Quectel LC76G

Compact GNSS Module

10.1 mm · 9.7 mm · 2.4 mm
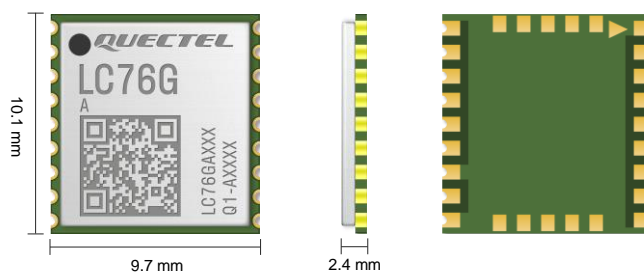
Based on the latest enhanced chipset, the new Quectel LC76G GNSS module supports concurrent reception of GPS, GLONASS, BDS, Galileo and QZSS. The LC76G is designed to be compatible with Quectel L76 and L76-LB modules, allowing for smooth migration between them.

Compared with single constellation receivers, by enabling multiple GNSS constellations, the LC76G module 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 LNA that delivers high sensitivity effectuates high accuracy positioning, fast signal tracking and acquisition and better module performance even in challenging environments.

By combining EASY™ (Embedded Assist System), an advanced AGNSS feature, with GLP* (GNSS Low Power), a low-power mode, the LC76G module achieves high performance with low power consumption and fully meets the industrial standards. The EASY™ technology allows the module to calculate and predict orbits automatically by using the ephemeris data (duration of up to 3 days) stored in the internal RAM. As a result, the LC76G acquires a position fix quickly, even at lower signal levels with low power consumption. Moreover, with the GLP* technology, the LC76G can adaptively adjust the on/off time based on the environmental and motion conditions to achieve a balance between the positioning accuracy and power consumption.

Based on its enhanced performance, the LC76G is ideal for consumer and industrial applications. Extremely low power consumption makes it a preferred solution for power-sensitive applications, such as portables.

Key Features

- ✔ Multi-GNSS engine for GPS, GLONASS , BDS , Galileo and QZSS, ensuring fast and accurate fix in any environment
- ✔ Footprint compatible with L76 and L76-LB 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
- ✔ Supported interfaces: UART and I2C

EASY™ 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

Version: 1.0 | Status: Released

Quectel LC76G

GNSS Module	LC76G (PA)*	LC76G (AB)
Region	Global	Global
Dimensions	10.1 mm × 9.7 mm × 2.4 mm	10.1 mm × 9.7 mm × 2.4 mm
Weight	Approx. 0.5 g	Approx. 0.5 g
Temperature Range		
Operating Temperature	-40 °C to +85 °C	-40 °C to +85 °C
Storage Temperature	-40 °C to +90 °C	-40 °C to +90 °C
GNSS Features		
Supported Bands	GPS L1 C/A, QZSS L1 C/A: 1575.42 MHz GLONASS L1: 1598.0625–1605.375 MHz BDS B1I: 1561.098 MHz B1C*: 1575.42 MHz Galileo E1: 1575.42 MHz	GPS L1 C/A, QZSS L1 C/A: 1575.42 MHz GLONASS L1: 1598.0625–1605.375 MHz BDS B1I: 1561.098 MHz B1C*: 1575.42 MHz Galileo E1: 1575.42 MHz
Default Constellations	GPS + GLONASS + BDS + Galileo + QZSS	GPS + GLONASS + BDS + Galileo + QZSS
Number of Tracking Channels	47	47
Number of Concurrent GNSS	5	5
SBAS	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN
Horizontal Position Accuracy [1]	Autonomous: 2.0 m	Autonomous: 2.0 m
Velocity Accuracy [2]	Without Aid: 0.1 m/s	Without Aid: 0.1 m/s
Acceleration Accuracy [2]	Without Aid: 0.1 m/s²	Without Aid: 0.1 m/s²
1PPS Signal Accuracy [2]	100 ns	100 ns
TTFF (with EASY™) [3]	Cold Start: 15 s Warm Start: 2 s Hot Start: 2 s	Cold Start: 15 s Warm Start: 2 s Hot Start: 2 s
TTFF (without EASY™) [2]	Cold Start: 30 s Warm Start: 25 s Hot Start: 2 s	Cold Start: 30 s Warm Start: 25 s Hot Start: 2 s
Sensitivity (@ Default Constellations)	Acquisition: -147 dBm Tracking: -166 dBm Reacquisition: -159 dBm	Acquisition: -147 dBm Tracking: -166 dBm Reacquisition: -159 dBm
Dynamic Performance [2]	Maximum Altitude: 10000 m Maximum Velocity: 500 m/s Maximum Acceleration: 4g	Maximum Altitude: 10000 m Maximum Velocity: 500 m/s Maximum Acceleration: 4g
Certifications		
Regulatory	**Europe**: CE*	**Europe**: CE*
Others	RoHS	RoHS
Interfaces		
I2C	Up to 400 kbps	Up to 400 kbps
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
Protocol	NMEA 0183 V4.10	NMEA 0183 V4.10
External Antenna Interface		
Antenna Type	Active or Passive	Active or Passive
Antenna Power Supply	External or Internal (through VDD_RF)	External or Internal (through VDD_RF)
Electrical Characteristics		
Supply Voltage Range	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
Current Consumption (@ 3.3 V, Default Constellations) [2]	**Normal Operation:** TBD @ Acquisition TBD @ Tracking **Power Saving Modes:** TBD @ Standby Mode TBD @ Backup Mode	**Normal Operation:** 36 mA @ Acquisition 34 mA @ Tracking **Power Saving Modes:** 3.8 mA @ Standby Mode 13 µA @ Backup Mode

NOTE:
1. The LC76G (AB) is a standard version module while the LC76G (PA)* is an enhanced low power consumption version.
2. [1]: CEP, 50%, 24 hours static, -130 dBm, more than 6 SVs.
3. [2]: Room temperature, all satellites at -130 dBm.
4. [3]: Open-sky, active high-precision GNSS antenna.
5. *: Under development/Ongoing.

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