceptional acquisition/tracking performances even in weak signal areas.

The compact form factor, great positioning performance, low power consumption and dual (U)SIM interfaces make MC90 a best choice for a wide range of M2M applications, such as bicycle-sharing system, student ID card, vehicle tracker, wearable device (smartwatch), pet tracker, asset tracker, driving recorder, etc.



Key Benefits

- ✓ Support 2.4G Wi-Fi (IEEE 802.11b/g/n) (scan only)
- ✓ Low power consumption: 1.2mA @DRX=5
- ✓ Support voice, data, SMS, OpenCPU and QuecFOTA functions
- ✓ Embedded abundant Internet service protocols
- ✓ Built-in LNA for higher sensitivity: -149dBm @Acquisition
-167dBm @Tracking
- ✓ Multi-GNSS system: GPS, GLONASS, Galileo and QZSS
- ✓ Support hybrid positioning (GNSS, Cell ID and Wi-Fi aided positioning)
- ✓ Support advanced technologies: EASY™/LOCUS™/AlwaysLocate™/GLP/
SDK/AIC/EPO™/QuecFastFix Online
- ✓ Great anti-jamming performance due to multi-tone active interface
canceller
- ✓ Support 1PPS function



Wi-Fi
Aided Positioning



Multi-GNSS System



Quad-band



Compact Size



LCC Package



Embedded Internet
Services Protocols



Dual SIM
Single Standby



Digital Audio



Extended Temperature
Range: -40°C ~ +85°C

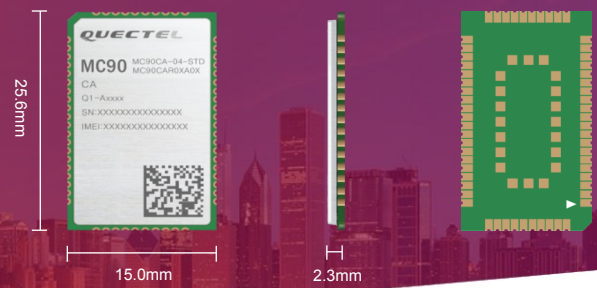


GPRS Multi-slot
Class 12

Rev.: V1.0 | Status: Released

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Frequency Band

Quad-band:
850/900/1800/1900MHz

Data

GPRS Class 12:
Max 85.6kbps (Downlink)
Max 85.6kbps (Uplink)
PBCCH
Coding Schemes:
CS 1, 2, 3, 4
USSD
Non-transparent Mode

SMS

Point-to-point MO and MT
SMS Cell Broadcast
Text and PDU Mode

Voice

Speech Codec Modes:
Half Rate (HR)
Full Rate (FR)
Enhanced Full Rate (EFR)
Adaptive Multi-Rate (AMR)
Echo Arithmetic:
Echo Cancellation
Echo Suppression
Noise Reduction

GNSS Features

Receiving Bands ^{Note:}
GPS L1 C/A: 1575.42MHz
GLONASS L1 C/A: 1601.71MHz
SBAS:
WAAS, EGNOS, MSAS, GAGAN
Channel Number:
33 (Tracking)/99 (Acquisition)/210 (PRN)
Horizontal Position Accuracy:
Autonomous: <2.5m CEP
Velocity Accuracy:
Without Aid: <0.1m/s
Acceleration Accuracy:
Without Aid: <0.1m/s²
Advanced Technologies:
EASY™/LOCUS™/AlwaysLocate™/GLP/SDK/AIC/
EPO™/QuecFastFix Online

Reacquisition Time: <1s

TTF @-130dBm with QuecFastFix Online:

Cold Start: <4.5s

TTF @-130dBm with EASY™:

Cold Start: <15s

Warm Start: <5s

Hot Start: <1s

TTF @-130dBm without EASY™:

Cold Start: <35s

Warm Start: <30s

Hot Start: <1s

Sensitivity:

Acquisition: -149dBm

Tracking: -167dBm

Reacquisition: -161dBm

Dynamic Performance:

Maximum Altitude: 18000m

Maximum Velocity: 515m/s

Maximum Acceleration: 4G

Interfaces

(U)SIM Interface: × 2 (3.0V/1.8V)

UART:

× 4 (Main Port × 1, Debug Port × 1,
Auxiliary Port × 1, GNSS Port × 1)

Analog Audio Channel:

2 Output Channels and 1 Input Channel

Wi-Fi:

2.4G Wi-Fi (IEEE 802.11b/g/n) (Scan Only)

ADC × 1

GPIO × 1

PCM × 1 (LGA Pad)

RTC × 1

Antenna Pad:

× 3 (GSM Antenna Pad × 1, GNSS Antenna Pad
× 1, Wi-Fi Antenna Pad × 1)

Electrical Characteristics

Output Power:

Class 4 (2W @850/900MHz)

Class 1 (1W @1800/1900MHz)

Power Consumption:

1.2mA @DRX=5

Supply Voltage:

3.3V~4.6V, 4.0V Typ.

Enhanced Features

eCall
GNSS (GPS/GLONASS/Galileo/QZSS)
Wi-Fi (Scan Only)
TCP/UDP/FTP/HTTP/PPP/SSL/MQTT Protocols
Dual UART
Audio Play
OpenCPU
FOTA
QuecFile
DSSS
STK
(U)SIM Card Detection
Jamming Detection
Firmware Update

General Features

GPRS Multi-slot Class: Class 12
GPRS Mobile Station: Class B
Great Anti-jamming Performance due to
Multi-tone Active Interface Canceller
Support 1PPS Function
Built-in LNA for Higher Sensitivity
Extended Temperature: -40°C ~ +85°C
Dimensions: 25.6mm × 15.0mm × 2.3mm
LCC Package
Approx. 1.4g
GSM 07.07, 07.05 and other Enhanced
AT Commands

Approvals

CE* (Europe)

Note:

GPS+GLONASS is the default GNSS configuration.

* Under Development