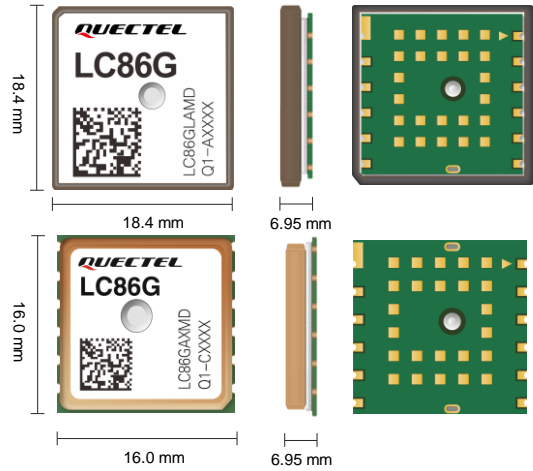




Quectel LC86G Series

Compact Integrated Antenna GNSS Module



Based on the latest enhanced chipset, the new Quectel LC86G series GNSS module supports concurrent reception of GPS, GLONASS, BDS, Galileo and QZSS. The LC86G series is designed to be compatible with Quectel L80 and L86 modules, allowing for smooth migration between them.

Compared with single constellation receivers, by enabling multiple GNSS constellations, the LC86G series increases the number of visible satellites, reduces the time to first fix and improves positioning accuracy, especially when driving through dense urban canyons. The integrated antenna on top of the module makes it easier and faster to design it in, it eliminates most of the RF problems during the design stages.

The integrated LNA that delivers high sensitivity effectuates high accuracy positioning, fast signal tracking and acquisition and better module performance even in challenging environments.

Based on its enhanced performance and low power consumption, LC86G series is perfectly suited for applications such as real-time tracking systems and sharing economy services.



Key Features

- ✓ Multi-GNSS engine for GPS, GLONASS, BDS, Galileo and QZSS, ensuring fast and accurate fix in any environment
- ✓ Footprint compatible with L80 and L86 modules
- ✓ Industry-leading sensitivity: -166 dBm during tracking and -147 dBm during acquisition
- ✓ Integrated LNA improves sensitivity
- ✓ Embedded multi-tone active interference canceller for anti-jamming
- ✓ UART interface
- ✓ Integrated Antenna



AGNSS Technology



Ultra Low Power Consumption



Ultracompact Size



Tracking Sensitivity: -166 dBm



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



Anti-jamming



RoHS Compliant



Multi-constellation System

Quectel LC86G Series

GNSS Module	LC86G (LA) ^⑥	LC86G (AA)	LC86G (AB)
Dimensions	18.4 mm × 18.4 mm × 6.95 mm	16.0 mm × 16.0 mm × 6.95 mm	16.0 mm × 16.0 mm × 6.95 mm
Weight	Approx. 8.0 g	Approx. 6.5 g	Approx. 6.5 g
Temperature Range			
Operating Temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
Storage Temperature	-40 °C to +90 °C	-40 °C to +90 °C	-40 °C to +90 °C
GNSS Features			
Supported Bands	GPS L1 C/A, QZSS L1 C/A GLONASS L1 BDS B1I/ B1C Galileo E1	GPS L1 C/A, QZSS L1 C/A BDS B1I/ B1C Galileo E1	GPS L1 C/A, QZSS L1 C/A GLONASS L1 Galileo E1
Default Constellations	GPS + GLONASS + BDS + Galileo + QZSS	GPS + BDS + Galileo + QZSS	GPS + GLONASS + Galileo + QZSS
Number of Tracking Channels	47	47	47
Number of Concurrent GNSS	4 + QZSS	3 + QZSS	3 + QZSS
SBAS	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN
Horizontal Position Accuracy^①	Autonomous: 1.5 m	Autonomous: 1.5 m	Autonomous: 1.5 m
Velocity Accuracy^②	Without Aid: 0.1 m/s	Without Aid: 0.1 m/s	Without Aid: 0.1 m/s
Acceleration Accuracy^②	Without Aid: 0.1 m/s ²	Without Aid: 0.1 m/s ²	Without Aid: 0.1 m/s ²
1PPS Signal Accuracy^②	100 ns	100 ns	100 ns
TTF (with EASY)^③	Cold Start: 12 s Warm Start: 2 s Hot Start: 1 s	Cold Start: 12 s Warm Start: 2 s Hot Start: 1 s	Cold Start: 12 s Warm Start: 2 s Hot Start: 1 s
TTF (with flash EPO)^③	Cold Start: 5 s	Cold Start: 5 s	Cold Start: 5 s
TTF (without AGNSS)^②	Cold Start: 25 s Warm Start: 22 s Hot Start: 1s	Cold Start: 30 s Warm Start: 28 s Hot Start: 1s	Cold Start: 30 s Warm Start: 28 s Hot Start: 1s
Sensitivity (@ Default Constellations)^④	Acquisition: -147 dBm Tracking: -166 dBm Reacquisition: -160 dBm	Acquisition: -147 dBm Tracking: -166 dBm Reacquisition: -160 dBm	Acquisition: -147 dBm Tracking: -166 dBm Reacquisition: -160 dBm
Dynamic Performance^②	Maximum Altitude: 10000 m Maximum Velocity: 490 m/s Maximum Acceleration: 4g	Maximum Altitude: 10000 m Maximum Velocity: 490 m/s Maximum Acceleration: 4g	Maximum Altitude: 10000 m Maximum Velocity: 490 m/s Maximum Acceleration: 4g
Certifications			
Regulatory	Europe: CE*	Europe: CE*	Europe: CE*
Others	RoHS	RoHS	RoHS
Interfaces			
UART	Adjustable: 9600–921600 bps Default: 115200 bps Update Rate: 1 Hz (Default), up to 10 Hz	Adjustable: 9600–921600 bps Default: 115200 bps Update Rate: 1 Hz (Default), up to 10 Hz	Adjustable: 9600–921600 bps Default: 115200 bps Update Rate: 1 Hz (Default), up to 10 Hz
Protocol	NMEA 0183 V4.10	NMEA 0183 V4.10	NMEA 0183 V4.10
Antenna Interface			
Antenna Type^⑤	Patch Antenna	Patch Antenna	Patch Antenna
Electrical Characteristics			
Supply Voltage Range	2.55–3.6 V, Typ. 3.3 V	2.55–3.6 V, Typ. 3.3 V	2.55–3.6 V, Typ. 3.3 V
I/O Voltage	Typ. 3.3 V	Typ. 3.3 V	Typ. 3.3 V
Current Consumption (@ 3.3 V, Default Constellations)^②	Normal Operation: 32 mA @ Acquisition 32 mA @ Tracking Power Saving Mode: 14 μA @ Backup Mode	Normal Operation: 32 mA @ Acquisition 32 mA @ Tracking Power Saving Mode: 14 μA @ Backup Mode	Normal Operation: TBD @ Acquisition TBD @ Tracking Power Saving Mode: TBD @ Backup Mode

NOTE:

- ①: CEP, 50 %, 24 hours static, -130 dBm, more than 6 SVs.
- ②: Room temperature, all satellites at -130 dBm.
- ③: Open-sky, active high-precision GNSS antenna.
- ④: Conducted sensitivity without patch antenna.

5. ⑤: External antenna is not supported.

6. ⑥: The LC86G (LA) antenna dimensions are 18.4 x 18.4 and LC86G (AA) and (AB) antenna dimensions are 16 x 16, whereas the PCB size is identical for the whole LC86G series.

7. *: Under development/ in progress.

8. TBD: To be determined.