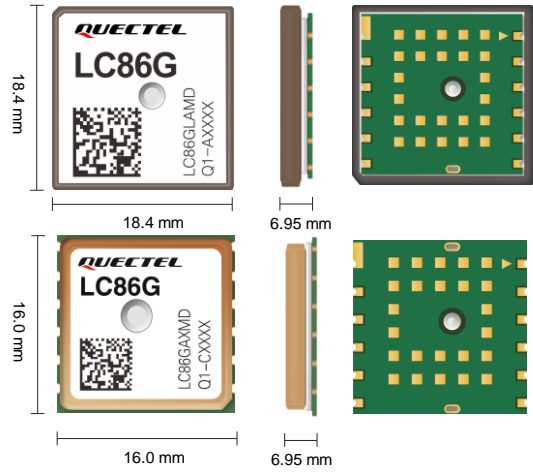




Quectel LC86G Series

Compact Integrated Antenna GNSS Module



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

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, Galileo, BDS 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 or external 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) ^①	LC86G (AA)	LC86G (AB)
Dimensions (mm)	18.4 × 18.4 × 6.95	16.0 × 16.0 × 6.95	16.0 × 16.0 × 6.95
Weight (g)	Approx. 8.0	Approx. 5.9	Approx. 5.9
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 GLONASS L1 Galileo E1 BDS B1I & B1C QZSS L1 C/A	GPS L1 C/A Galileo E1 BDS B1I & B1C* QZSS L1 C/A	GPS L1 C/A GLONASS L1 Galileo E1 QZSS L1 C/A
Default Constellations	GPS + GLONASS + Galileo + BDS + QZSS	GPS + Galileo + BDS	GPS + GLONASS + Galileo
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^②	Autonomous: 1.5 m	Autonomous: 1.5 m	Autonomous: 1.5 m
Velocity Accuracy^③	Without Aid: 0.1 m/s	Without Aid: 0.1 m/s	Without Aid: 0.1 m/s
Acceleration Accuracy^③	Without Aid: 0.1 m/s ²	Without Aid: 0.1 m/s ²	Without Aid: 0.1 m/s ²
1PPS Signal Accuracy^③	100 ns	100 ns	100 ns
TTF (with EASY)^④	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)^④	Cold Start: 5 s	Cold Start: 5 s	Cold Start: 5 s
TTF (without AGNSS)^③	Cold Start: 30 s Warm Start: 25 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)^⑤	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^③	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	Integrated patch antenna or external antenna	Integrated patch antenna or external antenna	Integrated patch antenna or external 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	Same as VCC	Same as VCC	Same as VCC
Power Consumption (@ 3.3 V, Default Constellations)^③	Normal Operation: 34 mA (112.2 mW)@ Acquisition 34 mA (112.2 mW)@ Tracking Power Saving Mode: 13 μA (42.9 μW)@ Backup Mode	Normal Operation: 30 mA (99 mW)@ Acquisition 30 mA (99 mW)@ Tracking Power Saving Mode: 13 μA (42.9 μW)@ Backup Mode	Normal Operation: 33 mA (108.9 mW)@ Acquisition 33 mA (108.9 mW)@ Tracking Power Saving Mode: 13 μA (42.9 μW)@ Backup Mode

NOTE:

- ①: The LC86G (LA) antenna dimensions are different, whereas the PCB size is identical for the whole LC86G series.
- ②: CEP, 50 %, 24 hours static, -130 dBm, more than 6 SVs.
- ③: Room temperature, all satellites at -130 dBm.
- ④: Open-sky, active high-precision GNSS antenna.
- ⑤: Conducted sensitivity without patch antenna.
- *: Under development/in progress.