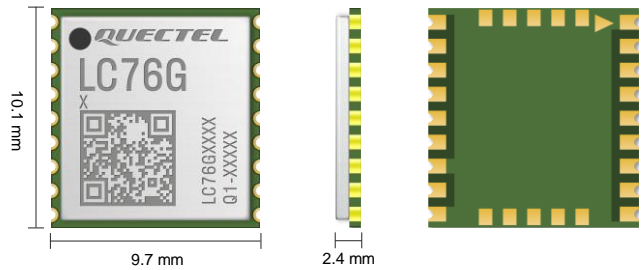




# Quectel LC76G Series

## Compact GNSS Module



Based on the latest enhanced chipset, the Quectel LC76G series GNSS module supports concurrent reception of GPS, GLONASS, Galileo, BDS and QZSS. The LC76G series is designed to be compatible with Quectel L76 module, allowing for smooth migration.

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

By combining EASY (Embedded Assist System), an advanced self-seeded AGNSS feature with ALP\* (GNSS Low Power) mode, the LC76G series achieves high performance with low power consumption and satisfies 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 series acquires a position fix quickly, even at lower signal levels with low power consumption. Moreover, with the ALP\* technology, the LC76G series 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 series is ideal for consumer and industrial applications. Extremely low power consumption makes it a preferred solution for power-sensitive applications, such as Toll Tags, Emergency Beacons and Battery operated Container, Pallet or Animal trackers.



## Key Features

- ✓ Multi-GNSS engine for GPS, GLONASS, Galileo, BDS and QZSS, ensuring fast and accurate fix in any environment
- ✓ Footprint compatible with L76 module
- ✓ 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

# Quectel LC76G Series

GNSS Module	LC76G (AB)	LC76G (PA)	LC76G (PB)
<b>Dimensions</b>	10.1 mm × 9.7 mm × 2.4 mm	10.1 mm × 9.7 mm × 2.4 mm	10.1 mm × 9.7 mm × 2.4 mm
<b>Weight</b>	Approx. 0.5 g	Approx. 0.5 g	Approx. 0.5 g
<b>Temperature Range</b>			
<b>Operating Temperature</b>	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
<b>Storage Temperature</b>	-40 °C to +90 °C	-40 °C to +90 °C	-40 °C to +90 °C
<b>GNSS Features</b>			
<b>Supported Bands</b>	GPS: L1 C/A GLONASS: L1 Galileo: E1 BDS: B1I; B1C QZSS: L1 C/A	GPS: L1 C/A GLONASS: L1 Galileo: E1 BDS: B1I; B1C QZSS: L1 C/A	GPS: L1 C/A GLONASS: L1 Galileo: E1 BDS: B1I; B1C QZSS: L1 C/A
<b>Default Constellations</b>	GPS + GLONASS + Galileo + BDS + QZSS	GPS + GLONASS + Galileo + BDS + QZSS	GPS + GLONASS + Galileo + BDS + QZSS
<b>Number of Tracking Channels</b>	47	47	47
<b>Number of Concurrent GNSS</b>	4 + QZSS	4 + QZSS	4 + QZSS
<b>SBAS</b>	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN
<b>Horizontal Position Accuracy<sup>①</sup></b>	Autonomous: 1.5 m	Autonomous: 1.5 m	Autonomous: 1.5 m
<b>Velocity Accuracy<sup>②</sup></b>	Without Aid: 0.1 m/s	Without Aid: 0.1 m/s	Without Aid: 0.1 m/s
<b>Acceleration Accuracy<sup>②</sup></b>	Without Aid: 0.1 m/s <sup>2</sup>	Without Aid: 0.1 m/s <sup>2</sup>	Without Aid: 0.1 m/s <sup>2</sup>
<b>Accuracy of 1PPS Signal (RMS)<sup>②</sup></b>	30 ns	30 ns	30 ns
<b>TTFF (with EASY)<sup>③</sup></b>	Cold Start: 15 s Warm Start: 2 s Hot Start: 1 s	Cold Start: 15 s Warm Start: 2 s Hot Start: 1 s	Cold Start: 15 s Warm Start: 2 s Hot Start: 1 s
<b>TTFF (with EPO)<sup>③</sup></b>	Cold Start: 5 s	Cold Start: 5 s	Cold Start: 5 s
<b>TTFF (without AGNSS)<sup>②</sup></b>	Cold Start: 28 s Warm Start: 25 s Hot Start: 1 s	Cold Start: 28 s Warm Start: 25 s Hot Start: 1 s	Cold Start: 28 s Warm Start: 25 s Hot Start: 1 s
<b>Sensitivity (@ Default Constellations)</b>	Acquisition: -147 dBm Tracking: -166 dBm Reacquisition: -159 dBm	Acquisition: -147 dBm Tracking: -166 dBm Reacquisition: -159 dBm	Acquisition: -147 dBm Tracking: -166 dBm Reacquisition: -159 dBm
<b>Dynamic Performance<sup>②</sup></b>	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
<b>Certifications</b>			
<b>Regulatory</b>	Europe: CE	Europe: CE	Europe: CE*
<b>Others</b>	RoHS	RoHS	RoHS
<b>Interfaces</b>			
<b>I2C</b>	Up to 400 kbps	Up to 400 kbps	Up to 400 kbps
<b>UART</b>	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	Adjustable: 9600–921600 bps Default: 115200 bps Update Rate: 1 Hz
<b>Protocol</b>	NMEA 0183 V4.10	NMEA 0183 V4.10	NMEA 0183 V4.10
<b>External Antenna Interface</b>			
<b>Antenna Type</b>	Active or Passive	Active or Passive	Active or Passive
<b>Antenna Power Supply</b>	External or Internal (through VDD_RF)	External or Internal (through VDD_RF)	External or Internal (through VDD_RF)
<b>Electrical Characteristics</b>			
<b>Supply Voltage Range</b>	2.55–3.6 V, Typ. 3.3 V	2.55–3.6 V, Typ. 3.3 V	1.75–1.98 V, Typ. 1.8 V
<b>I/O Voltage</b>	Same as VCC	Same as VCC	Same as VCC
<b>Power Consumption (@ Default Constellations)<sup>②</sup></b>	<b>Normal Operation:</b> 36 mA (118.8 mW) @ Acquisition 36 mA (118.8 mW) @ Tracking <b>Power Saving Mode:</b> 13 μA (42.9 μW) @ Backup Mode	<b>Normal Operation:</b> 10 mA (33 mW) @ Acquisition 10 mA (33 mW) @ Tracking <b>Power Saving Modes:</b> 5.5 mA (18.15 mW) @ ALP Mode 13 μA (42.9 μW) @ Backup Mode	<b>Normal Operation:</b> 15 mA (27 mW) @ Acquisition 15 mA (27 mW) @ Tracking <b>Power Saving Modes:</b> 7.5 mA (13.5 mW) @ ALP Mode 13 μA (23.4 μW) @ Backup Mode
<b>Power Consumption (@ GPS + GLONASS)<sup>②</sup></b>	<b>Normal Operation:</b> 30 mA (99 mW) @ Tracking 30 mA (99 mW) @ Tracking	<b>Normal Operation:</b> 9 mA (29.7 mW) @ Acquisition 9 mA (29.7 mW) @ Tracking <b>Power Saving Modes:</b> 4.6 mA (15.18 mW) @ ALP Mode	<b>Normal Operation:</b> 14.5 mA (26.1 mW) @ Acquisition 14.5 mA (26.1 mW) @ Tracking <b>Power Saving Modes:</b> 6.5 mA (11.7 mW) @ ALP Mode

NOTE:

- The LC76G (AB) is a standard version module while the LC76G (PA) is an enhanced low power consumption version.
- 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.
- \*: Under development/In progress.